THE INFLUENCE OF CHANGING WORK PRACTICES ON THE OFFICE SETUP

DOCTOR OF PHILOSOPHY IN CONSTRUCTION MANAGEMENT

SCHOOL OF CONSTRUCTION MANAGEMENT AND ENGINEERING

MARY KARIMI KAARIA

OCTOBER 2024

ABSTRACT

The office setup and everyday activities of office workers towards the accomplishment of office work may seem unchanging, but closer scrutiny reveals that the setups and work activities are dynamic and constantly evolving. While the organisational norms and standards guide the prefigured workspace, office workers adjust and reconfigure spaces as they seek to achieve the purpose of the work being accomplished while applying their individual preferences and choices.

This study considers office work as a social practice and part of the everyday life of the office worker. It uses social practice theory as a lens to conceptualise and interpret office workers' activities when accomplishing office work, and the role of the physical environment where work is performed. More particularly, the study uses the social practice theory concepts of meaning and materiality to interpret the relationship between the intentions of office workers and the physical environment in which office work is accomplished.

To understand how office work shapes and is shaped by the office setup, the study investigates in depth what the office is for and what office workers do in the accomplishment of work. It uses the experiences of office workers in a situated case to investigate what comprises office work, how it is accomplished and the role of the office setup. It examines the influences of when and where office work is accomplished, how office work practices interconnect and terminate, and the influence of meaning on the spatial-temporal arrangement of the office setup.

The ethnographic approach adopted in this research required the collection of data from office workers through in-depth participant observation, informal discussions, semi-structured interviews, photographs and sketches. Covid-19 mitigation measures were taken into consideration in the selection of research methods and during data collection resulting in redesign of the field research to a two-stage data collection to accommodate the physical interaction restrictions imposed by the Government of Kenya. The two stages data collection focused on the 'doings' and 'sayings' of the office workers at a micro level, the objects used, the purpose of their work and the arrangement of the setting in which the work was accomplished. In preparation for analysis, the data was arranged into four episodes: the preparation of the document, the informal unplanned meeting, the updating of the whiteboard and the formal planned meeting.

Research on office environments has mainly focused on the global north, however, this study is carried out in Kenya providing new data on the office environments and office work in corporate organisations in the global south. Using her workplace as the research field, the researcher, draws from office workers' experiences and provide fresh perspective on the how office workers exercise the preferences within existing organisational norms to modify their workspaces to meet their intentions.

The study has found that office work practices are dynamic, with meaning, objects used and spatial-temporal arrangement of practices continually changing. While the prefigured setup is configured to enforce and communicate organisational norms, the readiness of the setup is influenced by its capability to support anticipated practices. In the quest for convenience, office workers negotiate priorities and exercise preferences by selecting the time and place of work according to their intentions. The findings show that meanings lent to practices arise

from, among others, the intentions of office workers as they comply with norms, achieve the purpose of their work and seek convenience. The adjustments of the setup were found to take place to accommodate the additional meanings arising from the office workers' intentions. The quest for convenience was found to be central to the spatial-temporal arrangement of practices and the material arrangements supporting them. As office work unfolds, the readiness of the setup to fulfil office workers' intentions is constantly tested and office workers adjust the setup to accommodate the convenience they seek.

The study offers contributions to the fields of workplace design, facilities management, corporate real estate, and post-occupancy studies and is useful to office designers, corporate real estate managers and facilities managers seeking to enhance the office environment's ability to support changing office work practices. By examining the complex ways in which office workers interact with their environments, the study emphasis the need for flexible office setups that are responsive to office worker preferences and the changing nature of office work. The study findings can be applied in designing for the evolving needs of workers and organizations, and management of existing workplaces. Further research is recommended on cross-cultural comparisons and the use of longitudinal approaches to study office work and office environments.

ACKNOWLEDGEMENT

DECLARATION

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

MARY KARIMI KAARIA

Contents

Appendices

Appendix I   Observation template

Appendix II   Interview outline

Appendix III   COVID-19 Impact Statement

Appendix IV   Self-recording observation form

Appendix V   Application for Approval of Research Ethics

Appendix VI   Example of research license issued by National Commission for Science, Technology and Innovation (Kenya)

Appendix VII   Authorisation to carry out research within the organisation

Appendix VIII   Information sheet to participants

Appendix IX   Participant consent form

Appendix X   Extract of tabulated field notes

Appendix XI   Coding structure

List of tables

List of figures

List of images

1   Chapter 1   Introduction

Office designers have sought to provide a physical environment that enables the accomplishment of office work while fulfilling other roles assigned to the office, such as being the physical location of the organisation as well as the site of corporate identity and interaction. However, office work has been evolving with advances in technology that enable the redistribution of office work in place and time to alternative workplaces away from the office such as homes, 'third places'[1] such as restaurants, and also to alternative spaces within the office such as break-out areas. Though technological advances create new ways of working, referred to variously as remote working, hybrid working and telecommuting (van Meel 2011, Kingma 2019, Cole *et al.* 2014, Boell *et al.* 2016), there is still interest in the office as the place designated for office work. It is therefore necessary to understand what office workers do in the accomplishment of office work when in the office, what role the office fulfils and how office work is shaped by, and in turn may shape, the office setup.

Of particular interest are questions of whether the ways in which office work is accomplished, and the choices made by office workers in accomplishing it are related to how the office is set up to support office work. The understanding of what goes on in the accomplishment of work and the environment in which office work is accomplished is critical to the examination of the configuration of office space and considerations of how to accommodate change in the dynamic everyday life of the office worker. This study seeks to contribute to an understanding of spatial-temporal arrangement of office work and how the office may be reconfigured to support office workers' activities in the accomplishment of work and the choices they make. Additionally, it provides insights on the relationship between what office workers are doing and the configuration of office environment by conceptualizing the prefigured office setup as an arrangement that accommodates office work as well as the multiple roles that the office fulfils. By using an ethnographic approach, the study contributes qualitative data on the examination of workplaces and helps real estate and facilities managers gain understanding of what goes on in the office from the experience of office workers. Noting that studies on workplaces have mainly been carried out in the global north (Haynes *et al* 2019, Appel-Meulenbroek *et al* 2018, Umishio *et al* 2021), the study contributes empirical data on office work and the office environment in the global south, specifically in Kenya's capital city, Nairobi.

This chapter introduces the research by setting the problem against its background and outlining how the research has been carried out.

---

[1] Urban Sociologist Ray Oldenburg defined a *third place* as a place of refuge other than the home or workplace where people can regularly visit and commune with friends, neighbours, co-workers, and even strangers (Mehta and Bosson 2010).

1.1 Background

Organisations set up offices as the designated place of office work identifiable by the presence and arrangement of objects to support office work such as desks, computers, chairs, cabinets, and telecommunication connections. Traditionally, the office environment has been configured to enable work to be carried out primarily at the office desk. However, with the availability of a wide range of work tools including mobile and smart devices that enable mobility of office work, office work may now be viewed as more mobile, transferable, and no longer located in the office building or more or less tethered to the office desk (Leonardi and Bailey, 2008). Furthermore, the availability of supporting facilities (such as communications networks, spaces to work and furniture in locations other than the office) has further contributed to the emergence of different modes of distributed working sometimes referred to as hoteling, flexible working, agile working and remote working (Göçer *et al.* 2018, Kingma 2016, Rob 2015, Leclercq-Vandelannoitte 2021) that are not fixed to offices and desks or to specific hours of the day but more widely distributed in time and space, within and outside the designated office building. The options for where and when office work can now be done go beyond the designated workplace (i.e., the office and its desk) to alternative workplaces in homes, restaurants, in transit and in other third places.

Research in the field of management and organisation studies has illuminated the growing interest on the temporal and spatial arrangements of office work with calls for further research the relationship between the physical environment on the organisation of work (Orlikowski and Scott 2015, Endrissat and Leclerq-Vandelannoitte 2021). Additionally, studies on corporate real estate and facilities management have evaluated spaces used for office work using post occupancy assessments to understand the relationship between the office setup and the production of the office work (Palvalin 2017, Haynes et al 2017). However, while these post occupancy studies focus on the suitability of the office environment for production of work, the office is also the location where office workers can be reached or found, a point of service delivery, an organisational status symbol, an asset and a symbol of hierarchy (Harris 2016, Skogland and Hansen 2017, Hou *et al*. 2021). Additionally, the spatial-temporal arrangement of work is continually changing as office work is no longer limited to the designated workplace (Kingma 2016). This necessitates a deeper understanding of what office setups are used for and their ability to support the accomplishment of office work while fulfilling other roles to the corporate and office worker.

While the setup of spaces for office work may seem to remain static as office work is accomplished, they are also customised to meet the requirements of individual organisations, the intended work, and the interactions of office workers at the workplace. The objects in the office setup, such as desks, partitions, and cabinets, have physical attributes, such as shape, size, height, and spatial position, that play various roles in the makeup and the configuration of space. For example, the arrangement, size, finish, colours of desks and shapes of spaces can signify the worker's rank, while the type and height of partitions affect the acoustic and visual privacy of spaces and the expected interaction between office workers. The physical space, therefore, is arranged with multiple roles in view: its suitability is not assessed simply

2

in terms of its roles in supporting the accomplishment of office work; it is also expected to enable other roles of the office such as communicating and supporting norms of organisations.

As the 'fixedness' of place is being transformed by the portability of office work and its location, and as 'office hours' become more flexible, it has been suggested that the office as the designated place of work also needs to have flexibility to allow workers to exercise choice on what work may be carried out and when and where it is carried out (Haynes *et al*. 2019, Kingma 2019, Göçer *et al*. 2018). Such choices, however, are enabled and constrained by the supporting physical office environment and facilities, the specific nature of the work, the rules and norms of work that workers subscribe to, and the routines that form everyday life, as well as the control that workers may exercise over their personal comfort (Becker 2010, Skogland and Hansen 2017, Haynes *et al*. 2019). As the uptake of new technology and associated new ways of working become popular with office workers, a demand is created for the facilities that support them in the places that workers identify as suitable alternative places to work from. Of course, not all aspects of office work are amenable to such distributed practice and much office work may still be carried out in the office during fixed office hours. Indeed, for certain activities – face to face meetings with colleagues, for example – the fixed office may provide the most workable and convenient arrangements. An important effect is that the selection of workplace is likely to be driven by a range of factors, including the suitability of the office environment, the availability of tools and supporting facilities, and the time and place that are both convenient and meet the objectives of the work being undertaken (Mallawaarachchi *et al*. 2016, Chadburn *et al*. 2017, Haynes *et al*. 2017)).

Studies on the use of the office environment for office work have suggested that its suitability is associated with the individual worker's comfort and satisfaction and can be measured by assessing their satisfaction with aspects such as air quality, system control, acoustic separation, quantity of space occupied, office layout and aesthetics. They further suggest that workers seem more satisfied and have higher comfort levels if they can control their immediate environment (Mallawaarachchi *et al*. 2016, Purdey 2013, Mulville *et al*. 2016, Palvalin *et al*. 2017), signifying the importance workers attribute to choice and flexibility. The office environment's suitability for office work has been assessed by surveys on perceived satisfaction, but since the intention of work, objects, time, and place of office work are all continuously changing, the factors contributing to the suitability of the office environment are also likely to change, calling for other ways of examining suitability. Additionally, while surveys have been used to obtain feedback from office workers on the conduciveness of the office setup to office work, such surveys may provide limited understanding of how the office setup support the accomplishment of office work as this work changes throughout the working day, and in the longer term also (Purdey 2013, Appel-Meulenbroek *et al*. 2018).

Organisations set up offices to support occupants in performing their tasks and activities, preferably at minimum cost and to maximise worker satisfaction (van Meel, 2011). Office setups may be driven by both internal and external factors such as to improve office worker wellbeing, comply with regulation or to adjust towards changes in technology. For example, in March 2010 the Government of Kenya issued a directive for changes from enclosed offices

to open-plan in the design of government and public offices, in order to instil accountability and transparency by removing physical barriers and enabling the visibility of what office workers were doing in the workplace.[2] While the change in design of the workspace may have various objectives, the office setup is expected to be suitable for office work, providing support for the activities of office workers leading towards the accomplishment of office work, and the other roles it normally fulfils.

1.2   Research problem

While the study of the relationship between office work and office setup may be carried out in different ways and consider a wide range of aspects, it may be argued that suitability of the office setup extends beyond its capability to support the accomplishment of work to include its capability to support other roles that the office fulfils. The emerging trends in office work and the multiple roles of the office call for investigation of what the office is for and how what goes on in the office shapes and may be shaped by the office environment. Understanding the office's suitability for all these functions is complicated by the dynamic changes in office work and the choices of office workers enabled by new ways of working. As an office worker herself, the researcher found that her interaction with the physical setting of office work brought her to make enquiries about the reasons for the office workers' preferences and actions, and the effects of the modifications office workers made to the workspace. The researcher's professional background as a facilities manager of a corporate real estate portfolio contributed to her interest in the day-to-day interactions of the office workers with the physical setup of the office, and more particularly, the modifications office workers make to the setup to support the accomplishment of work.

Past studies have tended to focus on office worker's perceived productivity and have used user satisfaction to assess the suitability of office design have focused on the workers' satisfaction with the office environment (Umisho *et al*. 2021, Haynes *et al*. 2019). More particularly, studies in the fields of facilities management and corporate real estate have used post-occupancy assessments that evaluate the occupants' assessment of their own productivity to establish the satisfaction level of the office worker with specific design aspects such as visual and acoustic privacy, the quality of the indoor environment, and the building's location (Chadburn *et al*. 2017, Mallawaarachichi *et al*. 2016, Mulville et al 2016). While such approaches provide insights on occupant satisfaction with aspects of the office setup and thus its potential contribution to worker productivity, they do not examine explicitly what office workers are doing and how this may be enabled or constrained by the setup.

To understand how the office setup supports office work, it is important to understand what workers are doing in a day to day and the adjustments they make to the setup to enable the accomplishment of work. Duffy *et al*. (2011) recognise the difficulty office designers have in configuring the office setup to accommodate all possible uses noting that

---

[2] https://www.standardmedia.co.ke/busia/article/2000005189/its-open-space-for-all-public-offices

"No physical working environment, however well designed, does anything by itself or on its own account. What really matters is how intelligently, imaginatively, and energetically clients use and manage design to achieve what they want. Purpose is what matters most."

Further, individual office workers may have purposes and preferences for use that may or may not resonate with the work norms that guided the initial office setup. This may require changes in the office setup as each individual office worker responds to it and seeks to customise or personalise it, calling for understanding of the relationship between the office setup and office work.

While office setups may be studied through examining the physical attributes of the space and objects in it, such as size, shape, arrangement and finish, the physical attributes of spaces and objects are not enough to show how the setup may support the accomplishment of work. Instead, how the setup is used by workers, and how in turn the objects in the setup are used and the roles those objects are required to perform for the accomplishment of work must be examined. This study proposes that, in the accomplishment of office work, workers assign various uses to spaces and objects in the setup, and the arrangements of the office setup are continually changing to respond to the uses assigned. The study further proposes that, as office work changes, newly assigned uses may lead to reconfiguration of the office setup and its customisation or personalisation to align with these new uses. Indeed, such new uses of objects and spatial arrangements may arise out of the negotiated and shared preferences of groups of office workers.

Though the study of office work and the every-day life of office workers has been applied to various aspects of office work, such as new ways of working, the temporal structure of work and the use of objects and spaces (Rosengren 2019, Kokkoken and Vaagaasar 2017, Feldman and Orlikowski 2011) alludes that the ability of existing office setups to support the dynamic changes in office work is not always addressed directly. Studies on the use of the office environment use different approaches to examine the relationship between the physical environment and the accomplishment of office work (Appel-Meulenbroek *et al*. 2018). However, office work is changing and the suitability of office setups for dynamic changes in office work cannot be examined on its own without understanding what is going on in the office and the other roles that the office fulfils (Skogland and Hansen 2017).

The research problem is defined as the investigation of the interplay between office work, the objects used and the spatial arrangement of the office setup. This enables an examination of what influences the selection and arrangement of office work practices and how those influences are shaped by, and in their turn shape the office environment. In addition, the study also enables conceptualization of the office setup as evolving in its spatial-temporal arrangement towards supporting office work practices.

1.3 Social practice theory as a lens for the study of office work and the office setup.

In this study, office work is considered as a social practice comprising of sets of activities and shared norms that are recognisable by office workers. Office work is considered as part of the everyday life of office workers and is intertwined with other day-to-day social practices. Office work as a social practice is further discussed in Chapter 3. Social practice theory provides concepts that can be used to interpret and conceptualise the dynamic changes in office work and office work itself as elements of everyday practice. In social practice theory, practices do not stand alone but are inter-related with other practices: their study includes examination of actions carried out, objects used, the purpose for which work is enacted, as well as the routines and norms observed in every-day life. It focuses on work practices as the unit of analysis and not on the practitioners (Reckwitz 2002, Shove *et al*. 2012,). The concept of social practice theory is used to formulate descriptions, explanations, and interpretations (Schatzki 2010; 125) of how office work evolves and, consequently, how those changes influence the configuration of the office environment.

1.4 Exploratory enquiry

To operationalise the study from the broad research question to refined research questions, an exploratory enquiry was carried out with participants drawn from a selection of office workers as detailed in Chapter 5 (5.6.1.1). The enquiry was designed to explore the routines and daily activities of these office workers and the choices and adjustments they made as they selected the time, nature, and location of their work. While the enquiry suggested a relationship between the purpose of the work practices being carried out, the selection of time and place, and the availability of facilities, it was found necessary to observe the relationship between the objects, norms, preferences and routines of practice and the office environment to develop a better understanding of how and why office work is distributed across space and time. The lessons learnt from the exploratory enquiry were used to refine the research questions, as well as the design and methods of this study.

1.5 Research questions

This study considers that office work is part of the everyday life of office workers and that the practices of office workers are arranged in time and space within the setting of other activities taking place around them. Additionally, it considers that the activities of office workers undertaken for the accomplishment of office work are intentional and are guided by norms such as rules and procedures of work and of the corporate organization. This study considers office work as a social practice and uses social practice theory as a lens to examine what office workers do in the course of the accomplishment of work and how configuration of the office

space shapes and is shaped by office work practices. To address the overarching question on how office work practices shape and are in turn shaped by the office environment, this study seeks to answer the following questions:

i. In the unfolding of office work, what influences where and when office work practices are enacted?

ii. How do office work practices interconnect and terminate and what informs the selection and arrangement of objects used to interconnect and terminate practices?

iii. In the enactment of practices, how do meanings lent to objects and spaces influence the spatial-temporal arrangement of the office setup?

The framing of these questions is expounded in Chapter 3(3.5).

1.6   Overall research approach

The research design is based on the consideration that, by examining office work and the setup in which it is accomplished, the role of the office amidst changing office work practices is better understood. The existing literature on emerging trends in office work and the physical setup in which office work is carried out identifies a point of departure for refinement of the research design to an in-depth investigation of what the office worker is doing in the accomplishment of work and its relationship to the office arrangements.

Using the information acquired from the exploratory enquiry, the study takes a qualitative approach, based on a form of ethnographic enquiry, to achieve an in-depth understanding of the everyday life of office workers. The study uses the experiences of the office workers to understand their intentions, preferences, and routines, as well as the norms of office work and the office environment in which office work is accomplished. The concepts of social practice theory are mobilised to interpret what is going on in the office and the spatial-temporal arrangements that support the accomplishment of office work. This enables the investigation of the adjustments office workers make to their office environments as work unfolds. The field research takes place during the COVID-19 pandemic with the restrictions and social distancing guidelines impacting office work practices, interactions in the office and the observation of office work (see Chapter 4 [4.1.4]). The research design applied takes consideration of the pandemic mitigation measures put in place in the workplace as discussed in Chapter 5 [5.7].

1.7   Structure of the thesis

This study consists of 13 chapters. The first set of chapters focuses on the literature, with **Chapters 2 and 3** providing a review of the literature on office work, the office setup, and the theoretical framework, focusing on office work as a social practice and the contributing factors of office design.

The next set of chapters focuses on data collection, description of the data, data analysis and the findings emerging from the analysis. **Chapter 4** sets the stage of the empirical study by providing a conceptual overview of the field research setting, the impact of Covid-19 pandemic on the research and researcher as a participant observer. **Chapter 5** details the research design and also describes the methods used in data collection and gives details of data collection process. **Chapter 6** gives an overview of the data analysis and introduces the organisation of data into episodes for analysis. **Chapter 7 to 10** presents the analysis and findings of each episode on the office setup, the dynamic nature of office work practices, the connection and termination of office work practices, the convenience of office workers and the readiness of the setup for intended work and the reconfiguration of the office setup. **Chapter 11** provides a summary of the findings.

The last set of chapters presents the discussion and conclusion of the study. **Chapter 12** discusses the findings in the light of the existing literature. Finally, **chapter 13** provides the study's conclusion, setting out its contributions to knowledge in various fields and its further implications, as well as the recommendations for application in office setups and the designation of areas for further study.

2 Chapter 2   Office work and the office

The relationship between office work and office configuration has been studied by examining the suitability of the physical environment of the office for the accomplishment of office work. Office work, however, is no longer limited to a fixed place and time of work: this state of affairs necessitates understanding of the influences of where and when office work is done and the office configuration that supports it in order to understand what the office is for. To develop this, the extent to which the office setup influences and is influenced by when and where office work is accomplished needs to be examined. Additionally, although physical items that comprise the office setup may be configured at the initial setup of the office space, the setup may be reconfigured as work is accomplished and thus the influences on the reconfiguration need to be understood. This raises the question of what office workers do in the accomplishment of work and, in particular, how the office is configured to support office work.

The literature review is presented in two chapters. This chapter reviews literature on the role of the office, the office setup and office work, drawing on literature across a range of disciplines including, office design, post-occupancy studies, corporate real estate management and organisational studies. The next chapter conceptualises office work as a form of social practice and uses social practice theory as a theoretical lens to examine how office work is accomplished and the configuration of the office setup that supports it.

2.1   The office as a site of work and organisational norms

This study considers that the configuration of the office setup can be understood by examining how it is used; with the distribution of office work to alternative workspaces, however, office work is no longer restricted to the designated office. This raises the question: if work can be done away from the office, what is the office for? By comprehending the roles that the office fulfils, the study seeks to obtain insights into what the office is being used for and the configuration that supports it. In addition to the office being a venue for office work, the office is also a form of visual signature that illustrates the mission, strategy, culture and brand of the organisation, and a location for coordinating work as well as a place for keeping records (Battle 2003, Duffy 1992). This signifies that while the functions of the office include those related to the execution of work, the office also communicates various aspects relating to the occupant organisation.

To understand the roles of the office it is necessary to distinguish what the office space represents to corporate organisations and to office workers. Office spaces may be distinguished using spatial scales with the corporate level being concerned with the geographical location of the organisation's building and the office worker level being concerned with micro-spaces such as the office worker's workspace (Halford 2004). While the

spatial scale may be used to distinguish the corporate and office workers' view of office space, however, it may also distinguish the roles of the office from the corporate and office worker perspective. Therefore, the context of the office may be understood in the macro context of the corporate organisation as well as the micro context of the office worker (Halford 2004, Kallio *et al*. 2015). However, contrasting what office space represents at macro and micro contexts using spatial scales does not help to understand what is going on in the office and the role the office fulfils.

In addition to distinguishing office space at macro and micro spatial scales, practice scales may be used where the macro level represents the institutional scale, and the micro level represents what people say and do on a day-to-day basis (Bueger 2013). Kallio *et al*. (2015) suggested that while the relationship between various aspects of accomplishment of work and the physical environment at the organisational level has been observed, there is a need for further examination of that relationship at the level of the individual and groups of office workers. Though the macro level provides an organisational perspective to office setups, it may not provide insight on the relationship between the activities carried out by office workers and the office setup.   By distinguishing the macro and micro levels, the roles of the office are more thoroughly examined to obtain insight into what the office is used for and the configuration that supports it.

At a macro level, organisations set up offices to promote their corporate image, differentiate themselves from other organisations and provide a venue for organisational and managerial control of their activities (Zhang *et al*. 2008; Harris 2019, Halford 2004). While to the corporate body, the office provides corporate identity, culture and the differentiation of hierarchy, it is also the physical address for the location of office work and inputs to the process of production of office work (Harris, 2019; Kallio *et al*. 2015, Khanna *et al.* 2013). As an input to the process, the office provides an environment for monitoring and controlling outputs, standardisation of work methods, and ensuring accountability of inputs and outputs, as well as the assertion of corporate objectives and values (Leclercq-Vandelannoitte 2021, Jarzabkowski *et al*. 2015, Green and Myerson 2011). While Khanna *et al*. (2013) suggest that the office location and building are used to communicate the organisation's brand and image to people outside the organisation, Kallio *et al*. (2015) note that the internal setup of the office communicates the organisation's norms to the office worker and influences the way in which work is accomplished.

Office setups have been used to communicate and support enforcement of a wide range of organisational norms, such as the organisation's structure and values, the hierarchy of occupants, managerial control, the type of work carried out and the work rules and regulations, at a macro level (Skogland and Hansen 2017, Hills and Levy 2014). Additionally, the configuration of the office setup is meant to influence the actions of the office workers as they respond to those norms (Sage and Dainty 2011). This includes when office setup is used to communicate organisational change by re-configuration of the office arrangement to align with the new organisational structure or when shared spaces are introduced to encourage interaction among office workers (Skogland and Hansen 2017). Observing that the office setup communicates the hierarchy of office workers and how work supervision takes place,

Sage and Dainty (2011) argue that the office setup embodies the power relationships and managerial control amongst office workers as office work is accomplished. These norms are organised and enforced through various physical attributes in the physical setup (Beyes and Holt 2020, Jarzabkowski *et al* 2015, Skogland and Hansen 2017) such as physical items that symbolise various activities, spatial arrangement and aesthetics (Kallio *et al*. 2015). Since changes in organisational norms are demonstrated by, amongst others, changing the configuration of the office setup (Skogland and Hansen 2017, Duffy *et al*. 2011), the office configuration, that includes the arrangement of furniture, equipment and other physical items in the office, depicts and supports enforcement of various aspects of organisational norms, such as the rank of office workers, how work is organised and what goes on in the spaces within the office.

As part of communication of organisational norms, the physical items in the office setup enable the display of empowerment, incentives and privileges that mark the differences between office workers of various ranks (Rolf *et al*. 2018, Lu and Roto 2016), and serve to minimise or enhance observance of hierarchical structure in work processes and to communicate office workers' interactions (Sage and Dainty 2011, Lui and Roto 2016). Since the configuration of the office is considered a differentiator and symbolic representation of rank, the office setup communicates incentives available to office workers as they aspire to become executives, who may be accommodated in the more prestigious spaces in the setup (Becker 2004, Miller *et al*. 2014). This suggests that office configuration not only enables social interactions amongst co-workers in the enforcement of work monitoring and supervision but symbolises how work is supervised. Consequently, while the organisational norms and the changes to those norms may be communicated and enforced through the office setup, the aspects of the setup used to represent the norms may have different meanings to various office workers.

While at a macro level the office setup communicates the corporate perspective on the roles of the office, focusing on this level does not provide help understand how the office configuration is shaped by and shapes what office workers do in the accomplishment of work. In addition to communicating and enforcing organisational and work norms observed in the office, the office communicates the actions and events that take place in accomplishing the work, such as meetings, printing and archiving, and the time and place where they are carried out, as well as the processes to be followed (Southerton 2013, Jarzabkowski *et al*. 2015, Orlikowski and Yates 2002). While certain roles of the office setup, such as demonstrations of hierarchy, work supervision, and regulations that reflect the organisation's structure and norms, as well as providing the spaces designated for work and interaction (Miller *et al*. 2014, Skogland and Hansen 2017), may be considered as existing at the macro level, they may contribute to understanding of the office setup's role in the accomplishment of work at the micro level also. Skogland and Hansen (2017) examine the use of the spatial setup to enforce and communicate organisational change, noting that the meanings that the office workers attach to the spatial arrangement and other aspects of the physical setup need to be understood. However, proposing the use of office design to give information about organisational change, Duffy *et al*. (2011) noted that the design of the physical setup may not represent the same meanings to all office workers as individual office workers attach different

meanings to physical attributes in the setup. Therefore, while the physical attributes of the office setup are used to communicate and enforce various organisational norms and objectives (Sage and Dainty 2011, Harris 2016), the understanding of what is being communicated and enforced by the physical attributes may vary amongst office workers (Comi and Whyte 2017), necessitating investigation of the office workers' experiences and their interpretation of the suitability of aspects of the office environment for the roles they fulfil.

At a micro level, the office spaces are used by the office worker for the everyday accomplishment of office work and the fulfilment of other complementary roles, such as aiding, monitoring and supervising work; they are also venues for interaction, and providing services and amenities that support office work (Harris 2016, Sage and Dainty 2016, Halford 2004). The suitability of an office is associated by workers with their well-being, flexibility and convenience, as well as how it may support the managerial hierarchy and the social structures within which they operate (Hill and Levy 2014). The office setup is considered a contribution to the accomplishment of office work, with office workers' perceived productivity being associated with the suitability of the office environment (Mallawaarachchi *et al*. 2016, Mulville *et al*. 2016, Palvalin *et al*. 2017). Additionally, to the office worker, the office provides a place of interaction, association, identity, belonging and community (Lu and Roto 2016, Tagliaro and Migliore 2022, Brown 2008). Leclercq-Vandelannoitte (2022) observes that the office setup enables managers to supervise and monitor work and enforce work regulations by surveillance enabled by a spatial configuration that provides physical proximity to office workers, while representing authority and the work processes to which they must adhere. Consequently, the office is more than a venue for work, as it extends beyond being conducive to office work towards being a place where office workers interact with each other in the context of organisational norms.

In investigating the requirements for a suitable office setup, scholars have engaged in post-occupancy studies which provided insight into office workers' perceived satisfaction with the ability of various aspects of the physical environment to support office work. These include, the configuration of the office (Hill and Levy 2014, Rasheed and Byrd 2017), suggesting that enabling office work at the micro level is at the core of the office setup with the main role of the office being a venue for work. In a study on measuring office productivity, Harris (2019) based his enquiry on the other factors including: efficiency in optimal use of resources; effectiveness in enabling office workers to carry out their work; engagement in providing a positive work experience; support for the office workers' health and wellbeing. While Harris directly associated effectiveness with the execution of work, the efficiency, engagement, and environmental health of the office workers were considered to contribute to its accomplishment. This suggests that while facilitating effectiveness in the accomplishment of office work is a key role of the office, the office fulfils other roles that support this, including providing a satisfying work experience and supporting office workers' wellbeing. While perceived office worker satisfaction with aspects of the office setup such as the office layout, indoor environment, lighting and privacy is considered a basis when assessing the office's suitability for office work (Rasheed and Byrd 2017, Raskams and Haynes 2019, Göçer *et al*.

2017), it is also necessary to understand how office work is produced and how the office worker interacts with the office in its accomplishment.

The advancement of Information Communication and Technology (ICT), infrastructure and devices such as wireless data connectivity, laptops and smartphones have enabled office work to be carried out away from the office. However, the alternative locations and technological advancement of ICT devices used do not adequately fulfil the roles of the office, such as communicating and enforcing organisational norms, enforcing supervision and managerial authority and being a venue for socialisation and work interaction (Leclercq-Vandelannoitte 2021, Tagliaro and Migliore 2022). Additionally, though office work is no longer restricted to the designated office, office workers may still consider the office as a place of interaction and collaborative work (Tagliaro and Migliore 2022). Consequently, while office work can be carried out in multiple locations, the office has an ongoing role in the organisation and monitoring of work as well as in enforcing processes and rules that are used in its accomplishment.

Noting that the roles of the office can be studied from the corporate organisation's and office worker's perspective, the roles from both perspectives have the potential to intertwine. The roles of the office, which include being a resource centre, a location of communal work activities, and a place where shared objectives and values are communicated (Harris 2015, Tagliaro and Migliore 2022, Skogland and Hansen 2017) are fulfilled at both macro and micro levels which combine in the accomplishment of work. However, in examining the influences of where and when office work is accomplished and how that shapes the configuration of the office, the roles that the office fulfils needs also to be understood from the perspective of the office worker at a micro level. While the corporate organisation's perspective at a macro level provides a context for intended effects regarding the office setup, the office workers' perspective needs to be examined at the micro level to understand what office workers are doing in the office on a day to day and how the setup shapes or is shaped by their activities. Additionally, it provides an understanding of the emerging roles of the office setup at the micro level and may provide insights into its influence on where and when office work is accomplished and the configuration that supports it.

2.2   The office setup

The examination of the relationship between where and when office work is done and the office configuration that supports work necessitates understanding of the office setup. While the present-day office setup may be considered to draw on the 'Bürolandschaft' (desk landscape) of the 1950s and 1960s (Duffy 1969, Hills and Levy 2014), it also draws on the 'factory-styled' 'office landscape' setup of the 1970s and the subsequent inclusion of electronic devices and automation tools, as well as ICT infrastructure associated with electronic storage and communication of information, such as data and electrical cabling and cable routes (Haigh 2006, van Meel 2011). In a review of literature on new ways of working, van Meel (2011) observed that despite its technological advancement, office work was mainly

accomplished in 'factory-styled' offices that provided fixed workstations at the designated office, arranged according to organisational structure, hierarchy, work processes and a perceived need for supervision. This suggests that, while the use of ICT devices created the need for associated infrastructure in the office setups, the configuration of the office setup is influenced not only by the need for physical objects required for equipment and devices but also by the way in which the work is done and the organisational norms of work. While the literature on past office arrangements provides some background for the present-day office setup, it does not help to understand what the office worker is doing in the accomplishment of work and the office configuration that supports it.

Though the examination of the office configuration considers office workers' preferences for privacy and interaction and how distraction and noise are mitigated (Haynes 2017, De Been and Beijer 2014), the different categories of office work, namely concentration, collaboration and communication work, have varied needs for privacy and interaction. Haynes (2017) classified five types of office layout, namely: enclosed private office; enclosed shared office; cubicles with high partitions (about five or more feet high); cubicles with low partitions (lower than five feet high) and open offices with no partition or limited partitions. While attention is drawn to the configuration of the office setup and its suitability for various categories of office work (Haynes 2017, Rasheed and Haynes 2017, Sivunen and Putnam 2019), matching the types of office enclosure with categories of work is not enough to determine the suitability of the office type for the accomplishment of work. Noting the importance of the configuration of the office setup in the accomplishment of office work (Duffy *et al*. 2011, Harris 2016), the relationship between the office setup and the categories of office work needs to be explored.

Noting that team members and work groups extend beyond the persons who work in the same physical office environment and include virtual work groups of people brought together by the sharing and utilisation of information as well as social interactions enabled by mobile technology (Venezia and Allen 2007, Hurme 2005), ICT infrastructure, such as data connectivity, is one of the key aspects considered in assessing the suitability of setups for the accomplishment of office work (Tagliaro and Miglore 2022, Palvalin *et al*. 2013, Boell *et al*. 2016). Although decisions about when and where people work have been attributed to wireless and wired data connection, the use of mobile and fixed devices outside the designated workplace is influenced by various considerations including the availability of the same ease and reliability of ICT infrastructure in alternative locations (Harris 2015, Sanchez *et al*. 2018). Therefore, the suitability of the office setup is not defined solely by the mere presence of ICT infrastructure, but also includes its sufficiency and consistent availability (Kingma 2019, Tagliaro and Migliore 2022). However, while ICT infrastructure is considered an enabler for the office worker's preferences concerning where and when to work, it is not the only influence, on its own, when and where work is accomplished.

With both the designated and alternative workplaces providing infrastructure that supports office work practices and with the time and location of office work no longer fixed, the presence, arrangement and performance of the physical office environment contribute to the choices of where and when work is carried out. Aspects of the physical environment such as ventilation, lighting, ICT infrastructure, layout and aesthetics have been used to assess the

suitability of the office as the venue for office work and the satisfaction or comfort the individual workers with the physical environment (Haynes 2017, Rasheed and Byrd 2017, Fiege *et al*. 2013). Nevertheless, the presence of the equipment, partitions and furniture that make up the physical environment is not enough: the office setup also needs to be suitably arranged and conducive to the execution of office work practices. Additionally, the considerations office workers make when determining the suitability of the office setup that supports the accomplishment of work need to be investigated.

2.2.1   Suitability of the office setup

The office environment's suitability for office work has been a focus of studies in various fields including management, real estate, and organisational studies, with the various disciplines drawing attention to aspects that support or impede the accomplishment of office work (Appel-Meulenbroek *et al*. 2018), and a wide range of approaches taken to the relationship between office work and the office environment has been adopted. In a literature review of post-occupancy evaluation studies from the disciplines of psychology, architecture, management, real estate, engineering, building physics and health Appel-Meulenbroek *et al*. (2018) noted that the studies used a wide range of methodologies, including experiments, surveys, interviews and records of the office workers' physiological data; other studies also considered aspects of the office environment as contributors to the accomplishment of office work. Though there is no single way of assessing the suitability of the office environment, the research approaches used seek to assess the suitability of various aspects of the office setup for the accomplishment of office work.

While the studies have sought to examine the relationship between inputs associated with the physical office environment and the work outcomes of office workers, the empirical studies relied on a wide range of variables in both inputs and outcomes, with both inputs and outcomes being defined and interpreted differently from one discipline to another (Appel-Meulenbroek *et al*. 2018). On considering that an output-based approach faces challenges in quantifying productivity in office work, Harris (2019) proposes that an input-based approach enables the identification of aspects of the office environment which enable or constrain productivity. However, the input-based approach brings into focus various other inputs of office work, including the assessment of the cost of office workers' occupancy of the office and the satisfaction of the office worker with various aspects of the office environment.

Cost assessment methods, such as calculating space per employee or occupancy cost per person, have been used to assess the investments made in the office environment (Haynes 2007b, Harris 2015). Harris (2015) argues that managing the office as a real estate asset drives the assessment and management of it as a resource used to enable office work. Measuring the efficiency of utilisation of the workspace, using calculation of workplace efficiency per full-time staff member, seeks to establish the optimal use of real estate and reduce the occupancy cost (Khamkanya, 2012). The balance between meeting office workers' expectations and cost efficiency is considered in the decisions made on layout, indoor environment infrastructure and amenities provided in the office setup, as organisations seek

cost-driven solutions (Cooke *et al*. 2022, Haynes *et al*. 2019).   While cost is considered an important driver of space management decisions (Cooke *et al*. 2022), cost-driven solutions on their own do not achieve suitable office setups that fulfil the requirements of the organisation and office workers as other factors such as well-being and experience of office workers come into play (Skogland and Hansen 2017, Haynes *et al*. 2019).

While the suitability of the office as a workspace has been evaluated based on office workers' perceived satisfaction and well-being, the literature on office worker productivity lacks a universally applicable method for assessing the office environment's effectiveness in facilitating work accomplishment (Haynes *et al*. 2017, Becker 2004).   Using perception surveys, individuals' comfort and satisfaction with the office environment and building characteristics such as noise, indoor environment, lighting, privacy, connectivity, layout and the presence of social amenities have been observed as aspects contributing to worker productivity (Haynes *et al*. 2019, Chadburn *et al*. 2017). While the use of perception surveys provides insight on the factors that contribute to office worker well-being, they have also been considered to overstate occupant satisfaction (Purdey 2013), and there have been calls attention to the need for other ways of assessing the suitability of the office environment. Rasheed and Byrd (2017) argue that the post-occupancy evaluations that used occupant productivity assume that satisfaction with work conditions results in increased productivity, while it was more likely that personal preferences and comfort affect satisfaction and consequently perceived productivity.

In a bid to improve the methodology for assessing occupant satisfaction and productivity, Raskams and Haynes (2019) suggested the use of an experience sampling approach. Supporting the use of the experience sampling approach to assessing occupant satisfaction, Raskams and Haynes (2019) argue that, since the experiences of office workers may vary over time, a one-time survey is insufficient; repeated samples should be taken instead. While the improvements suggested for the methodology of post-occupancy assessments may provide more accurate feedback on office worker satisfaction on the suitability of the office environment there is need to capture the enactment of office work as it unfolds and the environment that supports it.

2.2.2   Office workers' preferences

While the office is set up for the accomplishment of work and in line with organisation and work norms, office workers seek to have suitable work conditions that give them a degree of control over their physical environment (Christy 2013, Chadburn *et al*. 2017).   Since the supporting environment is set up in conformity with the organisational norms of office work, the office workers' preferences also come into play (Schatzki 2006, Southerton 2013, Kietzmann 2013). A survey conducted by Chadburn *et al*. (2017) observes that office workers ranked their comfort and convenience at the workplace and their ability to make changes to the physical environment relatively high compared to other aspects, such as privacy. Though the office workers' preferences are enabled by the office setups and the ICT infrastructure that support flexibility of time and place of work within the office (Göçer *et al*. 2018, Brunia

et al. 2016), their preferences extend beyond the time and place of work to include customisation of their workstations and personalisation of their indoor environment (Harris 2016, Göçer *et al*. 2018).

Officer workers' preferences include flexibility of time and place of work, within and away from the office (Göçer *et al*. 2018, Chadburn *et al*. 2019, Haynes *et al*. 2019). Flexibility may be viewed as access to work and information sharing enabled by ICT infrastructure without limiting the office workers to an assigned workstation (Harris 2015, Fuchs-Kittowski *et al*.2010, Hassanain 2006). Flexibility, however, includes office setups that may be used both for communication and concentration work and have a combination of open and enclosed rooms for concentration work as well as spontaneous interaction, meetings and undistracted group or solo work (Brunia *et al*. 2016, Chadburn *et al*. 2019, Haynes *et al*. 2019). Flexibility within the office has been viewed as a 'fixed-flexible work style' with the provision of unassigned and shared desks (hot-desking) as well as reduced use of fixed desks that in turn reduce the cost of occupancy as workers share desks (Göçer *et al*. 2018, Endrissat and Leclercq-Vandelannoitte 2021). Since the flexibility enabled by the office configuration and ICT infrastructure may be viewed as enabling office workers to exercise their preferences for the time and place of work, it may be expected that the extent to which the preferences are exercised is influenced by the work being accomplished.

Studies have observed that office workers' preference for privacy and interaction in the workplace is dependent on the extent of disruption and interruption they can tolerate (Chadburn *et al*. 2017, Harris 2019). Discussing the contribution of the office setup to office workers' accomplishment of work, Mulville *et al*. (2016) note that the layout and configuration of space are among the contributors to noise and distraction in the office environment. Though researchers argue that a balance between collaborative and private spaces is necessary for the office setup (Hill and Levy 2014), the lack of audio and visual privacy is associated with interruptions and distractions (Chadburn *et al*. 2017, Harris 2019). While the need for collaborative and private spaces is dependent on the external and internal interactions required to carry out tasks (Lu and Roto 2016) and the attainment of the desired privacy or interaction is dependent on configuration, it may be considered that the officer workers' preferences are shaped by their individual biases on the suitability of various aspects of the configuration for the accomplishment of work.

Office workers' preferences may vary with the type of work being undertaken, their individual needs, gender and generational differences (Haynes *et al*. 2017, Palvalin *et al*. 2016, Rasheed and Byrd 2017): these variations indicate aspects to be considered when examining their preferences. Viewing preferences as biases in research, Rasheed and Byrd (2017) noted that their diverse experiences have the potential to influence office workers' perceptions of the office environment.   Furthermore, examining the influence that gender, age and type of office where they worked used might have on their perceived productivity Haynes *et al*. (2017) established that the gender and age of office workers had an impact on their preferences regarding social and work interactions and their satisfaction with the privacy and interactions accorded by the office configuration, confirming that office workers have diverse experiences of the office environment. While office workers' preferences may be viewed as

biases, the lack of recognition of the role of preferences during the accomplishment of work omits the officer workers' considerations of the suitability of the office setup and of their determinations about where and when office work is carried out. Office workers' preferences, however, do not stand alone: they need to be considered alongside other aspects of the physical environment required for the accomplishment of work (Chadburn *et al*. 2017). Focusing on how office workers' preferences are exercised in determining where and when work is accomplished, and the suitability of the office configuration might provide insights on the modifications made to the office setup in line with workers' preferences.

Though the office setup is driven by various factors including organisational and work norms, office workers' preferences, technological advancement, occupants' satisfaction, office work being accomplished, layout and occupancy costs other factors (Khamkanya, 2012, Harris 2016, Lu and Roto 2016), the examination of the suitability of the office arrangement is mainly according to its ability to support the accomplishment of office work (Hill and Levy 2014, Palvalin *et al*. 2016, Rasheed and Byrd 2017). On observing that the accomplishment of concentration and collaboration work was impacted by the appropriateness of the space, Palvalin *et al*. (2016) suggested that it was necessary to undertake a further examination of what office workers were doing as individuals and as teams, as they had different office space requirements. Additionally, arguing in favour of the flexibility of office arrangements to allow spaces for both concentration and collaboration work, Haynes *et al*. (2017) suggest that office work is always changing, and that interaction and privacy may be required spontaneously. This dynamic picture of office work implies that the setup that supports it should be able to be adjusted dynamically, and understanding the nature of office work is thus necessary to understanding how the office setup may be shaped to accommodate it.

2.3   Office work

The accomplishment of office work has been studied from the point of view of outputs such as timeliness of work delivery, the quantity and quality of work, and customer satisfaction (Ramirez & Nembhard 2004, Moussa *et al*. 2017), and different contexts that relate to the time and place of its accomplishment (Rosengren 2015). The contexts in which office work activities take place include its organisational setting, physical space, organisational norms, the office worker's preferences and the specific context of the work itself as well as factors relating to the time schedules of the working day (Moussa *et al*. 2017, Rosengren 2015). Rosengren (2015) argues that though office work consists of a wide range of actions, many of these can be done in different locations and at different times of the workday that are not explicitly confined to a specific place and time, but defined: the work's context, however, also defines the spatial and temporal boundaries within which it must be performed. Since the space and time boundaries are derived from various time-based contexts, including the temporal arrangements of a working day (Rosengren 2015). The work's context also influences the place and time where office work can be carried out. Therefore, while office work can be examined in terms of outputs and actions, it necessary the context within which it is being accomplished must also be understood.

In the absence of a single definition for office work, it has often been described as white-collar or non-manual work where workers process, share, use and transform information with the aim of providing leading products or services (Hopp *et al*. 2009, Ramirez and Nembhard 2004, Moussa *et al*. 2016), using virtual or physical documents. Office work is identified with tasks that include writing, reading, working with computer systems, work interaction (i.e. formal and informal talking), formal meetings, archiving, telephone calls and electronic messaging, exchanging ideas and clerical work (Boell *et al*. 2006, Conrath 1984, Been and Biejer 2014, Duffy *et al*. 2010). Office work is also described with reference to the intention of the work, such as letter preparation, providing advice and decision-making (Boell *et al*. 2006, Been and Biejer 2014) including both the actions carried out by the office worker and the purpose of the actions.

2.3.1   Intention of the office worker as a distinguisher of office work

In the examination of the influences of the time and place of work, it is necessary to understand the office workers' intentions in accomplishing the work and the choices they made in selecting the time and place of work. The intention of the office worker emanates from the objectives the office worker seeks to achieve as well as the organisation's objectives (Orlikowski 1996, Jarzabkowski *et al*. 2015). While office workers seek to fulfil organisational objectives, their motives in accomplishing their work may include the need to fulfil the responsibilities of their role and to exercise their ability to accomplish the work (Hopp *et al*. 2008, Kingma 2019). In addition to fulfilling the objective of the work, the office worker's intention may include the need to obtain accolades and recognition for the performance of work as well as to demonstrate compliance with organisational norms such as the application of the hierarchical authority and structure (Rosengren 2015, Hopp *et al*. 2008). While office work may fulfil multiple intentions that include organisational and office worker objectives, the purpose underlying the performance of each work activity may be unique, as different organisational and individual objectives are applied during the accomplishment of work. Rosengren (2015) suggests that office workers' intentions are not always aligned with the organisational objective, and office workers may apply temporary strategies, such as rescheduling work, to resolve such conflicts.

Though office work may be viewed as working with information through the performance of various actions carried out by office workers, with the aim of transferring, transforming, and translating information (Carlile 2004, Leonardi and Bailey 2008), such processing and exchange of information is ultimately aimed towards the fulfilment of various intentions of the office worker. Office workers' intentions do not stand alone but are formed in the context of organisational norms that distinguish the roles of office workers, actions carried out, and interactions between office workers, as well as the time and place of work (Sage and Dainty 2011, Jarzabkowski *et al*. 2015). Despite office workers' intentions, Sage and Dainty (2011) observe that the organisational and work norms provide controls and guidelines on how the work is to be carried out, thus confirming or restricting the ability of office workers in the exercise of their preferences. Consequently, in addition to the purpose of work being derived

from multiple objectives, organisational norms such as work regulations contribute to the considerations made by office workers in determining how, where and when office work is accomplished. Additionally, workers' intentions in accomplishing office work are continually changing though the office setup is expected to be suitable for the fulfilment of all of them.

2.3.2   Time and place of work

In the examination of what comprises office work, the actions carried out by office workers in the accomplishment of work are not limited to those that directly relate to doing work; they also include social interactions and physiological activities that office workers carry out in everyday life (Rosengren 2015, Appel-Meulenbroek *et al*. 2011). The consideration of activities such as having lunch, visiting the toilet, taking coffee breaks and other breaks as elements of office work (Takab 2009) takes into account the non-work activities that take place in the office. While social and physiological activities are intertwined in the tasks carried out by office workers, they are not in themselves office work but supportive activities contributing to its accomplishment.   Recognition of the role that non-work activities that take place day to day office life helps develop and understanding of what influences where and when office work is done.

Availability of data connectivity and other supporting facilities in locations other than the office has further contributed to the emergence of various new ways of working such as hoteling, flexible working, agile working and remote working (Harris 2015, Cole *et al.* 2014, Harris 2019). With the advancement of technology that enables office work to be portable and transferable (Leonardi and Bailey 2008), office work has evolved from being primarily paper-based to being carried out by digital technologies (van Meel 2011). The new ways of working have brought flexibility and enabled the implementation of office worker preferences in the use of office space (Kingma 2019, Boell *et al.* 2016); they have also led to the incorporation of additional ICT infrastructure and devices that have changed the ways in which way office work is carried out by incorporating virtual documents and workspaces (Kietzmann *et al*. 2013, Kingma 2019), affecting how office work is accomplished, where and when it is accomplished, and the configuration of spaces in which it is accomplished. While technological advancement may be viewed as a change from paper-based work to the use of electronic or virtual documents, the use of both virtual and physical documents and workspaces at the designated office not only enables the mobility of work within the office but also offers workers the opportunity to choose from a diverse range of methods for accomplishing their work, and in the process adding to its complexity (Boell *et al*. 2016, Kingma 2019). As their increased range of options for the accomplishment of office work expands, the identification of office workers' physical activities is not enough to explain the factors that influence their decisions about where and when to do their work. It is also necessary to understand what the work is, how it is accomplished, and why it is carried out.

2.3.3   Categories of office work

The studies on office work do not have a unified way of categorising it, however, researchers have developed categories for office work activities, the most common being communication, collaboration and concentration work (Sivunen and Putnam 2019, Duffy *et al*. 2011, Been and Biejer 2014) as follows.

   i.   Communication work is identified as that which relates to communicating with others either in formal or informal meetings, by phone or by email (Been and Biejer 2014, Perry *et al.* 2001, Sivunen and Putnam 2019).

   ii. Collaboration work is identified as that which requires that office workers to work together to complete a task. Collaboration work is characterised by virtual interaction between office workers using telecommunication devices and by physical interaction between workers who are in close physical proximity (Haynes *et al*. 2019, Kokkonen and Vaagaasar 2018, Sivunen and Putnam 2019, Fuchs-Kittowski and Siegeris 2010).

   iii. Concentration work includes work that the office worker undertakes alone and may require privacy or a quiet environment, such as working on a computer or working on a physical document (Haynes 2019, Appel-Meulenbroek *et al*. 2011, Sivunen and Putnam 2019, Duffy *et al*. 2010, Been and Biejer 2014).

Other categories of office work identified in the literature include group or teamwork, planned and routine or unplanned work, mobile work that can be carried out in alternative locations and stationary work that is carried out in a designated location (Takab 2009 Perry *et al*. 2001). While these other categories reflect the number of office workers involved, the scheduling of work and its location, the nature of the work being accomplished can still be linked to the broad categories of collaboration, communication and concentration work. Though categories of office work have been used to distinguish the office configuration (De Been and Beijer 2014), these categories do not on their own provide an understanding of the work being carried out and its relationship to the office configuration. However, they help to broadly distinguish the interactions that take place between office workers during the accomplishment of work.

In addition to technological advancement and the context of work have been observed to impact where and when office work is accomplished, the place and time of work is also influenced by the work being carried out. Office workers carrying out collaborative work were found to consider shared spaces an important component of the office setup (Göçer *et al*. 2018; Haynes 2008b; Fuchs-Kottowski *et al*. 2010). The category of office work, i.e., collaborative, communication or concentration work, has been considered influential in determining the office layout, with studies recommending spaces that minimise distraction for concentration work and spaces that enable interaction for collaborative and communication work (Chadburn *et al*. 2017; Brunia *et al*. 2016; Palvalin *et al*. 2017). Office configuration requirements, however, are not limited to the office workers' personal workspace (Hill and Levy 2014). In a study on the work coordination among creative and technology office workers, Kellogg *et al*. (2006) observed that office workers carrying out

creative work preferred to sit near each other to facilitate brainstorming and self-supervision as part of a team. While office workers doing similar work have a collective preference for their office configuration, their collective preference, shaped by the commonalities in the work they are carrying out, may influence the configuration of shared spaces.

While the time and place of work can be said to be influenced by the physical items used and whether the work is interactive or non-interactive, the configuration of the physical items that are such an important part of the office equipment needs to be suitable for the work being accomplished (Palvalin *et al*. 2017, Brunia *et al*. 2016, Haynes 2008). Office work, however, is dynamic, as the intention of office workers and the time and place of work are subject to constant change. This necessitates an examination of the office and office work through office workers' experiences, to facilitate understanding of how their intentions and preferences are exercised in the selection of the time and place of work.

2.4   Chapter conclusion

Studies on the suitability of the office environment for office work have sought to establish how aspects of office setup, such as furniture, ventilation, lighting, layout and aesthetics, contribute to the accomplishment of work by examining office workers' satisfaction with the office (Haynes *et al*. 2017, Rasheed and Byrd 2017, Fiege *et al*. 2013). Office work, however, is constantly changing, and those changes are expected to influence the configuration of the physical items that comprise the office setup for use in the accomplishment of work. Therefore, the unfolding of office work during the working day and its influence on office configuration needs to be examined. Since the configuration of the physical items in the office setup is expected to support the office work being accomplished and enable the fulfilment of various roles assigned to the office setup by, physical items, organisational norms and office worker's intentions with respect to the accomplishment of office work, it is first necessary to understand office work in its time and place.

While where and when office work is accomplished is associated with the incorporation of ICT infrastructure and devices that support new ways of working and enable the distribution of office work to alternative workplaces, the purpose of work is also constantly changing. Furthermore, the preferences of office workers and the ways in which they may exercise them are diverse: in combination, these matters have the potential to impact the role of the office as an enabler for the accomplishment of office work. Noting that the factors contributing to the suitability of the office configuration are not limited to its capacity to support office work, and that the office fulfils multiple roles for both the office worker and the occupant organisation, the office worker's preferences and intentions can easily be overlooked while examining the configuration of the office setup.

Though post-occupancy studies examine the suitability of the office environment for office work, insight is required into the factors that influence where and when work is carried out and on how relevant decisions about the time and place of work influence the configuration of the office. Additionally, though perception surveys provide insight into the influence that

preferences of office workers and type of office work have on the considerations made in the configuration of the office as a place of work, the intentions and roles being fulfilled by physical items used as office work is carried out need to be taken into consideration. Noting that the time and place of work may be better understood by examining how and why office work is accomplished, and that the office fulfils multiple roles in addition to being a place of work, how the office configuration is shaped and shapes office work may be better understood by examining office work and what goes on in the office on a day-to-day basis at a micro level.

3   Chapter 3   Theoretical framework

3.1   Introduction

This chapter sets out the theoretical framework for examining office work through what goes on in the day-to-day accomplishment of work and the experiences of office workers, in order to understand the influences of time and place of work and how work influences – and is influenced by – the configuration of the environment in which it is accomplished.

3.2   Theory selection

Study of the relationship between office work and the office configuration that supports it brings into focus the relationships between physical items and activities being carried out. This study considers physical items as including artefacts produced by the activities as well as the physical items that are used for their accomplishment, raising interest in the theoretical approaches that provide concepts for investigating and interpreting the relationship between what is going on and the arrangement of physical items used. Theories included in the category of socio-material approaches, such as spatial theories and practice theories, provide philosophical assumptions that contribute to the understanding of what goes on in the social setup (Moura and Bispo 2019).

3.2.1   Spatial theories

Spatial theories have been used in the study of workspaces, with researchers of organisational space seeking to examine the relationship between spatial arrangements and human interactions (Hirst and Humphreys 2013). Three approaches have been used in the development of organisational space (Zhang *et al* 2008, Beyes and Holt 2022) as follows:

i.   examination of space as purely physical and consisting of objects and artifacts that have geometrical relationships with measurable distance and proximity,

ii.   examination of space as a mental in nature comprising of thoughts, perceptions and symbolism of space,

iii.   examination of the social domination of space in its use and production including materialisation of power relations.

While the above approaches may be considered as distinct, growing interest on social aspects of space has drawn scholars of organisational space to consider the relationship between the physical, mental and social aspects of space. Foucault considers that social relations and space distribution cannot be understood separately with discourse being contextualised in material aspects of space (Hardy and Thomas 2015). Foucauldian Theory considers that space is not neutral and uses organisation discourse to examine social relations such as power relations, control and hierarchy (Leclerq-Vandelannoitte 2011). While Foucault uses discursive practices

to understand power relationships in different spaces, it does not focus on the spaces themselves.

Lefebre's theory on The Production of Space considers that space is 'not a thing among other things, nor a product among other products', instead it is 'the outcome of a sequence and sets of operations' therefore a production (Lefebre 1991). Lefebvre's Theory on *The Production of Space* is premised on the 'the spatial triad' that comprises of (Lefebre 1991):

  i.   The conceived space: the physical representation of space that is designed and built up with material components.

  ii. The perceived space: the representational space that holds symbolic meaning on that communicate the rules of space use.

  iii. The lived space: the interactions, actions and events that are part of lived human experience.

Lefebre (1991) considers while the abstract status of the conceived space has no symbolism attached to it and becomes less prominent as space is used, its configuration is pivotal to maintaining norms and social relationships as lived experiences come into play. Therefore, Lefebre's theory considers that space comprises of physical, mental and social aspects with the physical space and mental imaginative aspects of space being inseparable from the social use of space (Beyes and Holt 2022). The spatial triad proposes that the space is not passive and by incorporating the lived experience to the physical and symbolic dimensions of space, the triad provides a boarder understanding of how space is produced (Kingma 2016, Leclercq-Vandelannoitte 2011).

Researchers have used the Lefebvre's spatial triad - namely the conceived, perceived and lived space - to examine the physical space, mental construct of space and social relationships within organisational space (Marrewijk 2009, Hirst and Humphreys 2013). Noting the three dimensions of space as inseparable in the production of space Lefebvre provides a lens to examine space while highlighting the roles of capitalists, governments, planners, designers and users of space (Sivunen and Putnam 2019, Zhang et al 2008, Hirst and Humphreys 2013) providing concepts for study of spaces at a macro and micro level. Applying Lefebvre's theory, Halford and Leonard (2005) consider that space 'is thus not merely a "frame" or "container" for lived experiences, but is rather a tool of thought and action through which individuals ''may give to expression of themselves'' ' In a study on 'third workspaces' Kingma (2016) draws on Lefebvre's theory and uses the 'conceived space' and 'perceived space' concepts to examine third spaces by seeking the active meaning of those spaces. Further, Kingma (2019) uses Lefebvre to redefine New Ways of Working (NWW) by conceptualising the physical, mental and virtual aspects of NWW.

Despite considering conceived, perceived and lived space as homogenous, the conceived space that is imposed to users as planned by architects and planners often differs with the perceived space that bears symbolic meaning as well as the lived space as is experienced by users (Zhang et al 2008). Therefore, the conceived, perceived and lived space are often in conflict with each other creating tensions that may not be resolved but are managed as part

of the lived experience (Sivunen and Putman 2019). Lefebvre's theory provides a framework to examine how power relations are produced and sustained and has been used to examine the tension between the perceived space (designed, formal, regulated or imposed space) and the lived space to examine the dominant uses and space (Zhang et al 2008).

Though Lefebvre's concepts of conceived and lived space have been used to examine the differences between the planned use of space and the actual use spaces, other concepts of spatial and organisation studies have been used to examine spatial boundaries and meanings of spaces (Shortt 2015). Noting that space transforms over time through use, Zhang et al (2008) argue that the identification of legitimate use of space and acceptance of new use are derived from lived use of space. As the lived space use becomes legitimate, space transforms over time (Zhang et al 2008), suggesting that the meaning of space may be changing and new meaning becoming acceptable. Although changes from planned use to lived use can be examined using spatial theories, there is also a need to recognise the social context and meaning of spaces (Halford 2004).

Lefebvre and other spatial theories provide concepts to study the relationship between the social and material aspects of organisational space, however, they focus on space and how space developed though human action (Hirst and Humphreys 2013, Moura and Bispo 2018) without further examination of the complexities of social interactions and the dynamic relationship between practices and spatial configurations that support them (Beyes and Holt 2020, Halford 2008). Noting the 'spatial turn' in organisational studies, Beyes and Holt (2020) argue that organisations cannot be understood only through spatial representations calling for understanding of space as a site of organisation. This turns attention to understanding of organisation through practices and space as the site of practices (Feldman and Orlikowski 2011, Schatzki 2005) to examine goes on in the accomplishment of work and the office environment as the site of those work practices. Therefore, while spatial theories can be applied to examine how office environments are designed and utilised, by considering space as the site of practices, there is potential for further insight on what is going on in the space and the work practices behind the space use.

3.2.2   Practice theories

In the identification of concepts and descriptions that can be used to study office work practices and the setup within which it is accomplished, both social practice theory and Actor-Network Theory (ANT) have been considered to help understand relationships between activities of people, the physical items used, and routines subscribed to. Actor-Network Theory further considers both human and non-human actors, such as the physical items used, as having the ability and agency to carry out actions (Booth *et al*. 2016) without giving either of them priority (Sayes 2014), thus implying the contributions or roles of both the human and the non-human actors to activities or events are equivalent (Nicolini 2012). Taking the view that agency is the ability to influence an action, ANT has the potential to provide a closer conceptualisation of what is going on at a micro level (Moura and Bispo 2019, Nicolini 2009).

However, ANT considers non-humans to have agency but notes that non-humans do not exercise agency in the same way that humans do (Sayes 2014, Moura and Bispo 2018). While ANT helps in the examination of the micro-interactions in the network in which human and non-human actors connect (Sayes 2014), this approach provides no explicit definition of the concepts required for examining the meanings lent to the non-human actors and the roles they fulfil during the interactions that take place in the enactment of practices.

Both ANT and social practice theory consider non-humans as part of social life and as having agency in social life (Nicolini 2012, Sayes 2014). Social practice theory also recognises the intelligence of humans as a contributor to purposeful deliberate actions that form part of practices. The social practice theory examines actions, materials, routines, and performances of everyday life (Shove *et al*. 2012) by focusing on the practice as the unit of analysis and not on the practitioner, noting that practices depend on human intelligence as they are carried out by humans and are part of social life (Nicolini 2012, Schatzki 2010). The accomplishment of office work is dependent on the use of various skills and competencies and office workers apply preferences and norms in their doing of work (Harris 2016, Cooke *et al*. 2022). It may also be noted that office workers use their intelligence when interacting with human and non-human actors during the enactment of practices and have unique experiences and preferences in those interactions (Endrissat and Leclercq-Vanderlannoitte 2021). Thus, while office work activities can be conceptualised as practices using a range of theories, social practice theory provides concepts that can be used to interpret and examine the intentions of the actions of office workers, the attributes of the physical items used and the roles they fulfil, as well as the relationship between the actions of office workers and the attributes of the physical items.

As office work is dynamic and intentional and the objects used for work are continually changing, there is a need to understand the influence that change of practices has on the roles and configuration of such objects in the workplace where the practices are carried out. While sense-making offers a theoretical approach to interpreting these changes and provides steps for reflection on episodes of enactment of practices as they unfold (Sandberg and Tsoukas 2014, Weick *et al*. 2005), it is limited in its ability to provide concepts for examining the relationship between what is going on and the attributes of the physical items used. Additionally, though sense-making makes it possible to examine episodes of action to select and interpret the meaning of practices (Sandberg and Tsoukas 2014) it is necessary to first understand the practices being enacted in those episodes of action. While sense-making is considered useful in interpreting how new meanings are retained as practices change (Weick *et al.* 2005), it does not provide concepts to understand the practices themselves. Social practice theory, on the other hand, provides concepts for investigating 'what is going on' during the enactment of the practices and for making sense of the actions as well as understanding the changing meanings of practices that comprise office work and the physical items that support them. Since social practice theory considers practices to be purposeful (Shove *et al*. 2012), by using social practice theory as a lens, practices can be described, and the meaning attributed to practices can be interrogated and interpreted.

To obtain concepts for examining office work from the experiences of office workers, work may be studied as part of everyday life. If office work is viewed as intertwined with other everyday events and activities, work can be considered as part of social practice (Orlikowski 2007, Schatzki 2016b, Miettinen *et al*. 2009). Further, because it provides concepts to describe and interpret how human and nonhuman actors interact as practices are enacted, social practice theory is potentially useful in providing an understanding of the experiences of office workers and explanations of the preferences and intentions exercised by practitioners during the enactment of practices and how they influence the roles of non-human actors and the meaning they are lent when practices are being enacted. Consequently, social practice theory has the potential to enhance understanding of the enactment of office work and the office configuration that supports it.

Both spatial and practice theories make assumptions that address how humans and non-humans interact and interconnect, however, the spatial arrangement of the interactions depends on the meaning attached to it and what it is used for (Halford 2004, Hardy and Thomas 2015). However, with office work being dynamic in intention and time and place of work (see Chapter 2 [2.3]), the ongoing actions of office workers as work unfolds need to be examined. Unlike spatial theories, which emphasize physical structure and power dynamics, practice theories highlight actions, intentions, routines and norms, arguably making them better suited for understanding the fluid and evolving nature of work and workspaces (Nicolini 2012, Beyes and Holt 2020). Noting that the experiences of office workers are not limited to the micro interaction within the network of office workers and the physical things used in the accomplishment of work but include their intentions and preferences (see chapter 2[2.2]), practice theories help in examining office spaces by focusing on the dynamic, everyday activities that shape and are shaped by these environments. The study further notes that the accomplishment of office work is best understood through its examination at a micro level (see chapter 2[2.3]) making a strong case for use of the social practice perspective to understand the intentions and preferences of office workers, enactment office work and office configuration that supports it.

3.3   Social practice theory

The study of everyday life can be undertaken from a social practice theory perspective by the observation and examination of ordinary and routine intelligible activities with practices being the unit of analysis (Nicolini 2009, Reckwitz 2002, Schatzki 2016). Theorists of social practice have considered a practice to be a set of interconnected actions of 'doings' and 'sayings' in human life that meet determined objectives (Shove *et al*. 2012). The everyday practices also consist of purposeful routine activities carried out by people with required competencies, involving the use of objects and interconnected with other social practices through time (Shove *et al*. 2012, Schatzki 2010, Orlikowski 2007). Practices are also considered to involve mental activities such as the application of background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge (Reckwitz 2002). Noting that social practices comprise materials such as physical objects used,

28

the meaning lent to the practices by the significance and purpose these practices serve, and the competencies applied in the enactment of the practices (Shove *et al.* 2012), understanding of social practice elements - namely meaning, materials and competencies (Shove 2010) - helps in the examination of office work and the office environment which supports it.

Though there is no unified definition of practice, practices are typically viewed as interconnected activities, carried out by many people and not solely by an individual, and those carrying them out have knowledge of the practice and seek to fulfil certain objective(s) (Shove *et al.* 2012, Nicolini 2012). Schatzki (2006) considers that practices are 'structured spatial-temporal manifolds of actions' and further redefines them as 'organised spatial-temporal manifolds of human activities' (Schatzki 2010; 129). On the other hand, Reckwitz (2002) defines social practices as sets of routinized bodily performances that are also temporal sets of mental activities. While Reckwitz considers practices to be routine, Schatzki notes that practices are also irregular and unexpected and thus cannot be solely regarded as regular and routine. Whilst acknowledging the wide range of theories on practices, Gherardi (2016) and Schatzki (2010) agree that practices are situated in contexts and settings and order the sequence of events and materials required for their performance. The consideration that practices are sets of 'doings' and 'sayings', with neither having priority over another (Schatzki 2016), may imply that practices do not have spatial or temporal structures. However, applying Schatzki's definition of practices as being 'organised spatial-temporal manifolds of actions' and noting Reckwitz's definition that practice is a 'routinized way in which bodies are moved, objects are handled, subjects are treated, things are described, and the world is understood', it can be considered that practices are organised both spatially and temporally.

To investigate the influences of where and when office work practices are enacted and the office configuration in which they are accomplished, social practice theory provides a potentially useful lens for observing what is going on in the office, and more particularly the arrangement of office work and the influence on the office configuration. Schatzki (2010) notes that the roles of theories and ontologies in social research are:

i.   to provide an understanding of key concepts under investigation to conceptualise topics and subjects, formulate descriptions, explanations, and interpretations (as a paradigm);

ii. to suggest topics and issues of study by raising questions in matters such as the organisation of cities, history of capitalism, local and global, production of identities, relations between nature and society etc; and

iii. inform empirical work by suggesting connections among research findings.

Just as social practices are connected to human life (Schatzki 2010) and are carried out by using objects, routines, and knowledge in addition to the human body and mind (Reckwitz 2002) in order to achieve an intended objective, office work practices are undertaken by office workers using their skills, competencies, office equipment and furniture as well as procedures and processes to accomplish given objectives.   Therefore, using social practice theory as a lens, office work can be considered a social practice comprising interconnected doings and

sayings intended to achieve certain outcomes, using objects and competencies for their performance. In the examination of the relationship between office work and the office configuration, what goes on in the accomplishment of work, and how objects, the intent and context of work shape where and when work is done, need to be understood. Further, to interpret the relationship between office work and the office configuration, the social practice elements of materiality and meaning in the spatial-temporal arrangements of practices need to be examined.

3.3.1   Materiality

Materials used in the enactment of social practices are considered to be elements of practices alongside the meaning lent to practices and competencies used (Shove *et al*. 2012). Everyday life is constructed using material things: materials are part of everyday life and are intertwined with humans in the performance of practices. Materials are physical things in the absence of which the practices cannot be fulfilled: this includes physical space which is part of 'material arrangements' (Schatzki 2010). Materials used to accomplish social practices constitute the practice and participate in fulfilling the practice (Shove *et al*. 2012). For example, writing involves the use of a table, pens, and notebooks as materials, while the practice of cooking requires the use of a stove, pots and pans. The materials used in office work practices are arranged in an office configuration that facilitates the accomplishment of office work. Materials in office work practices may include physical objects in the workplace such as computers, printers, furniture, paper, partitions, physical space, and ICT infrastructure such as data connectivity, as well as the bodies of office workers.

Schatzki (2010) states that materials are both human and non-human physical entities and further groups material entities into four categories: humans; artefacts; organisms; and things of nature. Materials constitute practices both as objects and as agents that shape practices; they are configured and interconnected to facilitate the performance of practices as well as the interconnection of related practices, as they are intelligibly arranged in a manner designed to achieve a purpose (Schatzki 2010, Shove *et al.* 2012). In recognizing humans as a category of material entity, Schatzki includes the body of individual agents as material in the performance of practices, therefore concurring with Reckwitz's inclusion of bodily movements in the definition of social practices. This implies that materials that constitute and interconnect social practices include physical entities, such as objects used in the enactment of practices, the artefacts produced, and the practitioners of the practices, all of which are intentionally arranged.

Materiality in practices is considered as the physical attributes that make up the practice (Schatzki 2010). The physical entities used in practices have physical attributes that enable the performance of the practices. The practice being performed uses characteristics of physical entities such as bodily movements, shape, size, spatial arrangement, and mechanical movements to interconnect actions that constitute the practice. Schatzki argues that humans are carriers of practices and materiality in humans is also taken into consideration in the performance of practices. In stating that "all materiality is social in that it is created by a social

process, and it is interpreted and used in the social contexts" and "all social action is possible because of some materiality", Leonardi (2012) argues that materiality is given significance and assigned roles by the intention of the practitioner.

While social practice theory considers materials and meaning to be distinct components, socio-materiality studies suggest that materiality is shaped by human intent in everyday life and agency comes from the interaction between human and non-human elements (Shove *et al* 2012, Moura and Bispo 2019, Orlikowski and Scott 2008, Gherardi 2012). Moura and Bispo (2019) suggest that human and non-human elements are mutually constituted in day-to-day practices and have the power of agency over each other, thus having constructive entanglement. In a study of socio-material practices in technology, Orlikowski (2007) notes that constructive entanglement does not prioritize either the human or the technological; instead, both the human and technological are part of the social interaction that unfolds in everyday organizational life. From the social practice perspective, however, materials, both human and non-human, are carriers of practices as they interconnect them with and link them to other practices with which they are associated (Pantzar and Shove 2010, Schatzki 2010). While both human and non-human entities have agency in the interconnection of networks of actions and practices, the social practice perspective considers humans to have primacy as carriers of practices (Gherardi 2016, Schatzki 2010).

Material arrangements determine the interconnection and involvement of material entities with each other (Schatzki 2010) and thus their physical attributes aid in understanding how practices are interconnected. Additionally, since material arrangements prefigure practices by influencing the path of actions taken to accomplish the objective of the social practice (Schatzki 2010) the configuration of material arrangements ensures that materials are in place so that practices are fulfilled when they are ordered. Therefore, for practices to be accomplished, the materials required must be in place, performing and intelligibly arranged. In the absence of suitably prefigured material arrangements, it is expected that practitioners may seek to adapt and modify existing materials as they reconfigure the material arrangements towards the fulfilment of practices.

Taking the view that materiality constitutes the physical attributes that are used in social practice (Schatzki 2010), materiality in office work practices constitutes the physicality of workers and the objects that are used in the accomplishment of the practices. Therefore, the physical items used in the accomplishment of work and those that shape the space may be considered materials used for the enactment of practices. While the materials used in office work practices at different times and spaces may have similarities in how they are used and how they connect, it is expected that both the materials and the practices elicit varied individual or collective meanings from practitioners. In addition, the significance of the spatial-temporal connection of objects and bodily movement during the enactment of practices may differ from one practitioner to another. Though materials are arranged as part of practices and to connect practices, and materiality plays a role in the spatial-temporal connection of practices, shaping material arrangements in turn, it is not enough to understand the spatial-temporal arrangements of materials. Instead, it is necessary to understand how those arrangements are shaped and what contributes to their arrangement.

3.3.2   Meaning

While the materials required for the accomplishment of practices may be pre-arranged and set up in anticipation of the practices to be enacted or may be introduced and re-arranged as practices unfold (Schatzki 2010), the study of the material arrangements and rearrangements is not limited to the materiality of the arrangements that comprise the setup but also includes the roles and intentions that they fulfil. Practices do not just describe what people do, but also give meaning, identity and order to activities and the material entities that are used (Nicolini 2012, Orlikowski and Scott 2015). Shove *et al*. (2012) use the term 'meaning' to represent the 'social and symbolic significance of participation at any one moment' and suggest that meaning is dynamic.   Materials are given meaning by what they are used for, and the human action associated with them. Objects, bodies, and space become visible and acquire meaning out of the practices for which they are used (Hardy and Thomas 2015).

The meaning of material entities is negotiated in space and time and their spatial-temporal arrangements depend on the meaning attached and what they are used for (Hardy and Thomas 2015; Orlikowski and Scott 2015). Additionally, the meaning of material objects and the representation of those meanings on material objects is not static but is negotiated as practices unfold (Whyte *et al*. 2011). Since the accomplishment of practices and their location is dependent on commonly shared norms and everyday routines (Rosengren 2015, Southerton 2013), the materials used in the accomplishment of practices acquire meaning from the practices as they unfold (Hardy and Thomas 2015, Hopwood 2014). Thus, it can be considered that the meaning of material entities changes as practices unfold. Therefore, the meaning of material entities and their spatial-temporal arrangement is influenced by practices (Schatzki 2010, Southerton 2013). In this view, objects and spaces have no fixed meaning.

Noting that practices are manifestations of both 'doings' and 'sayings', and also that the material and the discursive are intertwined, the meaning of material entities can be understood from discourse in practices (Orlikowski and Scott 2015, Hardy and Thomas 2015, Schatzki 2016). In these terms discourse and materiality constitute each other, and discourse explains the meaning in materiality (Orlikowski and Scott 2015). Discourse is not independent and does not exist outside of materiality. Discourse plays various other roles, including enabling actors to express their understanding of the meaning of material entities and material arrangements, to share the identity of materials, and to say what is going on or what they are doing (Hardy and Thomas 2015, Schatzki 2016). In using discourse to give insights into meaning lent to practices and the material entities that support them, discourse may be considered as a way of understanding materiality. However, while 'doings' and 'sayings' may be considered as intertwined, the context in which they lend meaning to practices and materials needs to be understood.

Although the meaning lent to objects and spaces may arise from a range of factors that are varied and ambiguous, practitioners require a level of common or shared meaning for the

continuity of practices (Shove *et al*. 2012, Langenberg and Wesseling 2016). Proponents of sensemaking suggest that shared organised practices are forums of 'sharing of meaning', and change in the setting and enactment of practices is a result of possible meanings that are selected and retained and the identities that are constructed as the changes in practices unfold (Langenberg and Wesseling 2016). Noting that practices lend meaning to the objects they use and the spatial arrangement of those objects, and also that objects interconnect chains of actions in social life (Schatzki 2005), then the collective practices of office workers are expected to lend shared meaning to the objects in the environment where office work is carried out.

While practices give identity and meaning to objects and spaces (Gherardi 2016; Hardy and Thomas 2015), physical attributes such as finishes, size and arrangement may also convey the functional and symbolic meaning of the objects (Sage and Dainty 2011, Schatzki 2010, Hopwood 2014). Physical attributes of materials may have symbolic meaning that connotes social and power relations including hierarchy, managerial control, or informal interaction, and may be expressed, for example, through décor, size and spatial-temporal arrangements (Halford 2004). The meaning is understood by those who are members of the organisation and understand the context and symbolic value (Rosengren 2019). However, the objects used in practices may also have a symbolic meaning that is understood in their spatial and temporal setting and drawn from the culture, hierarchy, and norms of the community of practice (McGregory 2004, Fahy *et al*. 2014) and the meaning may be transmitted from one community of practice to another. Noting that meaning is dynamic and negotiated over space and time (Hardy and Thomas 2015, Hopwood 2014), material entities are likely to take up new meaning as practices are performed. It may be considered that work norms and how work is organized influence meanings lent to practices: therefore, the meaning that individual office workers attribute to practices and materials influences the adjustments they make as they use the workspaces.

Taking cognizance of the argument that the meaning of material entities is negotiated over space and time as they acquire meaning from the practices they are used for as they unfold (Hardy and Thomas 2015, Hopwood 2014), then it can be considered that this meaning is not static but unfolds as the practices unfold. The change in work practices has the potential to change the way material entities are set up and used in the enactment of practices, therefore lending the material entities new meaning and identity. To understand the influence that change of practices has on the configuration of material arrangements in the environment where the practices are carried out, one has to understand the meaning and identity of material components used in the enactment of material and discursive practices that constitute office work. It is also necessary to understand how the meanings and identity of those material entities are modified and retained during the enactment of practices in the changing setup of the office environment.

3.3.3   Spatial-temporal arrangement of practices

As well as comprising of materials, meaning and competencies, practices are also connected by these elements: the materials used, the meanings they are lent and the competencies of the practitioners (Shove *et al*. 2012). Additionally, practices are interconnected by time and space providing a sequence within which they are arranged (Moran 2015, Schatzki 2010). Since the temporal arrangement of practices is determined by their temporal structures and the sequences of practitioners' past, present, and future actions (Southerton 2006, Orlikowski and Yates 2002), time is part of practice arrangements.   Additionally, the spatial arrangement of materials suggests the spatial arrangement of practices enacted in the space and the spatial sequence of their enactment (Schatzki 2010, Shove *et al*. 2012). Since practices cannot be completed without materials, competence and meaning (Shove *et al*. 2012), and the arrangement of practices is impacted by the spatial-temporal arrangements that connect them (Southerton 2006, Schatzki 2010, Orlikowski and Yates 2002), the spatial arrangements of the material entities are better understood through the examination of the practices themselves. However, the spatial arrangement of practices does not stand alone, but is intertwined with their temporal structure.

The temporal arrangement of practices is enabled by the materials used and their arrangements (Schatzki 2010) and can be adjusted or disrupted by the entry of new materials such as the incorporation of ICT devices (Southerton 2013, Nicolini 2007). Consequently, the time when office work is carried out can be determined by the materials in place to accomplish it. Since practices are temporally arranged and ordered (Southerton 2013) and practice actions are prefigured by material arrangements (Schatzki 2010), temporal ordering and material arrangements are expected to be mutually interdependent and have a reciprocal relationship. However, the literature reviewed is not clear on whether material arrangements and temporal ordering of practices are mutually interdependent. If temporalities and practices are mutually interdependent according to Southerton (2013) and temporal positions of practices are supported by material arrangements (Schatzki, 2006) then the temporal ordering of practices and material arrangements would be expected to be mutually interdependent. It may be considered that in the spatial-temporal arrangement of office work practices, the materials used may not always be prearranged and in place, ready for the performance of every potential task; instead, the material can be rearranged in an improvised way for the fulfilment of practice when it is ordered.

The objects and associated infrastructure that enable the functioning of the objects are part of the material arrangements used in the accomplishment of practices and have the potential to shape the actions in the accomplishment of practices as well as the meaning and arrangement of other materials used in the performance of practices (Nicolini 2007, Schatzki 2010). While the temporal organisation of practices in everyday life determines the meaning of materials and their arrangements, practices can be adjusted or disrupted by the arrival and use of additional objects (Southerton 2007 and 2013). Office work practices can be disrupted by technological advancements that enable mobility of work and give flexibility to when and how office work practices are temporally ordered and accomplished (Kieztmann *et al*. 2013,

Nicolini 2007, Orlikowski and Yates 2002). Noting that the spatial-temporal organisation of practices can be impacted by the selection of objects during the enactment of practices, it is necessary to understand the extent to which reasons for selection are influenced by the meanings assigned to the physical attributes.

Since temporal and spatial structures of practices are not solely guided by the arrangements of materials used for the accomplishment of the practices but are also shaped by practice arrangements (Schatzki 2010; Orlikowski 2007), it is also necessary to examine the office environment from the social practice perspective. This may be done by investigating what office workers are doing in the office, the norms and routines of office work and how these shape where and when office work is accomplished and the configuration of the office environment. More particularly, this study will examine the relationship between the spatial-temporal arrangement of office work practices and the material arrangements that support it, whether prearranged or improvised.

Furthermore, since the study of aspects of social life can be undertaken by the observation of ordinary and routine intelligible activities (Nicolini 2009, Schatzki 2016, Reckwitz 2002), office work can be understood by studying the ordinary and routine activities that comprise it. These ordinary and routine activities of office workers occur at different times and in different spaces, and their interactions with other non-work activities, as well as the environment and conditions that sustain both work and non-work activities, are part of everyday life. The work and non-work activities are part of a constellation of practices that form everyday life at an institutional and day-to-day office worker's scale (Schatzki 2016). While office work can be examined on the institutional scale at the macro level, examining office work as part of the everyday life of office workers at a micro level enables investigation of the way in which the relationship between the workers and the office environment influences the accomplishment of their work (Kallio 2015). Office work practices can be understood by studying the ordinary and routine activities that comprise office work, the objects used and how the routines and objects are logically organised to accomplish the required practices. In this regard, office work can be viewed as a social practice with the activities that comprise office work, the space where it is accomplished, and objects used studied and analysed using concepts of social practice theory.

3.4   Conceptualising office work and workspaces using social practice theory

Office work practices may be examined as social practices that are part of everyday life and social practice theory provides key concepts to investigate and conceptualise office work and formulate descriptions, explanations, and interpretations (Schatzki 2010) of emerging office work practices, the objects used, where and how work is done. This section considers the concepts discussed in 3.3 above in the context of office work and the office setup.

As observed in Chapter 2 (2.3), the objects used, the intent of the work and the work itself are continually changing, and the time and place of the work are also changing. Social practice theory has the potential to help interpret the changes in objects, the intent and context of

the practices, and the dynamic nature of office work practices. To interpret the influences on where and when work is accomplished and how the office configuration that supports it is shaped, office work and the objects and spaces that comprise the office configuration can be conceptualised using social practice theory.

3.4.1   Office work

Work constitutes part of everyday life and is intertwined with other everyday events and activities, and may be viewed as a social practice (Orlikowski 2007, Schatzki 2016, Miettinen *et al*. 2009). Social practices are the smallest unit of social analysis and can be used to understand everyday life. Social practices are spatial-temporal manifolds of 'sets of doings and sayings' (Schatzki 2006) and comprise purposeful routinised bodily and mental activities and the use of knowledge and material objects (Reckwitz 2002). Additionally, social practices have teleo-affective structures that have coordinated activities to meet common objectives (Schatzki 2005, Welch 2017). Office work is part of the everyday activities of an office worker and is carried out to meet various objectives at an organisational, team, and individual level.

As with other social practices, office work can be viewed from a macro, meso and micro level (Bueger 2014), where the macro level looks at practices at the organizational scale, the meso level looks at the routines at the level of groups of workers and the micro level looks at practices of the individual worker.   In the same way that other types of social practices must interconnect to remain relevant to each other (Shove *et al*. 2012), office work practices are interlinked within and across different levels.   The groups of practices at each level interconnect with each other, forming a family of practices that become identified with office work and that can be replicated in different locations and by different actors as well as participating in the wider global phenomenon of office work (Shove *et al*. 2012, Schatzki 2006, Nicolini 2007).

It is in the office context that workers of various competencies are organised, and materials are arranged according to their use and meaning with a view to accomplishing common objectives and purposes. Schatzki (2006) considers the site of social practices as a mesh of practices and material arrangements. Similarly, the office can be considered a site of practice as being the location for the organisation and accomplishment of work, where the doings and sayings involve the interaction of the people with objects and knowledge in the context of routines and structures that are developed over time or learnt (Reckwitz 2002, Shove *et al*. 2012). Since social practices are connected to human life (Schatzki 2010), and are carried out using objects, routines, applied knowledge, and the human body and mind (Reckwitz 2002), it may be considered that office work is carried out with the intention of achieving an intended objective and influenced by the routines of work and the intentions of office workers. In the examination of the relationship between the influences of time and place of work and the office configuration, it is necessary to examine objects and spaces also, using social practice theory concepts.

Though spaces and objects may have similar functionality, their physical characteristics and spatial-temporal arrangement convey a range of symbolic meanings including control, hierarchy and power (Sage and Dainty 2011, Halford 2004). Therefore, while space and objects may fulfil certain roles during the accomplishment of work, the roles may vary depending on context provided by the different times and places in which the practices are being enacted (Shove *et al*. 2010, Halford and Leonard 2005). This necessitates a focus on the roles of objects and spaces and the spatial-temporal arrangements of work and workspaces to develop an understanding of office work. In the examination of the spatial-temporal arrangement of office work and workspaces using social practice theory, the concept of materiality enables the interpretation of physical attributes of objects and spaces while the concept of meaning enables the interpretation of roles assigned to space and objects. Furthermore, the concept of meaning enables the interrogation of roles of objects and spaces in the context of the work being accomplished as well as the intentions and norms of office workers.

3.4.2   Space and time

To understand how the time and place of work impact the configuration of space, the spatial-temporal arrangement of work and of the physical items that support office work practices needs to be examined. In its physicality, space is situated geographically to provide physical locations, boundaries, functionality and symbolism for the office workers and the practices they carry out (Halford 2008, Hopwood 2014, Merriman *et al* 2012, Blomley 2016). Space not only provides a site for practices and an avenue for interconnections between practices, but it also has physicality constructed by the objects that occupy it (Schatzki 2010). Additionally, space is socially constructed through everyday practices by being modified and configured to suit the social processes, and space changes over time as the practices it is used for change (Merriman *et al* 2012, Jarzabkowski *et al* 2015). Therefore, the arrangement of space is temporal and is defined by the social practices enacted in it. Consequently, in the examination of the workspace, it is necessary to understand both spatial and temporal arrangements.

Though workspaces are designed for predetermined roles, it is expected that roles will be adjusted and reconfigured to reflect new meanings and identities as the work practices evolve (Hardy and Thomas 2015, Halford and Leonard 2005). Halford (2004) suggests that the meaning and uses of space may also vary at different times, and the identity and meaning of space are constructed together with the practices in the space. In her study, Halford observes that the meaning of space varies according to different spatial scales (e.g., geographical location of the building, location of micro spaces within the building) and that workers are concerned about their office environment and the meanings invested in the spaces. While Halford's study suggests that spatial meaning and spatial practices are constructed, it also argues that personal memories and relationships are socially constructed in the office setup and give identity to spaces. While the physical attributes of a building/space are useful in ensuring the suitability of the space for the well-being of the worker, spaces and objects are

also part of workers' memories, experiences, and identities (Halford 2004). This implies that the social construction of space goes beyond the practices enacted and includes taking office workers' experiences into consideration.

Beyond the functionality and purpose of spaces and the objects therein, materiality in spaces and objects conveys functionality and symbolic meaning through physical attributes such as arrangement, furnishing, finishes and ambience (Sage and Dainty 2011, Hardy and Thomas 2015). The literature review in Chapter 2 (2.1) on the roles of the office setup highlights how the office space configuration has been used to provide support systems for the execution of work, aid managerial control and provide organisational cohesion as well as communicate the organisation's hierarchy, the corporate brand, and the power structure (Nicolini 2007, Sage and Dainty 2011, Harris 2016, Aroles *et al*. 2019). Halford (2014) notes that organisational space is seen as a resource used for managerial control, which may be resisted by workers through the practices they enact in various spaces. Additionally, social interaction and managerial control are enabled, obstructed, or communicated through spatial arrangements and objects (Sage and Dainty 2011, Leclercq-Vandelannoitte 2011). Noting that materiality is demonstrated in characteristics of space such as the size, configuration, artefacts, finishes and fixtures (Piquette and Whitehouse 2013, Hopwood 2014), the materiality of space that conveys functionality and symbolic meaning is determined by the social practices enacted in that space at various times. Though practices give functional and symbolic meaning to materials, the meaning of the spaces and objects used is best obtained from workers by paying attention to their experiences and by observing their interactions with the materials. Noting that the meaning of office space is attributed to its use and is tied to the social interactions in that space, the role of space at different times can be understood through the meaning lent by the practices carried out in the space and the identity given by the experiences of office workers.

Being socially and physically constructed, space can be viewed in an abstract way, considering its physical construction and size, or socially, by the practices with which it is identified (Ramo 2004). In the same way, time may be studied in its abstract form through quantitative clock time or in terms of timely moments or experiential qualitative time. However, although space is modified and constructed over time to suit social practices, spatiality cannot be removed from temporality (Merriman *et al* 2012). Additionally, the materiality of space is determined by the social practices performed in that space at various times (Merriman et al 2012). While the abstract depiction of space and time gives a quantitative description and measure of space in length and area, and of time in hours and minutes, it does not take into consideration the social construct of place and time that comes from the practices enacted and the experiences of practitioners. Though physical and social constructs may be used interchangeably, abstract space may not represent the spatial experiences of office workers (Ramos 2014, Halford 2004). Since space is both physically and socially constructed, spaces may have tangible and intangible boundaries and connectors that define the extent of space used and the spatial and temporal limits of practices enacted in them.

In social construction, space is also temporally constructed by the social practices being performed, and has temporal locations and boundaries, as well as functional and symbolic

meanings associated with the practices carried out (Halford 2008, Hopwood 2014, Merriman *et al* 2012, Blomley 2016). Space is temporal and is defined by the social practices in that space. Objects and space become visible and acquire meaning from the practices for which they are used (Hardy and Thomas 2015). Additionally, meaning and identity can be understood only through the lived experience of the practitioners. Noting that practices are connected by space and time, and the actions that comprise the practices are connected by objects and bodily movements (Hopwood 2014), it is necessary to understand the meaning lent to tangible and intangible connectors and boundaries of practices and how it is demonstrated in the configuration of space.

3.4.3   Objects

In examining the spatial-temporal arrangement of practices, the objects used, including their roles and arrangement, may be interpreted using the concepts of meaning and materiality discussed in 3.3.1 and 3.3.2 above. In addition to being among the materials used in the enactment of practices, physical objects play a wide range of roles that include enabling, separating and connecting practices as well as defining various characteristics of space. Furthermore, the physical attributes of objects and their arrangement convey their use and symbolic meaning (Sage and Dainty 2011, Schatzki 2010, Hopwood 2014) and also identify and configure spaces (Blomley 2016, Hopwood 2014). This suggests that physical objects are not simply material entities used in the enactment of practices: their physical attributes have a materiality that takes up various roles, symbolic as well as functional. Since practices are enabled and shaped by the objects used in the accomplishment of the practice (Sage and Dainty 2011, Leclercq-Vanderlannoitte 2011, Orlikowski and Scott 2009) and practices give identity and meaning to objects and spaces (Gherardi 2016, Hardy and Thomas 2015), the roles assigned to the physical attributes of objects may be considered to be influenced by the practices they support. Additionally, the roles of objects in the configuration of spaces are expected to have an impact on the creation of the work environment and the arrangement of infrastructure and tools that enable the performance of work. Noting that materials not only comprise but also connect practices (Shove *et al*. 2012), then to understand the objects used in practices and their roles, objects may be examined as being among the material entities that connect and comprise the practices being enacted.

In addition to objects playing a wide range of roles in defining various characteristics of spaces, some objects may act as connectors between practices and boundaries that mark the end of the practices and also provide boundary markers that demarcate and interconnect spaces (Blomley 2016, Hopwood 2014). Star (2010) notes that boundary objects allow different groups of people to work without affecting each other's work arrangement and performance. Boundary objects provide common and shared borders between groups or communities of practice (Star 2010) on different spatial scales (e.g., location, building, micro spaces). In addition to objects acting as connectors and boundaries to the practices, they are also boundary markers that demarcate spaces and give them identity, limits, form, and shape (Blomley 2016, Hopwood 2014). Practice boundaries are not restricted to physical objects,

but also include virtual objects. Scott and Orlikowski (2009) observed social-media software as a boundary object between hoteliers and travellers that conveyed information between the two groups. Kellogg *et al*. (2006) observed the use of web-based software in displaying, representing, and assembling the contribution of work across geographical boundaries and communities of practice. This ability of virtual objects to transform and convey information as well as connect communities of practice suggests that virtual objects can connect and mark boundaries of practices; virtual objects, however, do not replace the roles played by material objects in the demarcation and connection of practices, and in turn spaces.

Though the roles of objects that connect practices and spaces may seem distinct from those that form boundaries between practices and spaces, boundary objects that connect practices also demarcate the boundary between practices (Endrissat and Noppeney 2013). Since during the performance of practices, practical knowledge is conveyed through objects (Gherardi 2010), boundary objects can be suitable for supporting connections between practitioners. Depending on the capabilities of the objects, boundary objects enable the crossing from one bundle of practices to another and from one spatial context to another (Endrissat and Noppeney 2013, Blomley 2016), thus fulfilling the roles of connecting objects. Though objects have different uses and capabilities that are applied according to the intent, ability and knowledge of practitioners and their power relationships, boundary and connecting objects have a common identity and enable knowledge sharing across the communities of practice (Carlile 2004, Kellogg *et al*. 2006). Noting that elements of social practice, namely competence, materials and meaning, are linked in the performance of practices, the common meaning assigned to the practice and objects can be demonstrated by shared knowledge of the utilization of objects as practices unfold (Carlile 2004, Gherardi 2010). By enabling the crossing of boundaries, boundary objects connect practices by structuring practices, conveying information, and mobilising action across boundaries (Kellogg *et al*. 2006, Star 2010, Endrissat and Noppeney 2013).

Since the objects used are given identity by the practice (Gherardi 2016) and are part of social interaction at the workplace, objects used in the workplace have symbolic representations and meanings that are understood in their spatial-temporal and organisational context where work is performed. Objects not only act as connectors and boundaries to the practices but are also boundary markers that demarcate their physical limits and aid in workspace configuration (Blomley 2016, Hopwood 2014). However, the objects' roles of demarcating and connecting practices are dynamic, and the assignment of roles can be spontaneous: their prefigured positioning and use may be changed as the practice unfolds (Oswick and Robertson 2009). As the roles change, the meaning lent to the objects is negotiated in the performance of a practice (Orlikowski and Scott 2015). Additionally, the meaning of boundary objects is also negotiated during the performance of practices, and it is captured through examining practices (Oswick and Robertson 2009). Changes in the roles assigned to objects may be understood through the way in which objects enable the practices being enacted. As roles change, however, meanings lent to objects are re-negotiated and need further investigation to understand their influence in the spatial-temporal re-arrangement of objects.

Space provides a location for practices to be enacted, and it is also an avenue for the interconnection of practices. The characteristics of the objects and the functional and symbolic roles of the objects in connectors and borders of practices are expected to impact the configuration of the workspace. Noting that objects not only connect and provide boundaries to practices, the extent to which their role in connecting and terminating practices impacts the connection and demarcating of spaces needs also to be examined. However, office work practices are dynamic, and the roles assigned to objects are likely to change continually, along with the meaning lent to these objects. To understand the spatial-temporal arrangement of practices and how they are enabled by the spatial arrangements in the workplace, the roles and meanings lent to objects need to be examined through the experiences of office workers.

Studies that have adopted a practice-based approach to the study of office work have focused on the examination of new ways of working and the use of technology and applied concepts from organisational practices, socio-materiality and social practice theory, while studies on spaces of work have applied mainly management and spatial theories (Orlikowski 2007, Appel-Meulenbroek *et al.* 2018, Halford 2008,). The practice-based approach has been used to examine a wide range of implications of the use of mobile technology, such as the shift in the spatial-temporal arrangement of work and changes in the interactions between workers (Leclercq-Vandelannoitte 2021, Endrissat and Leclercq-Vandelannoitte 2021, Gherardi 2010, Nicolini 2009, Rosengren 2015). In addition to the practice-based approach being used to conceptualise the everyday life of office workers and the spatial and temporal arrangements of office work (Southerton 2013, Halford 2008), it has also been used to draw attention to the other roles that the office fulfils in communicating and enforcing work norms, such as hierarchy and supervision (Leclercq-Vandelannoitte 2021). While various practice-based theories have been used to examine various aspects of office work and how it is accomplished, in the study of the influences on where and when work is accomplished and the office configuration that supports it, it is necessary to understand the relationship between office work and the office configuration. The concepts of social practice theory help in describing what office workers do in the accomplishment of work, interrogating the selection and adjustments of the time and place of work and in the interpretation of the relationship between what is going on in the office and the configuration that supports their preferences.

3.5   Chapter conclusion and research questions

To examine how office work practices are shaped by, and, in turn, shape, the work environment, the study uses social practice theory to conceptualise office work and the office environment through the experiences of office workers. More particularly, the study uses the concepts of meaning and materiality to investigate the relationships between the spatial-temporal arrangement of office work practices and the material arrangement of the office configuration that supports its accomplishment. By mobilising the concepts of social practice

theory to examine what goes on in the accomplishment of office work, the research questions can now be clearly stated:

i. In the unfolding of office work, what influences where and when office work practices are enacted?

ii. How do office work practices interconnect and terminate and what informs the selection and arrangement of objects used to interconnect and terminate practices?

iii. In the enactment of practices, how do meanings lent to objects and spaces influence the spatial-temporal arrangement of the office setup?

Social practices are connected to human life (Schatzki 2010), are carried out using materials such as the human body and physical non-human objects (Schatzki 2010), involve people as individual agents and agency (Nicolini 2012), comprise routine and knowledge in addition to the human body and mind (Reckwitz 2002), have structure, norms, meaning and significance (Shove *et al.* 2012) and are directed towards an intended objective (Reckwitz 2002). Since office work is dynamic, in order to understand the influence that change of practices has on the office configuration, it is necessary to interrogate the meaning and identity of material components used in the enactment of material and discursive practices that constitute office work and how the meanings and identity of those material entities are modified and retained during the enactment of practices in the setup of the office environment.

Since the meanings of office work practices are based on the intentions these practices serve, the roles assigned to spaces and objects may vary according to the purpose of the activity and the context in which the work is done. Therefore, the role the office worker assigns to the space and the objects in it may vary depending on the work practices at a micro level and the virtual and physical social interactions at the workplace. In addition, the roles of space and objects used to accomplish the practice may vary according to the individual and collective norms and routines of the office workers, wider social and organisational norms, and expectations of work (Orlikowski and Yates 2002, Miettinen and Virkkunen 2005, Mazmanian *et al*. 2013, Rosengren 2012). The social practice theory concepts of meaning and materiality are potentially very powerful in interpreting both the roles office workers assign to objects and spaces as they accomplish office work, and the relationship between those roles and the spatial-temporal arrangement of office work.

In the study of the influences on where and when office work is done and their influence on the office configuration, office work and what goes on in the office, social practice theory provides a useful theoretical lens that informs the design of the research as well as the methods used for data collection, analysis and interpretation. The use of social practice theory in the investigation of office work based on the experiences of office workers provides concepts for examining the dynamic nature of office work practices as well as the spatial-temporal arrangement of practices, space and objects used. Furthermore, the examination of meaning lent to materials and material arrangements as office work unfolds helps to provide insight into the selection of the place and time of work and the modifications and adjustments made to the office configuration. The next chapter considers how the context

of the setting of the field research and provides a background to the research design and methods.

4   Chapter 4   Contextual overview

Studies on office work practices and the office environment have predominantly been carried out in the northern hemisphere, especially in North America, Europe, Middle East and Northern Asia providing insights that are based on the economic and social context of office work communities in these regions (Cole *et al* 2014, Duffy et al 2011, Umisho *et al* 2021, Lu and Roto 2016). This study presents an opportunity for an assessment of office work in the global south. The global south encompasses diverse regions that include Africa, Latin America, Asia and parts of the Pacific. This chapter provides a contextual overview of the unique social-economic and cultural environment in which office work is carried out in an African country in which this study is based, Kenya.

The researcher is an office worker and facilities manager of a national utility company in Kenya. The headquarters of the utility company are based in Nairobi and serve as the field for this study. The study takes an ethnographic approach and takes place during the Covid-19 pandemic. Noting the impact that context and the researcher's relationship with the field may have on the data collection and analysis (Coffey 2011), this chapter provides a contextual background of the geographical and temporal location of the field and the researcher's exploration of office work. The background describes the general setting of office work that shape the nuances behind the experiences of office workers and workplace environments in global south, with reference to Kenya, and gives an outlook of office work during the Covid-19 pandemic period. This background also gives perspective to the methodological considerations of the research process that takes cognisance of the research aims and researcher's identities as a researcher and 'insider' (Coffey 2011, 2018) leading to the research approach in Chapter 5 (5.6) and data analysis in chapter 6.

4.1   Context of office work practices

4.1.1   Geo-economic context

The field research is carried out in Nairobi, the capital city of Kenya, in East Africa. Kenya is located along the Indian Ocean coast and neighbours Ethiopia, Somalia, Tanzania and Uganda. Kenya is considered a key production and distribution base linking the region to Europe, Middle East, South Asia and Indian Ocean Islands[3]. Nairobi is a metropolis that serves as the economic, political, and cultural hub of the country and logistical hub for East and Central Africa. As an economic centre it attracts businesses and professionals from other parts of the world hosting various international organisations including the headquarters of United Nations Environmental Program (UNEP) and the UN-Habitat. The city's office spaces reflect a blend of traditional and contemporary influences, accommodating both multi-national

---

[3] Kenya is a member of regional trade block such as the East African Community (EAC) and Common Market of Eastern and Southern Africa (COMESA). She is a member of 79 countries in Africa, Caribbean and Pacific ACP that entered into trade agreements and partnerships with European Union. Kenya trade agreements and partnerships with United Kingdom and United States of America. https://mfa.go.ke/country-profile/

organisations and local enterprises. The mix of local and international influences are part of the backdrop of the social and technological infrastructure context under which the study of office work is carried out.

4.1.2   Social and cultural context

Noting the significance of culture in shaping norms in workplaces (Wells et al 2000), the social culture of mutual assistance and Harambee [pulling together] concept[4] provides some background on the collective action and collaboration influence of the sense of community, interactions and norms of office workers. The sense of community is enhanced by the Nyumba Kumi [ten houses] community concept whose principles encourage community policing though neighbourhood groups and information sharing[5]. In addition to the community and neighbourliness principles from Harambee and Nyumba Kumi concepts, the social interactions at the workplace are influenced by a diverse cultural landscape that draws from a mix of international and local workers. While work regulations of international and local organizations provide guidelines on conduct at the workplace, the local traditions of respect for seniority that predominant African society shape the response to hierarchy and rank at the workplace. Consequently, the work culture is characterised by observance of hierarchy, with the interactions amongst office workers being based on formality and respect for authority and seniority[6] shaping the interpersonal relationships at the workplace. The personal relationships and social networks at the workplace play a crucial role with networking and building personal connections being applied to create more relational workplace environment (Federation of Kenya Employers 2022, Cooke and Wood 2021).

Many organizations in Kenya follow The Government of Kenya Public Service Commission[7] work regulations that require employees work for 40 hours a week, spread in 5 days a week (Monday to Friday). In compliance to government regulations, the official work hours at the researcher's organisation begin from 7.45am to 5pm with a lunch break between 12.30pm and 1.45pm. As part of employee welfare, the organisation provides office tea in the morning and afternoon prompting tea breaks at 10am and 3pm. These work regulations and organisation-prompted breaks shape routines of office workers such as their commute between their homes and the office and social breaks and interactions within the workday.

---

[4] '*Harambee*' is a Swahili word that means 'pulling together' and is used to refer to individuals coming together in self-help initiatives. Harambee movement was initiated by the Kenya's First President, Mzee Jomo Kenyatta to encourage Kenyans to contribute towards development projects. Further information can be obtained from https://www.scribd.com/document/50531805/Harambee-is-a-Kenyan-tradition-of-community-self   and http://erepository.uonbi.ac.ke/bitstream/handle/11295/40009/Norey%20A.%20V.pdf

[5] '*Nyumba Kumi*' is Swahili for 'ten houses'. It is a community policing initiative by the Government of Kenya encouraging citizens to enhance security in their neighbourhoods. Further information can be obtained from https://vision2030.go.ke/progress-2016-march-security-peace-building-and-conflict-resolution/ http://www.parliament.go.ke/index.php/node/20332

[6] https://www.rivermate.com/guides/kenya/cultural-considerations

[7] https://publicservice.go.ke/index.php/publications/policies-guidelines

4.1.3 Technology infrastructure

Kenya's high use of ICT infrastructure is demonstrated, by amongst others, the preference of 58.4% of the banking customers to use mobile money transaction (Kenya Bankers Association Survey 2020)[8]. With 35% of the population being between 15-34 years, it is observed that ICT plays a significant role in information and intermediation for business and personal use (National Council for Population Development 2017)[9]. Despite the use of ICT tools for personal and business being considered as an enabler to new ways of working, many organisations, including the researcher's organisation, continued with in-person operations without making significant change to remote working; with some organisations considering working remotely as not necessary for business continuity even during the Covid-19 pandemic period in 2020 (International Labour Office/ Federation of Kenyan Employers 2022, Cirera et al 2022). A study by International Labour Organisation (ILO) and Federation of Kenya Employers (FKE) found that the decision to carry out in person work emanated from various considerations including the inability to process and coordinate work remotely and a lack of a 'digital culture'[10]. Additionally, there were notable skill and resource gaps in the use of digital tools that affected worker productivity calling for skill development. Similarly, a study on workspace flexibility among administrative staff in Public Universities in Western Kenya, Nyaoro and Anyango (2023) found despite the availability of digital tools, flexible working did not have a positive effect of work performance and noted that office staff considered working from home as ineffective. However, while some organisations associated remote working with loss of productivity and lack of control, the lack of ICT systems to process and coordinate work remotely, inadequate internet connectivity, high cost of implementing remote working and worker preferences contributed to affirmation of the office as the primary location of work (Nyaoro and Anyango 2023, International Labour Office/ Federation of Kenyan Employers 2022).

4.1.4 Covid-19 pandemic

The Covid-19 pandemic restriction, such as curfews and travel restrictions, disrupted the routines and social interactions of office workers. After detection of Covid-19 in Kenya on 13th March 2020, a lockdown was declared in the Nairobi Metropolitan area from 22nd March 2020 to 6th July 2020. The lockdown included suspension of non-essential activities and enforcement of 7pm to 5am curfews and travel restrictions[11]. As a resident of Nairobi and a worker in an electricity distribution company, the researcher had flexible working

---

[8] https://www.kba.co.ke/survey-mobile-apps-top-bank-customers-digital-banking-feature-preferences/
[9] https://ncpd.go.ke/wp-content/uploads/2021/02/Brief-56-YOUTH-BULGE-IN-KENYA-A-BLEESING-OF-A-CURSE.pdf
[10] International Labour Office/ Federation of Kenyan Employers, The Next Normal: The changing workplace in Kenya, International Labour Office, 2022
[11] The Public Health (Covid-19 Restriction of Movement of Persons And Related Measures) (Nairobi Metropolitan Area) Order, 2020 https://kenyalaw.org/kl/fileadmin/pdfdownloads/LegalNotices/2020/LN51_2020.pdf

arrangements during the first month of the lockdown period and later reverted to working from the office[12]. The hybrid work arrangements involved working for one week in the office and one week at home to decongest workspaces and minimise physical contact at the office. The frequent changes on the location of participants and periodic review of guidelines on application of restrictions resulted in a delay in the commencement of the field research.

As the lockdown period progressed, return to work arrangements were put in place with further guidelines were issued by the organisation to mitigate spread of the virus including replacement of physical meetings with virtual meetings. This provided an opportunity to review the research design to include use of self-recording observation forms, video recording and online interviews in compliance with mitigation guidelines during the lockdown period and the commencement of the first phase of field research (see Chapter 5 [5.6.1.2.1]). As the lockdown period was lifted and Covid-19 pandemic restrictions were relaxed, physical interactions at the workplace resumed, however mitigation such as wearing of face masks continued and virtual meetings, though not mandatory, continued to be encouraged. The resumption of physical interaction at the workplace allowed use of ethnographic methodology that entail proximity with participants including data collection methods such as participant observation, and face-to-face informal discussions and semi structured interviews providing an opportunity for the second phase of field research (see Chapter 5[5.6.1.2.2]). Details on the impact of Covid-19 on the research design and data collection are provided in Chapter 5 (5.9.1) and Appendix III.

Recent studies on the office environments during and after the Covid-19 pandemic has highlighted varying impacts of virtual work on office spaces (Tagiaro and Migliore 2022, Hou *et al* 2021, Cooke *et al* 2022, Umishio *et al* 2021). Though these studies have been carried out mainly in northern hemisphere countries, various aspects of disruption to office worker routines draw into question the work practices in the global south such as use of alternative workplaces including working from home. While the study does not set out to examine the impact of Covid-19 pandemic, it notes that the pandemic created requirements for the use of digital tools to minimise physical interaction at workplaces raising interest on working from home and change from time-based work that is dependent on the official work hours[13]. However, the change from measures used for time-based work that mainly takes place in formal workplaces required review of productivity measures[14]. Consequently, in the researcher's organisation and many other organisations, the designated office remained the primary location of office work in the period following lifting of Covid work restrictions, despite office workers having wireless data connectivity and access to their office work from their mobile phones and laptops. Reflections on the implication of Covid-19 on the research

---

[12] Electricity distribution and other essential services workers were required provide service from their designated workplaces requiring a return to working from the office.

[13] International Labour Office/ Federation of Kenyan Employers, The Next Normal: The changing workplace in Kenya, International Labour Office, 2022

[14] International Labour Office/ Federation of Kenyan Employers, The Next Normal: The changing workplace in Kenya, International Labour Office, 2022 https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_dialogue/@act_emp/documents/publication/wcms_849638.pdf

design and office work practices is discussed in Chapter 5(5.7) and Chapter 12 (12.7) respectively.

4.2   The researcher, the office worker

The research takes place in office buildings equipped with facilities designed to support office work, worker welfare, productivity and comfort. As a facilities manager in charge of the corporate real estate portfolio, the researcher's work responsibilities include setting up workspaces, maintaining the physical infrastructure and enhancing the overall work environment. As an office worker, the researcher has everyday experience of carrying out office work. The researcher is thus positioned at the intersection of various office dynamics, affording insights into both the operational and occupant experience aspects of the workplace. Indeed, the researcher's observations of day to day work prior to the present study raised her interest in understanding how frequent changes made to the office setup as work unfolded were being made Understanding in particular why these modifications were being made and how the office environment enabled or constrained them became a primary motivation for the present study. The dual role as a facilities manager and office worker allows the researcher to relate to the challenges and aspirations of co-workers as she witnesses firsthand their actions, interactions and perceptions as they the use of the office setup and the interventions they put in place to customise spaces as they use them. Despite this insider perspective being helpful in understanding the nuanced realities of office work, the researcher seeks to employ a qualitative research approach that empirically interrogates office work and the setting of office work from the daily interactions of office workers.

Without solely relying on the researcher's own experiences, this research aims to uncover the everyday experiences of office workers within their natural settings by delving into their daily routines, interactions and perceptions of the work and the workplace. By drawing on social practice theory as a lens, the researcher uses theoretical concepts to carry out an impartial investigation of 'doings' and 'saying' of office workers and uses theorical concepts to develop the enquiry and interpret the observation (these points are developed further in chapter 5.4 – 5.6). Social practice theory concepts provide the researcher with tools to observe the intertwined nature of practices and the setting, mitigating biases and preferences, and enabling methodological rigor at the data collection and analysis (Schatzki 2010, Schubert and Rohl 2017). This approach allows for the researcher to explore the relationship between the office work environment and the underlying the intentions of office workers during the accomplishment of office work.

Cognizant that her knowledge of the setting offers, and prior personal understanding of the field has the potential to shape the choices she makes on what to observe and how to present the observations (Coffey 2011), the researcher notes that there is a need to distinguish information from the observer and the observed. Since the norms and setting of the situated case are at the heart of this study and the researcher examines work and the workplace not as a stranger but as one who is part of what is going on, the researcher is aware that she is

immersed in the daily routines of the workplace. The self-awareness of the researcher as an inquisitive insider draws her attention to how her professional background and role may affect her perception of the field and potentially influence the study observations. Further, the researcher notes that since her position and responsibilities shape her work interactions with colleagues, they also have potential to impact how participants of different ranks behave when being observed despite being informed that the observation was for research purposes. To address this, the study takes ethnographic methodological approach to help provide a 'balance between strangeness and familiarity' with the field (Coffey 2011) and applies social practice theory concepts to formulate descriptions and interpret relationships identified in data (Schatzki 2010) as detailed in Chapter 5 (5.6). Additionally, aware that biases that may arise from being an observer participant may pre-empt the results of the study (Yin 2018, Brewer 2002), the researcher does not rely on data collected using participant observation but uses multiple data collection methods including semi-structured interviews and informal discussions with participants as detailed in Chapter 5 (5.6.5). Biases arising from roles of the researcher as a participant are addressed using various measures detailed in Chapter 5 (5.6.3). Additionally, the limitations of the researcher as participant are discussed in Chapter 5 (5.9).

The next chapter details the research design and methods.

5   Chapter 5   Research Design and Methods

5.1   Introduction

This chapter presents the research aim, philosophy and methodology for an investigation into what office workers do in the accomplishment of work and the office configuration that supports it, using concept of social practice theory. The chapter also presents the research design, data collection methods and data capture techniques.

5.2   Research aim

While the office as a place of work has been extensively studied, less attention has been devoted to studying the enactment of office work practices and how these are shaped by, and in turn shape office and the configuration that supports them. This study aims to elucidate the roles of the office and how the preferences and actions of office workers contribute to modification of the office configuration and how that influences the work carried out within it.

By conceptualising office work as a social practice and the office as the site of practice, as detailed in Chapter 3, the study aims to explore the role of materiality and meanings attributed too office work practices in shaping the material arrangements that support them. Further, recognising that the dynamic nature of office work can impact on the time and place of work, and the temporal and spatial arrangements of practices are intertwined, the study seeks to explore how meanings attributed to practices determine the selection of time and place of office work.   This is intended to explain how the meaning attributed to office work practices influences their spatial-temporal arrangement and shapes material arrangements as these practices unfold.

To address the overarching question of how office work practices shape and are in turn shaped by the office configuration, the key study questions (stated at the end of Chapter 3) are restated below for ease of reference:

i.   In the unfolding of office work, what determines where and when office work practices are enacted?

ii.   How do office work practices interconnect and terminate and what informs the selection and arrangement of objects used to interconnect and terminate practices?

iii.   In the enactment of practices, how do meanings lent to objects and spaces influence the spatial-temporal arrangement of the office setup?

5.3   Research philosophy

The study applies a practice ontology to the consideration that 'social life comes to being through practices' in which organisational reality is understood through practices (Feldman and Orlikowski 2011). By taking the view that reality is socially constructed, and practices are important constituents of social reality, practices are used as the object of inquiry in the study of social life (Gherardi 2016, Nicolini 2009). Arguing for a practice ontology Nicolini (2009) notes that practices provide a way of understanding phenomena of different complexity at all levels, including organisational and individual levels. Since practices are subjective, practice ontologies provide flexibility in the examination of a wide range of phenomena (Nicolini 2009). Noting that office work is dynamic, by considering practices as objects of inquiry, practice ontology can help examine the day-to-day unfolding of work as it is enacted in the office.

As detailed in the conceptualisation of office work and the office in Chapter 3 (3.4), while taking the view that office work is made up of practices, the study also considers that the office as the site of practice is socially constructed. The study applies site ontologies that 'conceptualise the social as a nexus of practices' where practices and material arrangements make up the site of the social (Schatzki 2005). By applying the social practice perspective that space is socially constructed and given meaning by the practices that are enacted in it and physically constructed by the material objects that enable those practices (Schatzki 2010), the research considers the office as the site of office work constructed by the practices enacted by office workers. By taking the view that everyday social life comes from practices and that the office is socially constructed by office work practices enacted in it, the study considers social practices as ontological objects that can be used in the study of the relationship between office work and the configuration of the physical workplace that supports it. In using practices as ontological objects, the study does not choose between the practice and site ontologies but draws from both.

The study also considers that practices can be a means of understanding the reality of office work that unfolds in the enactment of work practices as they take place in the social. Since practices are a nexus of 'doings' and 'sayings' (Schatzki 1996), 'doings' and 'sayings' exist together in the social and practices can be used as epistemological objects to elucidate the roles of physical attributes of material entities used in in the practices (Orlikowski and Scott 2015, Gherardi 2016) and material arrangements. Though the use of practices as a unit of enquiry focuses on everyday activities and not on the practitioners, practices help observers to obtain knowledge of the actions being carried out and to take cognisance of the dynamic nature of everyday life (Feldman and Orlikowski 2011). Arguing that practices are both ontological and epistemological objects, Gherardi (2016) notes that practices can become objects of knowledge by providing explanations of what is going on. Therefore, while individual practices can be viewed as ontological objects of study, they are also epistemological objects that are part of the way in which knowledge of everyday activities is produced. This study therefore uses practices as both ontological and epistemological objects.

In using practices as epistemological objects, the study takes an interpretive stance, where the meaning given by people is used to understand the social phenomena they are engaged in, and the objects used therein (Bryman 2016). Using practices as epistemological objects in interpretive research directs attention to the accomplishment of practices in real life, enabling the capture of the practices' context and meaning from the experiences of those who undertake them. The in-depth examination of real-life experiences of office workers provide explanations of the arrangement of practices by examining, the material and temporal nature of practices (Nicolini 2009). While the actions that take place in the enactment of practices enable interpretation of what is going on, practices are also subjective, as their meaning and context may differ each time and from one person to another (Nicolini 2009, Miettinen *et al*. 2009). It is in practices, however, that participants ascribe meaning to the use of object and spaces and order action (Reckwitz 2002). Though an interpretivist stance is prone to subjectivities, the subjectivity in interpretivism enables the incorporation of the office workers' intentions and preferences, what motivates their selection of the practices and how they are enacted, and ultimately the time and place of office work practices.

5.4   Application of theory

In examining the influence of office work practices on office configuration, this study focuses on the configuration of the office during the enactment of office work practices and the modifications made to the configuration as office work practices unfold. The theoretical framework detailed in Chapter 3 expounds the use of social practice theory as a lens to conceptualise office work and the spatial-temporal arrangement of objects and spaces used in its accomplishment. This brings materials into focus as part of everyday life, given meaning by the roles assigned to them and the human activities associated with them.

Noting that practices have human agency and are socially mediated (Schatzki 2006, Nicolini 2012, Kietzmann 2013), this research considers office workers as the human agents of office work practices, thanks to whom the meaning behind the roles given to the materiality of those objects can be examined. Further, noting that the meaning of different actions that constitute work and the significance of different times and places in a workday are socially constructed and understood from the viewpoint of the worker (Rosengren 2015), then those who carry out social practices know the actions they carry out, the materials used, the time and place, the significance of their 'world' and the context of the practices. Whilst acknowledging the wide range of theories on practices, Gherardi (2016) and Schatzki (2010) agree that practices are situated in contexts and settings, and practices order sequences of events and materials (human and non-human) required for their performance. Since the study considers social practices as a means of understanding social reality and that reality unfolds in the enactment of practices as they take place in the social, as outlined in section 4.3 above, individual practices are studied as objects of inquiry and as epistemological objects that are part of how knowledge is produced.

The dynamic nature of office work as highlighted in the literature was reviewed in Chapter 2, noting also that the objects used, the intentions of office workers and time and place of work

are constantly changing (Rosengren 2015, Hopp *et al*. 2008, Kingma 2019). Additionally, the preferences of office workers are unique and the expectations that office workers have of the suitability of the office for office work may vary their perceived satisfaction, as well as the work being accomplished and roles that the office fulfils (Palvalin *et al*. 2016, Rasheed and Bryd 2017, De Been and Beijer 2014). Since the meaning attached to material entities is transitory and negotiated over space and time by the practices being enacted, as elaborated in Chapter 3 (3.3.1), drawing in particular from the work of Whyte *et al*. (2007) and Rosengren (2015), it is expected that some meaning lent by practices is retained, and this may become the dominant meaning that influences material arrangements. Since changes in work practices have the potential to influence how material entities are set up and used in the enactment of practices, and therefore lend new meaning and identity to the material entities, it is expected that the meanings that are retained will be attributed to the dominant roles of material entities and their configuration. Noting that office work practices are dynamic, with objects, space preferences and the intentions of office workers continuously changing, in addition to examining the underlying meanings lent by practices, it is necessary to try to examine the meaning that is retained as the changing practices unfold.

In addition to being used to interpret meaning, social practice theory is also used to conceptualise the office, using materiality and the meaning attached to material entities and material arrangements. Orlikowski (2006) observes that materiality acts as 'scaffolding' to performances by providing extension, complementarity, and linkages to human agency. The notion of scaffolding suggests roles that material entities play in providing linkages during the enactment of practices, including in the relationships between the material entities used and the office workers' actions. The concepts of materiality and meaning in social practice theory are used to help explain the physical attributes of material entities and their relationship with the enactment of practices in the spatial-temporal re-arrangement of practices and objects. To understand the influence that change of practices exercises on the roles and configuration of material entities in the environment where the practices are carried out, the meaning of the practices and the meanings assigned to the material entities used during the enactment of practices need to be examined. Though it has been suggested that the examination of real-life actions using social practice theory may not be used to generalise or predict the outcomes of similar studies (Feldman and Orlikowski 2015), the findings from real-life contexts are useful in increasing understanding of situations, exploring and identifying relationships and explaining social life (Miettinen *et al*. 2009, Feldman and Orlikowski 2011). Investigating 'what is going' on during the enactment of the practices and examining practices themselves makes it possible to explain and interpret the changing meanings and material arrangements.

Though inductive research is used to interpret what is going on during the enactment of practices using theory, the study does not apply a purely inductive approach, but also adopts elements of abductive research, where theory is used to explain relationships between the enactment of practices and the configuration that supports it. Using social practice theory to understand office work, the study employs the theoretical concepts to develop the empirical enquiry as well as to interpret the observations made.

5.5   Research methodology

In the development of the methodological approach towards the investigation of the influences of time and place of office work and the relationship between office work and office configuration, the following were considered:

  i. The key purpose of the research, i.e., to improve understanding of what goes on towards the accomplishment of office work and the office configuration that supports it.

  ii. The context and body of literature that forms the background to the research.

  iii. The theoretical framework used to investigate office work and interpret the relationship between how office work is accomplished and the configuration of the office setup.

  iv. The established methodological approaches that are suited to address the research questions.

Though distribution of office work to alternative workspaces such as homes, co-working spaces and third spaces has been lauded as the introduction of new ways of working (NWW) (Leclerq-Vandelannoitte 2021, Kingma 2019), recent studies on these new ways of accomplishing office work have observed that the physical setting of office work fulfils a wide range of roles that shape how work is accomplished (Endrissat and Leclerq-Vandelannoitte 2021, Skogland and Hansen 2017). However, while office work and norms of work are organised and enacted in the physical space (Beyes and Hold 2020, Jarzabkowski *et al*. 2015, Skogland and Hansen 2017), the combination of material and virtual objects in office work has altered the time and place of work (Kietzmann *et al*. 2013, Kingma 2009) making the office work practices flexible and unpredictable. Additionally, office work is diverse and complex, and how it is accomplished is shaped by office workers' intentions and preferences and the requirements of the work (Boell *et al*. 2016, Göçer *et al*. 2018). While offices are configured to provide physical conditions that support work (Brunia *et al*. 2016, Fiege *et al*. 2013), office work is continuously changing and shaped by, amongst others, office workers' preferences and intentions.

In seeking to obtain insights into the preferences and intentions of office workers during the enactment of office work practices, the selection of methodology is guided by its ability to provide details of, and to obtain explanations and meaning about what is going on. Discussing the research gaps that result from methodological choices, Appel-Meulenbroek *et al*. (2018) argue for a combination of research methods in studying the workplace. While quantitative approaches have been used to collect data on aspects such as office ventilation, temperature, lighting, aesthetics, layout, acoustic and visual privacy, a qualitative approach helps in incorporating subjective elements that arise from the experiences of office workers. The qualitative approach can also help the researcher to see and hear what individual office workers are doing and saying as they go through their day and explore the meanings they attach to what they do, the routines and norms they follow and the choices they make. Since

office work is dynamic and the intentions and preferences of office workers are likely to change continuously, the investigation of practices enacted to accomplish the work enables the examination of subjective aspects such as workers' preferences in the selection of spaces and objects they use, as well as the meaning of those preferences and the norms and routines being observed.

As discussed in Chapter 2 (2.1), the office may be examined at a macro level from an organisational perspective or a micro level from the office workers' perspective. While understanding the macro level provides an institutional context, it does not allow an exploration of the influence of organisational norms, or office worker preferences and intentions, on the accomplishment of work, and the implications of the office setup for the everyday enactment of practices. Furthermore, the macro level organisational perspective does not help to provide insights into what informs and supports office worker preferences for the time and place of work as it is enacted. Unlike the macro level, the micro level is where a more in-depth understanding of the enactment of office work may be developed as part of the office workers' everyday practices and the arrangement of office work practices amid other everyday practices. Noting that the use of practices as epistemological objects helps to focus on the details and allows for the capture of subjective meaning and multiple interpretations (Nicolini 2009, Gherardi 2016), the investigation of practices at a micro level has the potential to capture the ever-changing aspects of office work practices.

Since space and its configuration are expected to change as practices change (Merriman *et al* 2012, Jarzabkowski *et al* 2015, Shortt 2015), the qualitative approach provides ways of gaining an in-depth description of practices and the setting in which they are enacted. Additionally, a qualitative approach allows the researcher to seek explanations of the situations as well as develop understanding of the real-life situation using multiple sources of data (Bryman 2016, Yin 2018). While the real-life experiences of an individual participant or a group of participants cannot be construed to be the representative of the reality of an entire population (Brewer 2000) and studying everyday practices may not be typical or representative of all practitioners, real-life experiences help to provide explanations of social life. In order to investigate what office workers are doing as they go through their day and seek the meanings they attach to what they do, the routines and norms they follow and the choices they make, the research is designed to explore office work from the real-life experiences of office workers in their natural setting and allow interpretation of the implications of their intentions and actions.

5.6   Overall approach

To investigate in depth what office workers do, how and where they accomplish office work and their interaction with the physical setting, this research takes a qualitative approach and applies various techniques used in ethnographic methodology in the quest for in-depth understanding of the real-life settings of office work. In discussing the methodological assumptions of organisational ethnography, Schubert and Rohl (2017) noted that both human and non-human entities are intertwined in the accomplishment of practices, and they cannot

be separated in the setting in which they operate. Additionally, using an ethnographic approach provides a means to observe interactions between office workers, their interactions with the office setup and the application of organisational norms and requirements of work (Sage and Dainty 2011). Though the qualitative approach may use various strategies such as phenomenology, grounded theory, ethnography, case study, and narrative approach (Bryman 2012, Yin 2018), by applying ethnographic methodology, the research focuses on ordinary activities in a natural setting and explores the meaning that those ordinary activities have to the people who are carrying them out (Brewer 2000). Ethnography facilitates the use of multiple data collection techniques and tools that cross-check the accuracy of data capturing and knowledge of the cases (Brewer 2000, Bryman 2016, Yin 2018).

Taking the view that practices have intelligible objectives, human agency, structure, and routine and are interconnected (Nicolini 2012, Schatzki 2010, Reckwitz 2002, Southerton 2013), the research design takes into consideration the influence of office worker intention and preference on the arrangement and enactment of practices. Noting that the benefits of ethnography as a methodology include 'microscopic' observations of the small and mundane events of everyday life (Brewer 2000, Hammersley 2018), the research design adopts procedures used in ethnography to investigate the enactment of office work practices at a micro level. While ethnography can provide detailed descriptions and help explore the causal process involved, it is usually weak when generalising to large populations or testing causal claims (Hammersley 2018). However, by using ethnography in the context of case studies, an in-depth investigation of cases can be attained using different data collection methods and multiple data sources (Yin 2018).

Everyday practices are situated within the context of where they are carried out and they are understood by those within that context (Orlikowski 2006, Schatzki 2007). The study of everyday work practices using a situated case provides the context in which work practices are enacted, captures organisational norms, and enhances understanding of the participant's everyday working environment (Orlikowski and Yates 2002, Kietzmann *et al*. 2013, Dearden and Wright 1997). Further, to mitigate the risk of multiple organisation contexts and norms, this study uses a single organisation as a situated case. Leclercq-Vandelannoitte 2011 notes organisations are constituted in practices, and values, meaning, interpretations and power relations are articulated in discourse and embodied in artefacts, rules, norms and practices across space and time. In using one organisation as a situated case, the study will seek to understand the roles of the office and the physical objects used in office work practices in this specific context. Therefore, this study uses a single case as a situated case from which participants are selected.

5.6.1   Two-stage research design

The data collection was designed as a two-stage project. The first stage was an exploratory enquiry designed to help develop data collection tools and to refine the range and selection of the participants in the situated case (Bryman 2016, Raskams and Haynes 2019). The second

stage was a more focused enquiry involving the situated case, with data collection in two-phases, all as summarised in Table 5.1.

	Stage 1- Exploratory enquiry	Stage 2 – field research using a situated case	
Participants	6 participants drawn from different organisations	Phase 1 • 10 participants drawn from the situated case	Phase 2 • 4 out of the 10 participants in Phase 1
Data collection procedures	Cross-sectional	Longitudinal - time sampling	Longitudinal - Episodes
Data collection methods	Semi-structured discussions	• Observation • Work logs • Semi-structured interviews	• Participant observation • Semi-structured interviews
Period	September - October 2018	June to July 2020	January – February 2021

Table 5.1: Two-stage research design

Source: Author

5.6.1.1 Stage one – exploratory enquiry

Taking the view that social reality is best understood though the experiences of the people engaged in it, the study sought to conduct a general exploration of office work first-hand based on the experiences of office workers. However, noting that the office work practices are dynamic, and the experiences of people are broad and not measured in standardized objective terms, an exploratory enquiry was carried out to refine the empirical enquiry and research methodology of this study. The enquiry drew six (6) participants from financial institutions, non-governmental organisations and state corporations based in Nairobi, Kenya. The participants were drawn from the disciplines of Human Resources, Finance, Customer Relations, and Construction Management. Through semi-structured discussions, participants described their work activities, the time sequence of activities in the working day, the location of the activities and the objects they used to accomplish office work. The exploratory enquiry sought to produce a first-hand description of the office work enacted, the routines of office workers and the choices and adjustments they made as they selected the time, nature, and location of their work. The participants were not observed. Since the exploratory enquiry used only structured discussions, the respondents gave information based on their own assessment of their work and the perceived convenience of the work's time and location. Without observation, it was not possible to examine closely the office work activities and the various times and locations of their performance.

While the structured discussion provided insights on the time and place of work, they were not sufficient to relate the actions of the office workers to the decisions they made on the

time and location of work, nor to the office configuration. Although the enquiry highlighted a potential relationship between the purpose of the work practices being carried out and the selection of time and place, it was necessary to observe directly the facilities and setup of the workspace in order to understand the choices the office workers made. Additionally, changes in the configuration of the place where office work was carried out and how the objects were incorporated and used as work unfolded also need to be observed. It was noted that to distinguish between the pre-set configuration and the re-arrangements made by office workers, it was necessary to capture the interrelationships between organisational norms and work practices on one the hand, and the use of objects and spaces on the other.

Since the exploratory enquiry drew participants from different organisations, it was inevitable that they would have different experiences of organisational norms such as work procedures and the prefigured office configuration. This made it difficult to distinguish individual preferences and routines from the norms set by their respective organisations. The enquiry noted that, while the time and place of office work might be shaped by the intention and choices of office workers as well as the facilities available in the office setup, a more focused enquiry on a single case could help to distinguish organisational norms from preferences exercised by office workers. The lessons learnt from the exploratory enquiry were thus used to develop the second stage of data collection, which consisted of field research focused on a single case study with participants drawn from one organisation.

5.6.1.2   Stage two – design of field research

To investigate office work practices through the experiences of office workers, the researcher's organisation was selected as the situated case to enable in-depth observation of what different office workers do at a micro level (see section 5.6.2 below). While a single case can be used in a holistic research design that covers the whole organization (Yin 2018), it enables investigation of office work from multiple office workers without variation of the organisational norms each office worker is required to comply with. This second stage covered field research and applied ethnographic methodology to collect data in two phases. Additionally, this study applied a longitudinal observation with elongated periods to enhance understanding of unique situations and changes (Yin 2018) that occurred during the enactment of office work practices.

5.6.1.2.1   First phase of field research

The field research was designed to have two phases of data collection. The first phase targeted 10 office workers (primary participants), selected from different departments, and their co-workers. The data collection was intended to investigate the typical day of an office worker and focused on what the participants were doing at different time bands of the day, the configuration of the place of work, the objects they used and how office work practices were interlinked between participants and their co-workers. The data collection entailed

observations and semi-structured discussions with the primary participants. Each primary participant was observed for one day and semi-structured discussions were held at day's end to explore each worker's understanding of what they did during that day. Where physical observation was not possible, participants were requested to maintain a log that described the work they did at a particular period of the day, the objects used, and the location where they carried out the work, as well as the activities and roles of their co-workers. At the end of the first phase, the space's facility managers were interviewed to acquire additional information on the space's set-up and infrastructure. The facility managers were also requested to describe the office arrangements provided in the various spaces and any changes they observed, as well as the types of adjustment requested by the participants.

The observation method used was the observant participant method, where the researcher was embedded in the activities being carried out in the office. The researcher participated in many of the activities observed and contributed to the meetings while at the same time being an observer. Due to the interruptions occasioned by the dual role of the researcher as an office worker, in some observations the researcher took video recordings and provided a work template for the participant to complete. The researcher sought prior consent from the participants to take videos (see 5.9.2 below). The observations carried out in the first phase were captured using an observation template. Additionally, the semi-structured interviews were recorded and transcribed. The data collection tools are further discussed in 5.7 below.

During the first phase of the field research, it was noted that the static video equipment did not always follow the movements of the office workers and missed the actions they carried out when they moved from their workstation. Additionally, video recordings were interrupted at times by visual obstructions rendering the recordings incomplete as they did not capture the intended time span. The use of video recording was not continued to the second phase, but the taking of photographs was introduced to enhance the capture of details on the configuration of the setting. In preparation for the second phase, the observation template developed for the first phase was improved to capture the data in the same format as the work log. Additionally, the questions guiding the semi-structured interview were enhanced to include a discussion on the context of the work and rearrangements carried out by office workers. The data capture tools are further discussed in 5.7 below.

5.6.1.2.2 **Second phase of field research**

The first phase of field research resulted in the observation that the actions carried out towards the accomplishment of the intended work did not take place in continuous sets of action in the same location. Instead, the actions being carried out and the time and place where they were done continually changed. Additionally, the co-workers and objects used also kept changing. While the first phase of field research observed specific periods of time, it did not observe all the actions performed by the participants in the course of accomplishing the intended work. The second phase of field research was developed to observe the accomplishment of tasks being carried out by the participants without being limited to when and where they took place.

Being an in-depth observation of office work at the micro level, the second phase of data collection was built on the first phase by selecting 4 of the 10 participants observed during the first phase of the field research. This second phase of field research went beyond investigating a typical day to further interrogate the details of the actual work being carried out on the day of the observation. To obtain a rich context and an in-depth description of what was going on as well as the setting of the work, the data were collected using participant observation, informal discussions, and semi-structured interviews to form a rich description of office work.

The participant observation entailed shadowing the participant and focusing on the spatial-temporal sequence of actions as they took place, what office workers were doing, the characteristics of objects used, how those objects were used, the spatial-temporal arrangement of the practices and objects as the work was accomplished and configurations of the objects as the office workers used them. After the interaction between participants and their co-workers during the accomplishment of office work had been observed, the second phase of field research also observed in-depth spatial-temporal arrangements of practices and objects during those interactions. This expanded the participant observation to the co-workers as they enacted practices related to the work being accomplished. Of particular interest were the practices that were collectively enacted, the collaboration that took place, the shared objects incorporated in the practices and the reconfigurations that took place during the enactment of practices. Additionally, informal discussions were held with the participants and their co-workers during the observation. At the end of each observation, semi-structured interviews were conducted to obtain information about the purpose and importance of the work to the participant and co-workers, the purpose of the actions observed, the role that the objects played and the contribution of the observed physical characteristics and configuration of the objects towards accomplishing the practices.

The data from participant observations was captured in field notes and photographs and thereafter written out in rich text that described the setting and what was going on. Data from informal discussions was used to enhance the rich text. The semi-structured interviews were recorded and transcribed for analysis (see further below at section 5.8). The rich descriptions comprising of data collected using participant observation, informal discussions and semi-structured interviews were arranged in episodes that describe the actions and events towards accomplishing the intended task. The development of 'episodes' of work is detailed in 5.2 below.

5.6.2   Selection of Case and participants

The study drew participants from the same organisation to reduce the variations in types of organisational policy, procedures and norms that affect how office workers conduct their work. To observe the participants' day-to-day work as it is enacted and to capture the context within which it is accomplished, the study uses a single organisation as a situated case. Noting that everyday practices are situated within the context of where they are carried out and they

are understood by those within that context (Orlikowski 2006, Schatzki 2007), the researcher identified the organisation where she worked as a suitable situated case, due to the wide range of departments and high concentration of office workers in its head office. The situated case is an electricity distribution and retail company with approximately 600 staff carrying out office work in its head office. Though the organisation has offices across the country, the headquarters of the organisation were selected as the setting for the study. This was intended to reduce variations in the office arrangements, hierarchical relationships, and procedures for gaining access to different locations. Selecting her organisation as the situated case gave the researcher the opportunity to utilise her background knowledge of the office setup, the organisational structure, and the participants' roles in the organisation. While the real-life experiences of an individual participant or a group of participants cannot be construed to be representative of the reality of an entire population (Brewer 2000), the selection of participants in the situated case can be taken from a cross-section of staff in the head office from different departments and rank.

Noting that practices are interconnected and that communities of practitioners are formed in order to perform the accomplishment of work and according to the organisation's norms (Kietzmann et al. 2013), the selected participants were observed together with their co-workers. The participants in this study were categorised as the primary participants, while the co-workers were categorised as secondary participants. The primary participants were drawn from various job roles with the key consideration being that they should be persons who were provided tools, data connectivity and virtual private network rights by their employer to enable them to carry out office work both inside and outside the office. Such people are therefore expected by their organisation to undertake work even when they are outside the office. A total of 10 selected participants drawn from various departments and different hierarchy levels in the organisation structure were observed together with their co-workers.

The secondary participants were drawn from the co-workers identified by the primary participants. The secondary participants included facility managers and designers of the spaces where the primary participants worked. These were identified by the primary participants' referral, using snowball sampling. In a study on managing collaborative spaces, Kokkonen and Vaagaasar (2017) used snowball sampling to identify interviewees. Snowball sampling extends the purposeful selection of additional respondents who have been authenticated through referral (Biernacki and Waldorf 1981). The secondary participants were drawn from other levels of management including supervisors, subordinates, peers, and service providers to the primary participant. The relationship and nature of the interaction between each primary and secondary participant were identified through the data collected from the primary participant. The study targeted 5 secondary participants for each primary participant. Such secondary participants were checked for duplication where they may have been selected by more than one primary participant. Where there were duplicates, care was taken to ensure that the field notes distinguished between the activities they carried out with different participants, so that the interactions of each participant were correctly recorded.

5.6.3 Role of the Researcher as a Participant

To capture information in the real-life setting of office work, participant observation was used to record what office workers were doing and to identify the norms they complied with and how they used the spaces and objects. While participant observation allows the researcher to shadow a participant to observe in-depth ordinary activities in a naturally occurring setting while retaining independence as an observer (Bryman 2016, Yin 2018), one of the limitations is that participants are likely to behave differently when being observed, resulting in questions about the validity of data. Further, the possibility of a subjective relationship between the observed, the observer and the context of the observation also contributes to questions about the reliability and legitimacy of the data (Brewer 2002). Noting the usefulness of participant observation in observing the setting, concurrent activities, and context of actions as they happen on-site (Miettinen et al. 2009), but also aware of the caveats mentioned above, to avoid affecting the setting, the researcher observed from a distance and used video recordings where possible instead of constantly shadowing the participant.

Recognising also that the researcher is a colleague of the participants, she took time off from work on the days when the participant observations were scheduled, to avoid taking on work roles during observation. Though the purpose of the researcher's presence in the setting was communicated to the participants, it was noted that viewing the researcher as a staff member provided a more natural setting for observing office work, since the office workers carried on with their work, generally appearing unconcerned about the fact that they were being observed. While the natural setting was maintained, it was also noted that the physical presence of the researcher invited normal work discussion from participants and their co-workers with some co-workers thinking that the researcher was paying them a work visit and participants interjecting with conversations on normal work matters during the observations. Though this did not interfere with the natural work setting of the office work practices, the normal work interactions with colleagues at times disrupted the researcher as she carried out her observation.

5.6.4 Time-frame sampling

Time may be structured in duration, patterns, or events as well as in routines formed by the practices that are enacted (Southerton 2013, Moran 2015). The temporal structure of a day includes interdependent and commonly accepted time sequences in everyday life such as mealtimes, work times and commute time (Orlikowski and Yates 2002, Moran 2015). Although observation of office work carried out in the duration of a working day is likely to capture the events and junctures of the day, the long periods of observation may be difficult to recall and describe in adequate detail. Additionally, observations carried out using duration or patterns of a day or at various junctures, e.g., end of day or start of day or at scheduled events, could skew the observation of a typical day. For systematic data collection and to ensure a full range of coverage of a typical day, time-frame sampling was carried out using time-bands of a day that included routine activities as well as extraordinary events that

occurred during the sampled time. This study uses mealtimes, breaks and work hours to establish general time bands for an office worker's day. The time bands are arranged in four phases, comprising: between the beginning of a working day and mid-morning coffee/tea break; between coffee/tea break and lunch break; between lunch break and the end of official working hours; and working late / after official work hours. To observe a wide range of periods across a working day, participant observations and work logs were structured according to the temporal structure of a typical day. To cover all the working days of a week, the participants were allocated for observation to different days of the week.

While the time bands are based on the temporal rhythms of a typical day, it is considered that the work being accomplished may not be limited within time bands. To capture the practices employed in the accomplishment of office work without these limitations, the data was arranged in 'episodes' of work (detailed in Chapter 6 [6.2]). The episodes were identified according to the categories of work detailed in Chapter 2 (2.3.3), namely concentration, communication and collaborative work. Noting that set schedules and timetables of everyday routines, such as when a workday starts and ends, create awareness of 'a long working day' and 'working late' that describe work time that extends beyond generally accepted or set work hours (Rosengren 2015, Orlikowski and Yates 2002), the use of episodes facilitated the extension of the period observed beyond the set time bands. This enabled the episodes to capture the temporal sequence of the performance of a practice contributing to the fulfilment of a task without these limitations.

5.6.5   Overview of Methods

Studies of offices and office work have used a range of data collection methods, such as surveys, interviews, and document analysis, to assess the suitability of office environments (Haynes *et al*. 2019, Boell *et al*. 2016). To obtain deeper understanding of what office workers do and how they carry out work in their workplaces, observation, photography, and sketches have also been used to capture details of office work activities across space and time (Laurier 2004, Sivunen and Putman 2019). Further, qualitative methods allow researchers to observe and listen to the participants: this enables researchers to gain an understanding of their everyday life and helps them to interpret the meanings that practitioners attach to the events being observed (Bryman 2016, Silverman 2013).

This study used semi-structured interviews and participant observation as the main data collection methods and incorporated tools such as worklogs and observation templates. For work undertaken in the office, participant observation of work carried out at different time periods of a workday were supplemented by work logs, in-depth semi-structured interviews, photographs, and sketches. In settings with limited access, such as homes and third spaces, work logs maintained by the participant were used as substitutes for participant observation. Participant observation allows the researcher to shadow a participant to perform in-depth observation of ordinary activities in a naturally occurring setting while retaining independence as an observer (Bryman 2016, Yin 2018) while work logs provide a record of participants' activities (Bittman *et al*. 2009) in situations where they were not observed.

Interviews were used to explore the respondents' experiences, motives and opinions, and the outcomes of their activities (Mazmanian *et al*. 2013). Photographs and sketches provide the arrangement and appearance of the workspaces (Paoli and Ropo 2017, Sivunen and Putman 2019).

Noting that biases arising from researcher's views, experience and theoretical background can hinder authenticity in data collection (Bryman 2016, Yin 2018) and that potential self-consciousness amongst participants can cause participants to behave differently when being observed (Hammersley and Arkinson 2007), the researcher sought to employ multiple data collection methods to crosscheck and complement the data captured.

5.7 Data collection tools

To carry out the collection of data, the researcher used observation templates and work logs that captured the activities of office workers at various time periods and locations as well as semi-structured discussions to capture the office workers' explanations of the activities they performed and the choices they made. The data collection tools used during the first phase included self-recording by the participant where observation by the researcher was not possible due to access restrictions following COVID-19 pandemic (further discussed in 5.9.1 below). During the second phase of data collection the restrictions had been reduced, allowing interactions in the office to resume. The return to normalcy enabled participant observation to be carried out.

The information obtained by observation and self-recording focused on what the office workers were doing to accomplish office work in the various workplaces, the objects they used, spaces and times of work and how the office workers were involved with their co-workers in the accomplishment of work. The observations took note of the processes and setting of office work as well as the arrangement of the space where the work was being carried out and the time when it was carried out, as well as the objects used in the accomplishment of work. In a study carried out by Laurier (2004), the observation of work was carried out to capture office work being done as the office worker was driving, allowing the researcher to observe in detail how the office worker handled the objects of work in different situations while driving. Additionally, Sage and Dainty (2011) use observation to capture the interactions between office workers in an office setup. In this research, observation is used to capture how the spaces and objects are arranged and rearranged to accommodate the activities in which the office workers are engaging at a particular time and place. The researcher used observation templates *(attached as **Appendix I)** and field notes to collect data on the accompanying and enabling infrastructure that facilitates the activities of office work. The variations of activities at different times within the day were noted and the adjustments of space arrangement with each interaction were captured using discussions, photographs, sketches, or video clips. Additionally, sketches, drawings, photographs, and video clips were used to collect detailed information on the arrangement of objects and spaces.

The arrangements, rearrangements, and adjustments of space over time are an integral part of this study. Therefore, documents such as photographs and sketches of the spaces were used to examine the spatial arrangement and compare the changes that have been effected in the space during its use. The use of photographs and floor plans to capture spatial arrangements complements the observation notes to provide a rich description of space (Sivunen and Putman 2019, Green and Myerson 2011). Where available, drawings and space arrangement standards were used to provide information on the set-up that was planned for the space for comparison with the current set-up and its use (Sivunen and Putman 2019).

Semi-structured interviews and informal discussions were conducted with office workers to obtain information on the reasons for the activities they were carrying out, the selection of objects and spaces and the time preferences for accomplishing the work. The interview outline is attached in *Appendix II*. Information from the discussions and interviews clarified and gave context to what would be seen during observation or self-recorded by the participants. Semi-structured interviews provide explanations from participants on work patterns, the choices made on the selection and use of objects and the decisions made on practices being enacted (Leclerq-Vandelannoitte 2011, Green and Myerson 2011). While semi-structured interviews provide an opportunity to obtain information that cannot be observed, open-ended questions allow participants to provide broad answers and go into details that they found relevant to the discussion, such as challenges encountered (Sage and Dainty 2011). To ensure that discussions were held in the context of the observations carried out, informal discussions took place during observations and semi-structured interviews were conducted within the same day as the observations.

5.8   Data capture

The data were collected through observation, informal discussions, semi-structured interviews, and photographs. In recognition of the spatial location as the physical and social site of the practice (Schatzki 2006), the observation was limited to the physical location where the work was situated and the captured the physical setting and the unfolding acts that took place in the performance of work. Data collected by observation was captured through field notes, short video clips and photographs. The observation took note of the setting where the office work was being carried out, the office arrangement, and the activities that were going on. The observation also took note of the objects used and how the objects were used as well as the interaction between the participant and their co-workers. The informal discussions were used to obtain more information about the activities, the common identities and roles of spaces and objects and to obtain a general understanding of the objectives of the activities being carried. When high interaction was ongoing, photographs were taken at intervals of 1 -3 minutes. In periods of low interactions, photographs were taken at longer intervals of up to 20 minutes. Occasionally, short video clips were also taken to capture movement that could not be captured in the field notes at the time of observation.

During the observation, the researcher took field notes using a laptop. The field notes comprised the activities that the participants were doing and saying as the activities unfolded, the sequence of the activities, the objects they used, the interactions that took place, the artefacts produced and the setting of the workspace. The notes detailed the time, and brief descriptions of what was going on were written in chronological order. Information provided during informal discussions was also included in the field notes. The photographs taken were used to complement the field notes and capture details of the settings and interactions. The photographs and video clips were used to capture the work setting and details of interactions that could not be written in the field notes. The additional details from the photographs and video clips were typed and arranged chronologically according to the sequence of events that took place during the observation period. The additional details from photographs and video clips included physical attributes of objects, such as their spatial configuration, the spatial-temporal sequence of their use and movement, and the visible characteristics of the objects, as well as the bodily movements of the participants and their co-workers as they used the objects and interacted with each other. With gestures and other bodily movements being part of 'sayings' (Schatzki 2002, Llewellyn 2008), the observation took note of the bodily movements that the participants used to communicate with co-workers.

During the observations, the researcher held open-ended informal discussions with the participants and their co-workers on the setting of the workplace, the meaning of the terminology they were using as they conversed amongst themselves, what they were doing and the general norms of the work. The information obtained from the informal discussions was used to enrich the field notes.

At the end of the observation period, the researcher held semi-structured interviews with the participants and one of the co-workers with whom they worked closely during the observed period. The semi-structured interview questions were open-ended and designed to obtain information on the significance of activities being undertaken, the spatial arrangement of the setting, the spatial arrangement of activities and the reasons for the preference of objects used. The interviews with the participants and co-workers were recorded. The recorded interviews were typed into text and transcribed to include non-verbal communication observed during the interviews. The interviews were open-ended and semi-structured, allowing the participants to tell their own story freely in descriptions of their work, what it was about and what it meant to them. The interview also allowed digressions, giving examples and stories that were not directly related to the period when the participant was observed. While speaking freely, participants recounted their experiences and expressed their preferences, describing the challenges they faced, the possible consequences of their actions, and their dislikes, as they contextualised the reasons for what they did, the purposes and capability of the objects they used and the choices they made. Due to the varied disciplines and hierarchy levels from which the participants were drawn, the participants used different terminology to describe their activities and the significance of what they were doing and the spaces and objects they used. Additionally, the open-ended nature of the semi-structured interviews resulted in a varied depth of responses to questions posed. During the transcription of the interviews, transcripts were matched with the activity and setting that the participant was referring to when answering the interview questions.

The data collected, using observation, informal discussions and semi-structured interviews, was arranged in 'episodes' corresponding to the actions and events that occurred in the process of accomplishing the intended task (see Chapter 6{6.2}). The episodes for analysis were identified using the categories of office work discussed in Chapter 1 (1.3.3). To relate the significance of the role of objects and spatial configuration to the performance of work, the purpose and intent of each episode was used to provide context to the arrangement of actions that made up the episode. An overview of the data analysis is presented in Chapter 5.

5.9   Limitations

Ethnographic techniques have been criticised for being prone to biases that may hinder the authenticity of data collection, such as the researcher's personal views and experience or theoretical background (Brewer 2000, Bryman 2016, Yin 2018). Furthermore, the researcher's use of her organisation as the situated case has the potential to introduce biases arising from her personal views, experience in the organisation and theoretical background. While these biases can hinder authenticity in data collection (Brewer 2000, Bryman 2016, Yin 2018), the research employs multiple data collection methods to crosscheck and complement the data captured. Additionally, though the presence of the researcher among the participants is considered to cause the people observed to be self-conscious or act differently, therefore hindering observation of a real-life setting (Hammersley and Arkinson 2007), the researcher's status as the participants' colleague confirms the authenticity of the real-life setting and of the observation.

Objections are raised to the qualitative approach because of its limitations in respect to the credibility and transferability of its findings, which are restricted to similar contexts (Silverman 2013). The application of ethnography as an additional methodology has addressed this difficulty: the multiple methods enable triangulation by using more than one data source to capture real-life everyday experiences, enhancing the credibility of the study and the transferability of its findings (Brewer 2000, Suchman *et al*. 1999). The limitations of the study are detailed in Chapter 13(4).

5.9.1   Access Restrictions

The planned data collection activities included participant observation, with the researcher being embedded in the workplace, and face-to-face discussions with the participants. However, the COVID-19 pandemic struck as preparations were being made for data collection. Consequently, data collection was rescheduled to allow for adjustment of the data collection tools used in the first phase to recognise the restriction in physical movement (see COVID-19 impact statement attached as **Appendix III**). Instead of observation, the participants were requested to maintain a log of their activities using a self-recording observation form (attached in *Appendix IV)* which was sent to them by email and on

completion returned by email or another electronic medium. Furthermore, instead of face-to-face semi-structured discussions, the discussions were made via telephone or video call. The respondents were also requested to take photographs of the spaces they were using for office work. The second phase of data collection was not hindered by the prohibition of physical interactions in the office, as the COVID-19 restrictions had been reduced, making observation and face-to-face discussions possible.

5.9.2   Ethics

Prior to the commencement of the field research, the researcher sought ethics approval from the University's Research Ethics Committee via the School of Built Environment Subcommittee. The ethics forms are attached as ***Appendix V***. Upon being granted the ethics approval by the University, the researcher also sought a license to carry out research in Kenya (the license is attached as Appendix ***VI***). The researcher was granted a research permit by the Kenyan Government Agency that authorises research. Permission was also sought from authorised persons in the situated case to carry out research in the organisation (the authorising letter is attached as ***Appendix VII***).

Participation in the study was voluntary, and participants were requested to give consent before participating. The information sheet provided to participants and the consent form are attached as ***Appendix VIII and IX***. Noting that participants were work colleagues of the researcher, to mitigate any influence based on work relations, participants were informed that the information provided was for academic purposes only. Since the data collection involved access to personal and company information, prior consent was obtained from participants. Participants' consent was also obtained before recording semi-structured telephone interviews, taking video recordings or photographs, or using documents from participants' workspaces or work. Where recording and use of participants' documents was not permitted, detailed field notes were used.

Direct participant observation took place in the office setting. During data collection, care was taken to uphold the privacy of personal spaces and details that the participant considered as private were not included in the data. In inaccessible settings, work logs and telephone interviews were used. Participants were informed that confidential personal or commercial information that might be inadvertently given would be blanked out from records. To protect the identity of participants, the data were anonymised in the reports. During the research period, the data was stored in a password secured computer accessible only to the researcher. Physical documents were stored in the researcher's lockable cabinet.

6 Chapter 6   Data and Analysis Overview

In view of the interconnection of practices as they depend on each other (Nicolini 2009) and recognising that practices are organised in spatial-temporal arrangements (see chapter 3 [3.3]), the data were organised to link together interconnected practices to reflect the norms of office work and the work the office workers intended to accomplish. Since teleo-affective formations of practices enjoin activities to meet a certain objective (Welch 2017), the structure of the data organisation was based on enjoined activities that met common objectives.

6.1   The situated case

The participants for this study were selected from a situated case (see Chapter 5 [5.6.2]). Noting that the data collected is concerned with the experiences of office workers (see Chapter 5 [5.8]), it is helpful to consider and distinguish the macro and micro spatial and practice levels of office work (see Chapter 2 [2.1]). While at the macro level, the office building is the designated office building with alternative workplaces including homes, the company recreational facility, on transit and third spaces, at the micro level, the designated workplace of the individual worker is the desk and its immediate surroundings.

At the micro level, the desk is considered the main location of work and the activities carried out by the office worker are spatially positioned about the designated desk. The office worker's workstation is an allocated desk that is considered the assigned place of work and exists within the office set-up of the department that the office worker belongs to. The workstation comprises the desk assigned to the office worker and other objects within the office worker's workspace that are also assigned to the office worker. These objects include cabinets, chairs, computers and telephone headsets. Though the official work hours are between 7.45 am and 5 pm, arrival at the designated office and occupation of the allocated workstation marks the beginning of a typical working day. Despite the availability of technology that enables the distribution of work to other locations, the office workers' designated workspace is their desks. During interview, an ICT manager stated:

> I have a choice of location [between home and office], but I only use one location which is my desk [the office]. Because I find it comfortable. I also find it accessible to me and other people. In a very short period, I can get to know and interact with the people who are concerned with what I am doing. I am always here at my desk. (ICT Manager, June 2020)

The prefigured office setup of the situated case is arranged in departments with office workers assigned desks in an open office set up according to their rank, with enclosed offices assigned to senior executives. During the observations, movable objects such as desks, partitions, whiteboards, and printers were static, while computers and telephone extensions were static on the desk and tethered to the external wall by data and power cables that served

them. Chairs, printed documents, notebooks, laptops, and mobile phones were continuously rearranged as practices were enacted. The participants were drawn from different departments and spread across different floors in four locations referred to as Buildings A, B C and D. Therefore, each participant had a designated desk at the micro level and a designated building at the macro level.

6.2   Development of episodes

Using a two-stage approach, the data drawn from observations, semi-structured interviews, informal discussions and photographs were organised into 'episodes'. The use of episodes served to provide sets of activities and enabled the study to reflect on different types of office work activities.   Episodes provide a framework within which a sequence of events and activities can be structured as every episode has an 'initiation' point where activities towards a determined objective are detached from the other ongoing activities, followed by the 'conduct' of interconnected activities carried out within the episode, and a 'termination' when the objectives of the interconnected activities are met (Jarzakbowski and Seidl 2008). While each episode may be distinct, with practices being spatial-temporally arranged within episodes, episodes help to organise practices in the wider spatial-temporal arrangement at the organisational level (Jarzakbowski and Seidl 2008, Comi and Whyte 2017). Since episodes can be viewed as interconnected everyday practices intended to meet a determined objective, they provide a means of grouping interrelated practices for analysis (Jarzakbowski and Seidl 2008, Comi and Whyte 2017).

While Jarzakbowski and Seidl (2008) use episodes to define the beginning and end of the sequence of practices to guide their analysis, Comi and Whyte (2017) use episodes to identify the settings to be observed and thereafter analyse related episodes. In this study, the data collected were arranged into 'episodes' comprising office work practices that were enjoined and carried out to accomplish the intended work. The episodes comprised an event or a cluster of interconnected activities in which the participant was involved with the aim of accomplishing a specific task. Noting that an episode can be terminated before the objective is met (Hendry and Seidl 2003), the spontaneous termination of activities related to the specific task was considered as the end of an episode. The beginning and end of episodes was identified from multiple perspectives, including observation, document analysis and interviews, all of which were sources of data. In this study, the setting, chronology of events and activities in each episode were detailed using information drawn from observation notes, informal discussions, interview transcripts, and documents produced and used by participants, as well as photographs.

In the first stage, a detailed description of the setting, organisational norms and context, and the activities carried out by office workers during the observations was developed using information from the field notes, the informal conversation and details selected from the photographs and video clips. Secondly, the description was organised in tables matched to the transcripts of interviews and information gathered from the informal conversations held with the participants and their co-workers. The interviews and informal conversations

provided information on what was happening when the observation was carried out and explanations of the setting were captured. Thirdly, photographs of the setting and activities were included in the table and displayed alongside the appropriate descriptions and interview transcripts. An extract from the table is attached as **Appendix X**. From the table, a rich description of the setting and activities was developed using a combination of coordinated information from field notes, interview transcripts, photographs, video clips and informal discussions.

In the second stage, the following steps were taken to develop a rich description of each episode. First, the activities captured in rich descriptions were arranged chronologically with the information given during the interviews being included to give context and to capture the experience and views of the participants and their co-workers. In addition to the enactment of practices, active interpretation of the sequence of activities was used to identify the arrangement of practices across space and time (Fahy *et al.* 2014). Where the rich description did not convey meaning and identity, active interpretation of the setting was also used to place descriptions in the context of the situation observed, using the researcher's knowledge of office work and the organizational norms of the specific case.

Because social practices can also be understood as 'regular, skilful performances of (human) bodies' (Reckwitz 2002), care was taken to note the gestures and bodily movements observed when workers were using objects and engaging in interactions with co-workers. Secondly, the unfolding actions of the participants were described in detail and the unfolding conversations were used to discover the purpose of actions, the role played by the people involved and the objects used. The explanations given during the interviews and informal discussion provided additional information on the functional and symbolic attributes of the objects used and the significance of those attributes during the performance of the activity. Thirdly, the spatial arrangement of the setting, the norms and the context of the episode were described by matching observation notes with photographs and excerpts from the transcript.

Four episodes were developed for analysis: the document preparation episode, the planned formal meeting, the whiteboard episode and the unplanned informal meeting. Because the developed episodes comprised common everyday office work practices enacted by office workers, they were categorised accordingly. They were conceptualised as follows, using the 3 categories of office work outlined in Chapter 2 (2.3.3), namely concentration, collaboration, and communication.

a. The document preparation episode was conceptualised as having aspects of both concentration and collaboration work.

b. The informal unplanned meeting episode was conceptualised as collaboration work.

c. The whiteboard episode was conceptualised as communication work.

d. The formal planned meeting was conceptualised in two parts:

    i. Preparation for the meeting as concentration work.

    ii. The meeting itself as communication work.

The episodes are based on data collected from the following participants and their co-workers:

Identifier	Role	Location
Participants		
P1	Projects Officer	Building A, 14th floor
P2	Administration Officer	Building A, 14th floor
P3	Security Manager	Building B, 4th floor
P4	Audit Manager	Building B, 4th floor
Co-workers		
CW1	Projects staff	Building A, 14th floor
CW2	Records Clerk	Building A, 14th floor
CW3	Human Resource Officer	Building B, 5th floor
CW4	Records Assistant	Building A, 14th floor
CW5	Regional staff	Building A, 1st floor
CW6	Architectural Services staff	Building A, 14th floor
CW7	Building Technician	Building A, 14th floor
CW8	Finance Officer	Building B, 1st floor
CW9	Security Installation Technician	Building B, 4th floor
CW10	Property Officer	Building A, 14th Floor
CW11	Projects Supervisor 1	Building A, 14th Floor
CW12	Office Assistant	Building A, 14th floor
CW13	Projects Supervisor 2	Building A, 14th floor
CW14	Team Leader	Building A, 14th floor
CW15	Planner	Building A, 14th Floor
CW16	Investigating Officer 1	Building B, 4th floor
CW17	Investigating Officer 2	Building B, 4th floor
CW18	Lawyer	Building B, 2nd floor
CW19	Communications staff	Building B, 3rd floor
CW20	Safety Manager	Building B, 14th Floor

Table 6.1: Participants and co-workers observed in the four episodes.

6.3   Data analysis overview

The episodes were analysed in three steps: the descriptive coding and categorizing of data, the development of themes and relationships, and finally the interpretation of relationships, using social practice theory.

6.3.1   Descriptive coding

The first step comprised descriptive coding, using the coding structure attached in *Appendix XI*. The descriptions of interest included the actions of office workers, objects used, the defining characteristics of the objects and space arrangements, the roles of objects, and the

purposes of the work, as well as the common norms and the rules observed. Detailed descriptions based on observation of real-life performance of the practices were used to extract the actions that were carried out, the physical attributes of objects and the space configuration as well as the role of objects and spaces in the actions of office workers as the practices were enacted. The contextual accounts given by participants were used to give context to the purpose of the work and the roles fulfilled by the objects and spaces used. Participants' accounts were also used to examine the potential meanings that the participants associated with the practices being enacted and the objects and spaces that they used. The descriptions also included the bodily movement and the sequence of actions that constituted the practices being accomplished as well as the purpose and importance of the work; the use, meaning, and identity attributed to practices, objects and spaces were also coded.

To account for artefacts as material objects produced during office work, the roles of the physical attributes of artefacts were included in the analysis. Additionally, noting that the discussions and interactions taking place in the workplace might be represented by artefacts (Oswick and Robertson 2009), artefacts used and produced during work, such as hard copy correspondence, reports, drawings, and files, were noted and included amongst objects whose roles were categorised and potential meanings subsequently analysed.

In each episode, the activities and roles of objects used were matched chronologically and spatially to identify the spatial-temporal arrangements of roles. The 'doings' and 'sayings' that signified interconnections of activities within an episode were noted, and the physical attributes of the objects used in the continuation or conclusion of the unfolding performance of an episode were identified. The physical attributes that enabled the use of objects and their relationship to the role of the object in fulfilling the action were interrogated. Further interrogation of the spatial-temporal arrangement of objects was carried out to identify the temporal changes in the spatial arrangement of the objects as the enactment unfolded. The description of the setting of each episode included objects whose spatial positioning did not change during the performance of work; those that were affixed to the building components were considered prefigured and static. Additionally, objects whose spatial positioning and arrangement were predetermined by the organisation's standards, and not at the office workers' discretion, were also considered as prefigured. The objects whose spatial arrangement changed as the work was performed were considered movable: their changing spatial configuration was further inspected and the connections between their movement and the ongoing work activities were identified and coded.

To draw out the connections within and across the episodes of work, the relationships between objects and activities at points where actions interconnected were described and categorised according to their roles. This includes objects used by practitioners to convey information during the accomplishment of work. The roles related to enabling continuity or interaction of activities and collaboration between communities of practice (Star 2010, Endrissat and Noppeney 2013), as well as roles enabling convergence through translation, transformation or transfer of information and knowledge sharing between practitioners (Star 2010, Carlilie 2004), were grouped as connecting roles. Objects whose roles were related to separation, termination, and demarcation of spaces, or that acted as barriers between

activities (Blomley 2016, Hopwood 2014) were grouped as performers of boundary roles. The physical attributes of the objects were matched against their functions as connections and boundaries within the activity, between activities and between episodes. Because roles are spontaneously assigned to objects as work unfolds, and the emerging roles and meanings attributed to objects are identified through ongoing 'sayings' and interactions in the workplace (Oswick and Robertson 2009), the roles verbally described by office workers in the course of work and the purpose of the work were attached to objects they were using in the enactment of practices. Further inspection of the spatial-temporal arrangement of objects was carried out to identify the influence of roles assigned to the objects on the spatial-temporal configurations of the workspace and identify linkages between the spatial-temporal arrangement of practices and those of objects. The descriptions of the linkages between objects, activities and spatial-temporal arrangements were coded and categorized for the development of topic themes.

6.3.2   Development of topic themes and relationships

Noting that social practices are interconnected chains of doings and saying and that they are organized in ensembles of interrelated practices that are aided by material arrangements (Schatzki 2005, Orlikowski and Scott 2015), the topic themes were drawn from descriptive codes and developed using social practice concepts of theory, materiality and meaning. Since the site of the organization of practices not only comprises the physical materials but also includes meaning arising from the norms, purpose and understanding of the practices (Schatzki 2005 and 2017), the topic themes included the meaning arising from the intentions and context of the work and commonalities in the specific case, such as collective norms of the use and arrangement of space. The development of themes took into consideration the individual and collective meanings that the practices lent to the material arrangements.

Connections were drawn between the topic themes, to identify relationships between the intentions of office workers, the office work practices and the physical attributes of objects, as well as the relationships between the roles assigned to objects and their spatial-temporal arrangement. Such relationships did not always provide a connection between the work's purpose and the arrangement of objects. This necessitated further analysis of the purpose of the work and the selection of objects incorporated during the enactment of practices. While the relationship between the purpose of work and the incorporation of objects provided insights into what the incorporated objects were used for, it did not always help explain the roles the objects were fulfilling when incorporated into the practices, and how those roles influenced their spatial-temporal arrangement.

To interrogate the relationship between the roles of incorporated objects and their spatial-temporal arrangements, the analysis sought to identify the relationships between the office workers' intentions and the spatial-temporal arrangement of practices. The analysis noted that roles were assigned concurrently or in sequence, necessitating further interrogation of the contribution of the temporal arrangement of roles to the spatial arrangement of practices and the incorporated objects. The analysis also sought to determine whether the concurrent

roles assigned to objects complemented or conflicted with each other as practices unfolded, and how conflicts were resolved in the spatial-temporal arrangement of practices and objects. Considering that the spatial-temporal arrangement of practices was supported by the existing configurations and the rearrangements made to them, the analysis highlighted relationships between the roles fulfilled by objects and the spatial-temporal arrangement of practices and objects.

6.4   Interpretation of relationships using social practice theory

The third step entailed the interpretation of the relationships identified in the empirical data using concepts of meanings and materiality drawn from social practice theory (see Chapter 3 [3.3]). The social practice concept of materiality was used to examine the physical attributes of incorporated objects that supported the enactment of practices. Additionally, the concept of meaning was used to interpret the roles fulfilled by the objects in the incorporation of the office workers' intentions. By drawing on both materiality and meaning, the analysis sought to determine the relationship between the influences of the spatial-temporal arrangement of practices and the influences of the spatial-temporal arrangement of objects.

Noting the role of intention in some of the meanings conferred on practices, and the influence of this on the spatial-temporal arrangement of practices and objects, the analysis sought to further interpret the contribution of meaning to the adjustments and modifications office workers made to the office configuration as office work practices were enacted. This entailed reflection on the relationships between the meanings linked to the office workers' intentions and their response to the material arrangements through the customization or adjustments to the office configuration. The analysis took into consideration the interconnections of practices through various media, including the practitioners, space, time, and objects. Drawing from the concepts of the materiality of physical objects and the meaning of temporal arrangements of practices and the objects used to accomplish those practices (Orlikowski and Yates 2002, Orlikowski 2007, Schatzki 2010), the relationships between spatial arrangements of objects at the time and place where work practices were accomplished were examined. Further, the analysis examined the spatial-temporal trade-offs and adjustments achieved through the use of improvised or adopted material objects to shape practices and the configuration and use of spaces where they were employed.

An analysis of each episode is presented in Chapters 8 to 10. As discussed in the research aims (see Chapter 5 [5.2]), understanding what is going on in the office, and the roles assigned to physical attributes of objects, is essential in understanding the spatial-temporal arrangements of practices as work unfolds and how those arrangements and rearrangements influence the office configuration. Therefore, in each episode, the office set-up is described, and excerpts of the field notes are used to describe in detail the activities of the office workers and the temporal-spatial arrangements of the practices and the objects used. Additionally, excerpts from semi-structured interviews and informal discussions are used to explain what is going on in the episode, the roles assigned to objects and the significance of the activities to the office worker. The excerpts from field notes are presented in italics, while excerpts from

interviews and discussions are presented in quotation marks or as indented text; context is provided where appropriate. Vignettes are used to provide an in-depth illustration of objects or scenes within the episode. The vignettes are presented in text boxes.

7 Chapter 7 Data analysis – document preparation episode

7.1 Introduction

This episode takes place in Building A on 3rd February 2021 from 9.30 am. The work carried out begins as solo concentration work and progresses into collaborative work carried out together with co-workers. In accomplishing office work, the office worker was observed to enact various practices concurrently or in sequence. These practices include working with the computer, reading and writing on hard copy documents, speaking on the telephone, and having an informal meeting (see Chapter 7), as well as printing. The collaborative aspect of work was observed in the spatial-temporal re-arrangement of the practices as information was sought from co-workers and incorporated into the document being prepared. Additionally, the collaborative aspects bring out the distribution of practices beyond the office workers' desks to the nearby desks and spaces as information is collected from online and physical documents and reviewed for inclusion in the document being prepared. The spontaneous transition from concentration to collaborative work and concurrent performance of practices is enabled by the prefigured setup.

The participants and co-workers in this episode:

Identifier	Role	Location
Participants		
P1	Projects Officer	Building A, 14th floor
Co-workers		
CW1	Projects staff	Building A, 14th floor
CW2	Records Clerk	Building A, 14th floor
CW3	Human Resource Officer	Building B, 5th floor
CW4	Records Assistant	Building A, 14th floor
CW5	Regional staff	Building A, 1st floor

Table 7.1: Participants and co-workers in the document preparation episode

The setting

The episode takes place on the 14th floor of Building A. The floor is divided by a central corridor that forms two wings. The corridor also separates the two departments accommodated on that floor. The floor is finished in granite tiles and the corridor is defined by a row of columns and carpeting. In the corridor is a cabinet that is used to store office supplies and shields the office administrator from the corridor. On each side of the central corridor, there is an open office setup arranged in cubicles with a maximum of 6 desks per cubicle arranged in 2 rows of 3 desks and a 1.5-meter walkway between two rows running from the central corridor to the windows. The walkway provides access to the 6 desks and divides the space between the rows. The cubicles are separated by 1200mm high particle board desk dividers that are covered in blue fabric and sandwiched between adjoining desks. The colour of the fabric is the organisation's corporate colour. The desks in the same row are divided by half-glazed 1200mm high desk dividers. All the desks on that floor are

arranged to face the central corridor with the workers' backs to the window in a standard office arrangement. The standard arrangement is extended to the department across the corridor. The office workers being observed belong to the department that occupies the Southern Wing of the floor, arranged as shown in the figure below.
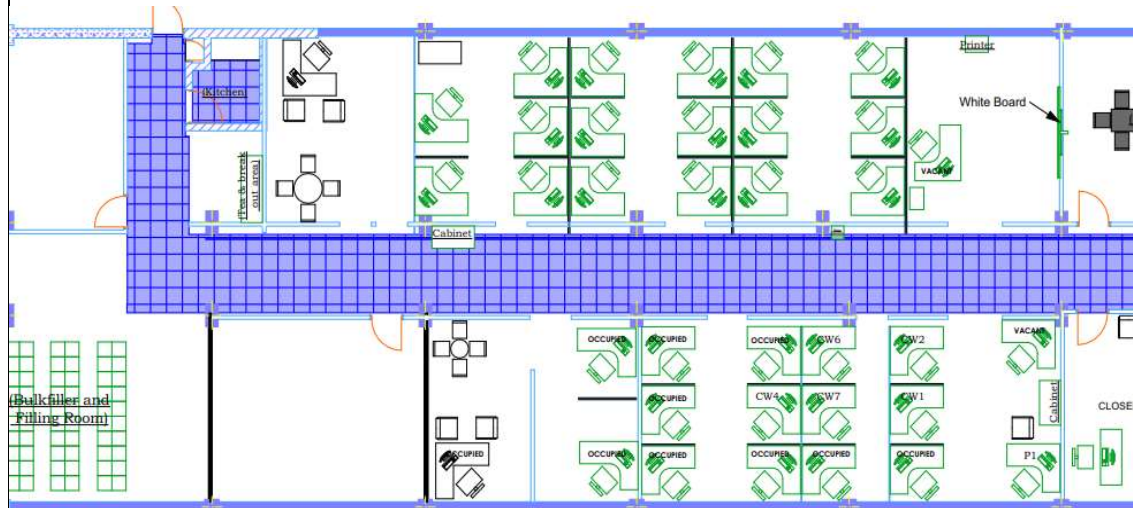
Figure 7.1: Layout of the 14th floor of Building A

P1 occupies a desk that is positioned in the first cubicle of the southern wing of the open office and shares the cubicle with 3 other members of staff [marked P1 on the bottom right of Figure 6.1 above] The cubicle has only5 desks: P1's desk, an unoccupied spare desk that is in front of P1, and 3 assigned desks, arranged in a row across the walkway within the cubicle; they are occupied by P1's co-workers: CW1, CW2 and a third co-worker who is away on leave. P1's desk is a free-standing 1600mm L-shaped desk with a right return and drawers. The right edge of the desk is alongside a full-height fixed partition that separates the open office from the closed office next to it. On the desk is a desktop computer, a telephone extension, the manager's folder, a green file containing appraisal documents, a diary and notebooks. The computer's central processing unit is on the edge of the desk and the screen and keyboard are near the centre of the desk's work surface. The computer cables have been passed through the desk grommet and others are passed along the edge of the desk near the wall, tethering the computer and telephone to the wall. Behind the desk is a fabric-covered work chair which he uses and a free-standing coat hanger with his jacket. In front of the desk is a fabric-covered cantilever visitor's chair, a 900mm high glazed cabinet containing files, and the unoccupied space in front of his desk. P1 is entitled by his rank to the extra space for visitors in front of his desk, and to the cabinet. Therefore, space that would have been taken up by two additional desks is part of his space.

The document P1 is preparing comprises an appraisal form and documentary evidence to support the information in the appraisal form. The appraisal form is an Excel document that is filled in and submitted quarterly. The appraisal form tabulates the goals of the staff and the achievement of each goal. The participant, P1, had submitted a completed form via email to his supervisor and was required to submit documentary evidence of the achievements that he had mentioned for his appraisal to be considered complete. The staff who report to him have also submitted their appraisal forms to him, as their supervisor, and he is reviewing the information submitted by staff in his department as evidence of achievements they have indicated in their appraisal forms. Some of the documentary

> *evidence submitted relates to his appraisal.   The evidence required is drawn from documents held by different people within and outside his department. The assessment of P1's performance during the period under review is based on the information provided in the appraisal and the evidence attached.*
>
>
> *(Field notes, February 2021).*

In this episode, P1 has scheduled practices contributing to the accomplishment of the document preparation; the information to be assimilated is drawn from different sources and prior actions have been taken to ensure that the information is available at the time he requires it. The document being prepared is used to determine the participant's performance rating and has a submission deadline. Submitting a complete document within the required time has a personal impact on the participant and is therefore an important and urgent matter to this office worker. Consequently, a sense of urgency and pressure are associated with the completion of the practices necessary for preparation and submission of the document. This is demonstrated in the concurrent practices that are carried out and the assignment of multiple roles to objects necessary for their performance. This will now be examined.

7.2   The prefigured setup

An observation of the setting shows that, at a macro level, organisational norms influence the provision of the acoustic and visual privacy required for closed and open spaces. The physical attributes that define the office worker's rank include the spatial arrangement, type and size of the office, and the size and type of desks, cabinets and chairs, as well as the height of partitions. During the informal discussions, the interior designer explained that the colours, textures and shapes on the finishes of building surfaces walls and floors, as well as on fittings and furniture, are part of office branding and the furniture and finishes in the office setup conform to corporate colours and are also used to distinguish the spaces of different uses. Therefore, in addition to demonstrating the hierarchy in the organisation, the prefigured setup at the macro level communicates the organisation's identity and differentiates it from other organisations.

While the setting is a standard floor, the prefiguration of the space takes into consideration the functionality of the space and the work to be performed.

> We also have standards which we use so we help them [office workers requesting for space arrangements] understand how we apply the standards and what is possible. The most emphasis is on functionality or functional dynamics. Mainly they lay emphasis on staff who are interrelated, staff who do common things or staff who have related roles and tasks. Functionality and work dynamics, we try to arrange people depending on how they work so that we don't have people in a subsection trying to cross over to the other side. The good thing is that our users and supervisors really

make that possible by telling us where people are interrelated. (Interview with Interior Designer, June 2020)

The prefigured setup is used to enable interaction between office workers in the performance of work. Office workers use the setup to enable interaction with their preferred social network and interactions between office workers of similar and different ranks. The Interior Designer explains the preferences expressed by office workers:

> What they value most is privacy. Most people do not want to feel that they are in an open space and they cling to the half-height partition. So, they value privacy and workstations and the other accessories they own. They also value who they sit next to. There are people who have a '*nyumba kumi'* [close social network of people sitting near each other] and they feel warm around this person, they feel this person has good energy, I feel this person lifts my spirit, I feel this person is a well of knowledge, so they value who they sit next to. (Interview with Interior Designer, June 2020).

Though the office is required to meet a standard, the office setup is continually changing. A member of maintenance staff noted, "*There are always changes because maybe the [organisation's] management rearranges the structure, so we have to adopt the new structure and we have to do the rearrangements.*" The Interior Designer also observed, "*Every time there is a change in regime [new Chief Executive Officer] definitely the regime [new Chief Executive Office] comes with [initiates] changes, new structure, appointments. We have [also] exits from buildings where we are leaving a building to another [relocating from one building to another].*" During office rearrangements the changes include the application of office workers' preferences, as is noted during the interview with P1:

> There is a standard for how the manager [departmental head] is seated, the chiefs [section heads] are seated and how the other staff are seated. So, we must maintain the standard for as long as it works. But other than that, we brought what was working for us in the old location to the new location [building A]. We tried to fix it the way it was because it was already working. So let us have the manager, the secretariat, the property team and then the projects team. In the projects team there was a fight over who sat in the boss's cubicle and who sat on the other side. Only the brave ones like CW2 said let me cross to his (boss's) side because in the other location we didn't have CW2 on this side (boss's cubicle). (Interview with P1, February 2021)

Further to the prefiguration of the setup, at a micro level office workers value their personal space and seek to control its setup and use. CW1 explained:

> My space is within the surrounding partitions. The boundaries are within the partitions. Once you are working you find yourself crossing to your neighbour to get maybe one or two things to add to your project. (Interview with CW1, February 2021)

Office workers interviewed considered the partition as providing visual privacy between neighbouring co-workers and preventing the documents on their desks from spreading to the

neighbouring desk. The half-height partitions, while allowing workers to converse with each other without leaving their desks, were also assigned the roles of demarcating the boundaries of spaces and encouraging or discouraging physical interaction between office workers who, while separated by the partitions, sought to control their personal space. Additionally, in the quest to incorporate their social network in the spatial arrangement, office workers sought to influence interaction around them by sitting near their social groups and away from supervision, while supervisors sought to have proximity and create social links with their subordinates.

While the prefigured setup shaped the interaction within the office, the office workers also exercised their preferences by not using the objects in the setup, such as the telephone extension, temporarily isolating it from the practices they were enacting. Additionally, office workers used the physical attributes of the half-height partition to enhance the physical interaction amongst themselves despite its role in marking boundaries between workspaces.

> It was easier to talk to them [co-workers in the next cubicle] over the partition. Otherwise, I would have had to go round and come back. We are just not used to calling (on the telephone extension) amongst ourselves. I don't think we know the extensions; we rarely use the extensions. (Interview with P1, February 2021)

The prefigured setup is arranged with fixed, static-in-use and movable objects for anticipated use. The use includes the type of work that will be carried out, how it will be performed, the flow of work from one office worker to the other and the modes of initiating and responding to work requirements and communicating the interactions during the execution of work. The organisational norms comprising written and unwritten rules of conduct, work procedures, and corporate identity are part of organisational design considerations in the prefigured setup. Despite the organisational norms, office workers seek to include their preferred social interactions in their seating arrangements in the office. The roles assigned to the physical attributes of objects are not limited to facilitating the work but also include enforcement of organisational norms by enabling their application, while also enabling office workers to incorporate their personal preferences.

7.3   Spatial-temporal arrangement of objects

In this episode, the office worker carries out solo concentration work alone at his desk, but also collaborates with co-workers who provide the information he needs.

> *The observation begins at 9.30 a.m.*
>
> *P1 is speaking on a telephone extension while working on a Word document on the PC and reading the paper documents that are displayed in an open green spring file. The Word document is one of the documentary types of evidence he needs to attach to the document being prepared. On the phone, he is speaking with a co-worker in Human Resources (HR), CW3, requesting the information that he requires for the appraisal. The information is obtained from the HR software that he cannot access himself; he is, however, required to attach it to his submission as supporting evidence. The HR information is to be sent to him*

through email. He checks his email as he speaks on the telephone and then goes back to the Word document he is working on. The green file contains the printed documentary evidence for his appraisal and the documents submitted by his team. Some papers are fastened into the file using the springs while other papers are not filed but are loosely spread on the open file. The manager's folder is also at the corner of his desk, but it is closed. He also has a printed copy of his appraisal, on various parts of which he has made handwritten notes. The printed copy is an older version, and he has a current version which he has opened on his computer. The handwritten note on the printed copy is a list of the evidence that he should include in his new submission.

(Field notes, February 2021)

P1 speaks with CW3 [who is in a different building] via a telephone extension while working on his computer and with hard copy documents on his desk. It is expected that the practices of speaking on the telephone, reading hard-copy documents, and working on the computer will be performed concurrently with reference to objects such as printed documents and handwritten notes. The ongoing telephone call is used to order a document to be sent by email, thus instructing an email practice to be undertaken by CW3. P1's computer is ready for its role as the receiving object, rendering the computer and the telephone complementary objects in the email practice. The telephone conversation ends and is followed by solo concentration work where P1 works on the computer while concurrently using hard-copy documents. The concurrent practices of speaking on the telephone and checking emails on the computer are driven by a sense of urgent need for the document being requested. Additionally, the concurrent practices of using the computer and reading the hard copy documents are driven by the need to include the information in the hard copy documents in the document he is preparing using the computer. The complementarity of the objects is observed in the concurrent use of the computer to access virtual documents and the use of other objects, such as physical documents on the desk.

The enactment of concurrent practices is enabled by the complementarity of objects that are within reach and those on standby ready to be incorporated into the bundle of practices that make up the document preparation episode. The purpose of the telephone call creates the need for the subsequent practices of retrieving the email and assimilating the information to the document being prepared. Other artefacts in the green file, such as the appraisal form and the evidence collected so far, are kept on standby in that file as part of the temporal and spatial arrangement of objects on the desk.

At 9.31 a.m. paper documents placed on the desk surface are rearranged. The green folder is open and placed on top with the notebook beneath it. The blue folder [Manager's folder] is set at the far left of the desk. Appraisal documents have been moved closer to the participant. The computer keyboard and mouse are moved to a position next to the appraisal documents and within reach. The participant is reading a document on his computer while referring to the printed hard copy appraisal with his handwritten comments and the other documents on his desk. The Excel document open on the computer screen is his performance appraisal form. He rearranges the loose documents into the green file, closes it and sets it aside. He places the green file side by side with the manager's folder on

the far-left corner of the desk. He also opens his notebook at a specific page and spreads the open notebook in front of him on the left side of the desk. He pulls out his printed appraisal document and other documents from the green file and places the printed appraisal in front of him between the notebook and the file. He refers to the notebook as he browses emails looking for a specific email. He opens the documents window on the PC. He goes back and forth between the document folder on the PC, the Excel document and the email.

(Field notes, February 2021)

The central processing unit and monitor are in a static position on the desk throughout the episode; the keyboard and mouse, however, are constantly rearranged relative to the physical documents such as files, folders, and notebooks in readiness to be incorporated in the concurrent practices that are unfolding. During the period of solo contraction work, the computer is assigned the role of capturing additional information from printed documents for inclusion in the virtual documents on which P1 is working, as well as retrieving information from other virtual documents sent to him via email or available online. As the concurrent practices of working on the computer and reading printed documents continue, the printed documents are placed side by side with the computer keyboard within the office worker's arm's reach and reading range. During the unfolding of the practice, movable static-in-use objects around the office worker, such as the desk, partitions, and central processing unit on the desk, become 'fixed', even though their physical attributes make them movable.
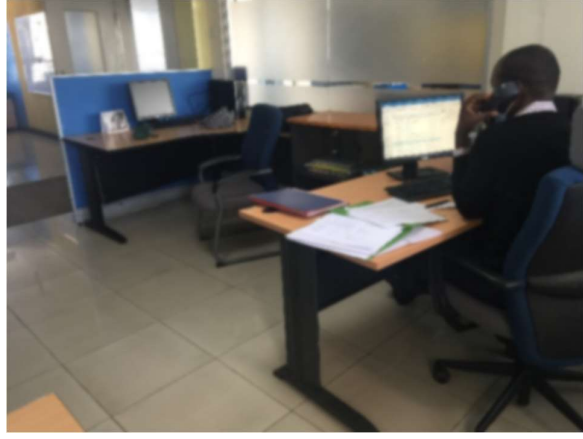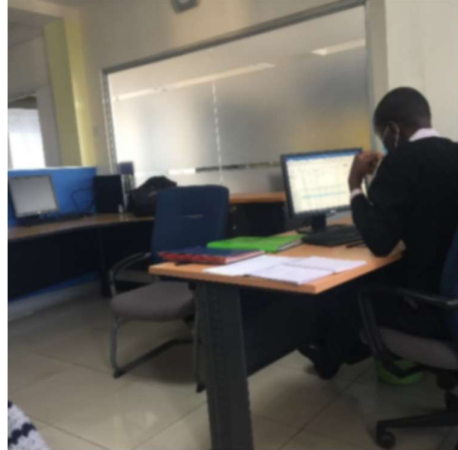
9.31 am	*9.37 am*
P1's desk arrangement at the beginning of the episode. The green file is closest to the worker, and he is referring to printed documents while speaking on the telephone.	*The items on the desk have been rearranged. The notebook is closest to the worker, followed by the printed appraisal form. The manager's folder and green file are furthest from him.*

Image 7.1: P1's desk arrangement
(Field notes, February 2021).

Movable objects, such as tethered objects, desks, cabinets, and partitions, become temporally static during the performance of practices while untethered objects and physical artefacts continue to be moved when in use. The temporal static state of movable objects maintains the prefigured spatial arrangement at the micro level.

7.4 Spatial-temporal rearrangement of practices in transition from concentration to collaborative work

The document preparation involves the collation of documents provided by P1's co-workers and the assimilation of the information from the various documents into the document being prepared. The documents being collated are both physical and virtual documents while the information being assimilated is retrieved from physical documents, such as printed documents in the green folder and handwritten notes, as well as virtual documents such as soft copies sent via email or retrieved from the shared online folders. While the document preparation is solo concentration work by P1, its completeness requires the use of physical and virtual documents obtained through collaboration with other co-workers. Transmission of virtual documents electronically via email or shared online folders enables the office worker to carry out the collation of documents through virtual collaboration without physical interaction with co-workers.

Disruption of virtual collaboration

9.48 am. P1 is reviewing physical documents brought to him by CW1. He notices that his computer is not connected to the server and he cannot access the shared online folder. He requests CW, to give him the telephone number of the ICT support team. CW2 brings a handwritten piece of paper to P1 with a set of telephone numbers for the ICT support person written on it by hand.

With the handwritten piece of paper before him, he peruses his cell phone and dials a number. He is calling someone in ICT and lodges a complaint that he cannot access the online shared folders. As he is speaking on the phone, he calls out to CW1 and asks him if he can access the shared folder online. A one-and-a-half-meter walkway separates CW1's and P1's desks. CW1 is working on his laptop at his desk. He responds aloud 'Let me check' without removing his eyes from the laptop. Using his mouse, CW1 moves to the 'my documents' screen on the laptop and clicks on some folders. He turns to P1 and says that he can access them. P1 continues the phone call with ICT, opening various windows in the computer as he follows the instructions that ICT is giving him. The conversation concludes, and he goes into the email screen on his computer. P1 says to CW1, 'Let me check the shared folders from your laptop. CW1 agrees, opens the shared folders screen in the laptop and then stands up, leaving his seat to make way for P1. CW1 goes and sits in the next cubicle. P1 shifts the documents he is using from his desk to CW1's desk.

After a few minutes, P1's telephone extension rings. He goes back to his desk to answer the call ICT have made to check if his network is now accessible. He bends over, looks at his PC

> *screen and uses his mouse to manoeuvre around the screen. He sits and continues to use his mouse. He informs ICT that the network is still not working. P1 completes the telephone conversation and returns to CW1's desk, sits on CW1's chair and continues going through documents in one of the shared folders. He finds that some folders are not complete and requests CW1 and CW2 to retrieve hard copies from the physical files. CW2 goes to the filing area and retrieves a file, removes a document from the file and makes a copy, using the printer. CW2 gives the copy to P1 and returns the original document to the file. He keeps the file on his desk.*
>
> (*Field notes, February 2021*)

The computer and the telephone are essential objects for office work and enable collaborative work to be carried out without physical interaction; therefore, the office worker carries out collaborative work virtually and the virtual collaboration is conducted without physical interaction as though it were solo work. With the significance of the episode being urgent, the office worker prioritises the use of telecommunication and online tools to obtain the documents he requires and seeks additional information. The solo work enabled by virtual collaboration is interrupted by the inability of P1's computer to carry out the role of retrieving documents from the online shared folder. P1 explains the importance of objects that enable virtual collaboration:

> The phone was very important because there was information I needed from people who did not sit here with us. So I kept calling them on the extension. I called our HR office and asked them, 'Where is the document?' I could not scan it with the computer, so I used the printer, and the office phone. When I could not get them on the extension, I used the mobile. The computer is everything for us. The network was slow, so I called ICT (Information and Communication Technologies) to fix my network so that I could access the details from the shared folders. I was just imagining what would have happened if ICT could not have restored my folders (Interview with P1, February 2021)

The disruption of virtual collaboration by lack of readiness for data connectivity immediately brings the requirement for physical collaboration with co-workers and the associated distribution of work to the co-workers' workstation. The temporary incapacity of his computer to perform the role of retrieval and display of documents results in an inconvenience that is resolved by the unscheduled spatial distribution of the role from P1's computer to CW1's laptop. Additionally, the dysfunctional data connection has resulted in the movement of CW1 to a desk in the next cubicle. The office workers' desks are adjacent to one another, enabling office workers to continue interacting physically. The practices enacted in the accomplishment of document preparation are spontaneously spatially and -temporally relocated to the neighbouring desk, due to the inability of P1's computer to fulfil its role in the intended virtual collaboration. This in turn spatially and temporally rearranges the practices being enacted by CW1.

The lack of readily available virtual objects results in spontaneous physical interaction amongst co-workers and the incorporation of other objects and practices into the episode. Retrieval of files from cabinets in the filing area, photocopying of documents and refiling incorporates additional objects and extends the spatial positioning of the episode to the filing area and the printing area. To correct the inconvenience and disruption caused by the unavailability of the data connection and the lack of sufficient information in the virtual objects, the practices of retrieval extend to other co-workers beyond P1's cubicle, as far as the filing area.

The shift from virtual to physical objects incorporates the use of handwritten reviews instead of email correspondence. The inclusion of handwriting practices into the bundle of practices in the episode also calls for complementary practices such as physically carrying the document back to the originator or calling the originator to come in person for the feedback. With feedback and information being physically moved from one office worker to the next, the physical interaction incorporates spontaneous informal discussions amongst co-workers, as captured in the following excerpt from the field notes:

> *9.54 am. CW2 turns to his desk, gathers the papers he had to pick from P1 and takes them to CW4. The papers are the supporting documents that the Property required to clarify their contents.*
>
> *9.59 am. P1 is still seated at CW1's desk. CW1 is standing next to him, and they are both going through documents in the green file. CW2 returns with some documents and joins CW1 and P1 in the conversation. The conversation is about the inconsistencies between the project schedule and the documents that have been provided as evidence of achievement in the completion of appraisals.*
>
> *(Field notes, February 2021)*

As the absence of virtual documents in the online shared folder is resolved by the use of hard copies in the physical file, the office worker collaborates with co-workers to retrieve files and collate hard copy documents. Additionally, the need to review hard copy documents requires the involvement of more office workers to accomplish the task. What began as concentration work quickly transitioned to collaboration work.

The deadline for submission and the importance of the appraisal imposes the necessity for urgency and accuracy on the writing and printing practices. The urgency in accomplishing the practices informs the decision by the office worker to use his co-worker's laptop to resolve a temporal constraint caused by the unavailability of data connectivity at the office worker's computer. Additionally, urgency leads to a physical interaction that draws other co-workers into the accomplishment of the intended task through the use of physical documents and the interactions necessary to obtain information and collate it. The failure of data connectivity and subsequent disruption of solo concentration work results in the spatial-temporal rearrangement of office work at the micro level, with P1 using CW1's desk and laptop, as well as the use of physical objects and interactions instead of their virtual equivalents. The

spontaneous spatial-temporal rearrangements are enabled by the ability of the meanings lent by practices to be maintained, as alternative objects and spaces are incorporated into the practices being enacted.
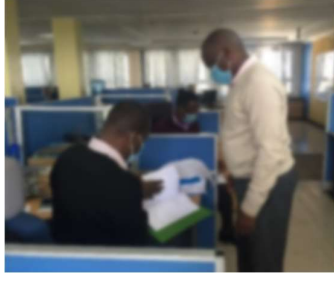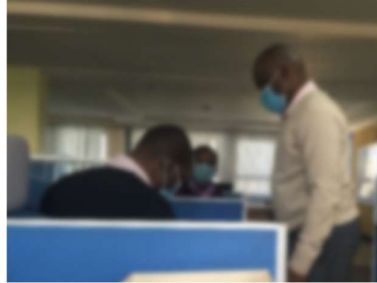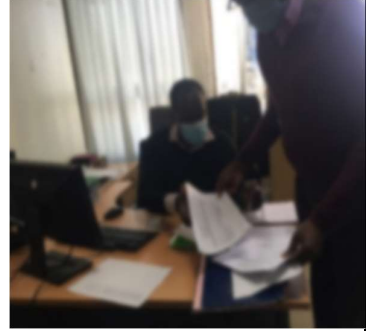
7.5 Concurrent roles interconnecting at the desk

As the episode progresses from solo concentration work to collaborative work, the desk fulfils roles involving transitions of practice as it supports the spatial arrangement of objects on and around it. While the objects of work such as printed documents, notebooks, the keyboard, mouse, and telephone are spatially rearranged within reach on the desk surface from time to time to play their assigned roles, the desk remains spatially static but becomes a location of convergence for physical interaction with co-workers. As concentration work and collaborative work proceed in the same micro space, collaborative office work practices, such as speaking on the telephone and meetings, are intertwined with concentration practices, such as working on the computer, taking notes in a notebook, and reading a document. These concentration and collaborative work practices compete for time and space and are observed to take place sequentially as well as concurrently. Additionally, the unavailability of documents in the online shared folder and the spontaneous collaboration with other co-workers shifts the role of displaying documents from the computer screen to the desk where physical documents are placed. The shift from virtual documents to physical documents results in co-workers bringing physical documents to P1. The collaborative work converts the desk from a location of solo work to a location for collaborative work and the desk forms a platform for the convergence of office workers, information and interconnection of practices and objects used.

> *9.59 am. CW1 is still standing next to his desk. P1 is sitting on CW2's chair: they are looking at the documents in the green file and P1 is comparing the status of work indicated in the physical documents with the status indicated in the Excel file in the shared folders. CW2 returns with some documents and joins them in the conversation. The conversation is about the inconsistencies between the project schedule and the documents that have been provided as evidence of achievement in the appraisals. CW2 sits and looks over the lower part of the partially glazed partition that divides his workspace from CW1's. (Field notes, February 2021)*
>
> *10.00 am. P1 returns to his desk with the green file. The A3 printed project schedule and Manager's folder is still on his desk. He places the file on top of his desk next to his notebook. He arranges the documents he has come with, placing them inside the green file. CW2 has followed him to his desk and is standing by his desk carrying with him 2 other appraisal forms that have their supporting documents; some are stapled, and some are loose. They both look at printed appraisal forms for the staff that CW2 has brought. CW2 shows him the adjustments that the staff have made to their forms. (Field notes, February 2021)*
>
> *10.03 am. CW2 returns to P1's desk with the requested appraisal documents.*

9.59am P1 (seated), and CW1 having conversation at CW1's desk.	9.59 am CW1 overlooks the partition to join the conversation while still seated at his desk.	10.03 am P1 has returned to his desk and has physical interaction with CW2 at his desk.

Image 7.2: Spontaneous interaction at office worker's desk
(Field notes, February 2021)

The need for verification and review of the documents being submitted necessitates a series of informal meetings where documents are reviewed before compilation. Physical interaction by co-workers to assimilate the information that has been transmitted physically from one co-worker to the next assigns the desk the role of a meeting point and platform for the compilation of documents. These roles are assigned to the desk where the compiler, P1, is seated; when he moves, the role assigned to the desk moves with him. The desk assigned carries the significance of the importance of the document being compiled and the urgency of the task, as well as the authority of the compiler. The practices that constitute the review and compilation of documents are not limited to reading and writing by hand on physical artefacts but include communicating with co-workers by speaking on the telephone and physical interaction as well as working on the computer using virtual documents submitted by email. These concurrent roles of work surface and meeting location performed by the desk complement each other as both roles are re-assigned to P1's desk when he returns to his designated desk.

P1 considers his desk as a point of service and guidance to his co-workers. He described the role of his desk: "*Other than the service at my desk, I also guide them on what should go out and what should be contained in it.*" He also described his space in the following terms: "*other than a point of service it is a place of consultation and final thought process. I don't just pass documents so it's a point of 'let's discuss,' 'what are you doing,' 'what's the point of this'.*" However, as regards the document preparation, P1 explained the change of significance of the interaction at his desk. "*When he [co-worker] comes, then he expects me to ask questions about what he is doing. But when I go, he takes me through. When he comes here, he expects me to ask questions [as supervisor], when I go, he takes me through [as peer].*" P1's exercise of his supervisory responsibilities changes the purpose of the work that he is doing to supervisory work, and the desk is assigned additional roles as the place of supervisory control. His co-workers are also cognizant that the interactions at the P1's desk have a supervisor-

worker context. While his desk provides a supervisory context to the supervisor-worker interaction, it is assigned multiple roles associated with supervisory responsibility, including being a point of service and a place for consultation. The roles assigned to the desk as a point of supervisory control as well as a venue for interaction are observed to be accomplished concurrently and the information is brought together, reviewed and communicated back through physical interaction.

7.6 Dynamic nature of the temporal meaning of practices

The urgent need to bring together and review information for timely submission of the document by the deadline necessitates the concurrent performance of practices such as working on the computer and speaking on the telephone as the physical interaction continues. Since the objects used to accomplish speaking on the telephone, working on the computer, compilation of physical artefacts and physical interaction are not the same, their temporal arrangement shifts from concurrent to sequential. This is observed when the physical interaction is briefly interrupted to allow a call to be made on the telephone extension. This call does not go through and the participant continues with the physical interaction. It is after concluding the physical interaction that he calls CW3 on his cell phone. The temporal sequence is captured in the field notes extracted hereunder.

10.03 am. P1 goes to the email contacts and checks the telephone extension number of a member of HR staff (CW3). He dials the extension as CW2 seats at the visitor's chair in front of him holding the documents that he has brought. P1 waits for the call to go through. The call does not go through. (Field notes, February 2021)

10.04 am. CW1 joins CW2 at P1's desk and informs him he has sent a document in the shared folder via email. P1 opens his email and sees the email from CW1. CW2 stands up and leaves, carrying with him the requested appraisal he came with. P1 calls CW3 using his cell phone. (Field notes, February 2021)

10.05 am. P1 makes the call on his cell phone and speaks to CW3 about the status of leave balances. The status of leave balances is required in his appraisal document. He opens the Excel sheet of the appraisal document and refers to it as he speaks on the phone. He goes to the email and back to the Excel sheet as he speaks on the cell phone. He confirms over the phone that the email has arrived and opens the Excel sheet attached to the email he has received from HR that contains the leave balance per staff. He concludes the phone call and places the cell phone on the desk next to his keyboard.

(Field notes, February 2021)

The call on the telephone extension was made with the expectation that CW3 would be present at the designated desk in Building B and prepare the information earlier requested by P1. On failing to reach CW3 on the telephone extension, P1 calls him on his mobile phone in an attempt to reach him irrespective of their location. P1 expounded on this use of the

mobile phone: "*I called our HR office and asked them 'where is the document?'..' scan it'... so, I used the printer, office phone. When I could not get them on the extension, I used the mobile.*" The decision by P1 to call using the mobile phone connoted the urgency with which the document from CW3 was required. On receiving the document from CW3 via email, P1 continued to discuss the contents of the document with CW3 over the mobile phone. The telephone conversation on the mobile phone was carried out concurrently with opening the email and reading the document on the computer. This virtual collaboration between P1 and CW3 as they reviewed a virtual document via mobile phone brings about a convergence of practices that enable collaboration with an office worker in another building. While the purpose of using the mobile phone was to reach CW3 irrespective of his location, the purpose of the call itself changed to include a joint review of the submitted document. The changes in the purpose of the mobile conversation between P1 and CW3 not only resulted in a temporal shift in the role and context of the use of the mobile phone but also a temporal shift in the meaning and purpose of the practices enacted. The temporal change of meaning lent to the practice of speaking on the mobile phone is also reflected in the concurrent practices enacted by P1, such as working on the computer, thus incorporating the use of the computer while speaking on the mobile phone.

7.7   Incompatibility of practices – disruption

Despite the urgency of the document being prepared by the collaborative and solo concentration work observed, the performance is suspended upon the arrival of a co-worker from another floor. The unscheduled meeting that follows conflicts with the document preparation as the desk where the compilation is being carried out becomes the venue of the unscheduled meeting.

Disruption

CW5 comes to P1's desk and finds that P1 is not there. P1 is at the tea place serving himself a cup of tea. CW5 works in the regional office that is on the 1st floor of the same building. CW5 usually visits the 14th floor to follow up on various items that are being facilitated by the central office. Today's visit was not previously scheduled. CW5 says that he has some pressing items he wants to discuss with P1 and P1's co-workers.

P1 sets the green file with the appraisal documents on the side of his desk and continues to discuss CW5's concerns about various issues including the Building D renovations project. CW1 had been assigned to the renovation project and is listening to the conversation. In front of him, P1 retains the manager's folder and the certificate of completion that is on top of it together with his printed appraisal form that has handwritten notes on it, his notebook and the project schedule printed on A3 paper.

After a short while, P1 removes his appraisal document and cell from the left side of his desk table and places them on the right return. He also moves his cup to his right. The left side of the desk surface, which is the space on the table between him and CW5, is now clear. He

---

> *opens his notebook and places it before him as he calls CW1 to join them at his desk. CW1 drags his chair to P1's desk. CW1 has also come with a writing pad. Ps leads the conversation and CW4 makes suggestions about the scope of the renovations project. P1 tells CW1 to bring a drawing related to the project.*
>
> *CW1 comes with a printed drawing and the meeting between CW5, CW1 and P1 begins.*
>
> *(Field notes, February 2021).*

The objects on and around P1's desk are rearranged to accommodate the unscheduled meeting with CW5. An additional chair is added, and the physical artefacts related to the document preparation are removed from the surface that is to receive physical artefacts for the unscheduled meeting. The desk becomes a venue for an unscheduled formal meeting and the desk surface becomes a space for displaying this main artefact, an A3 size drawing.

CW5's visit is not compatible with the document preparation activity; thus, the two could not progress concurrently. Consequently, the practices associated with the document preparation activities are postponed making way for meeting practices and the unplanned informal meeting is inserted amid document preparation. P1 explains the postponement of the document preparation:

> If you look at my list, and for me I do a lot of coordination for the region. …When he arrived [CW5, from the region] you realise I even put my appraisal aside and I pulled my items for the region. Before he even put in [his request], I had removed my items for the region. Because CW1 has been seconded to handle items in CW5's region I had to pull him. That is why I stopped doing so many things and said let me be clear with this one once and for all because he doesn't get an opportunity to be here [come to the floor] often. I also do not get an opportunity to sort out their issues. For any external person, we give them attention more than others… That was important because... I had to put all my thoughts so that I had no distractions. You also noticed that I would say [to those who called on the phone] 'I will give you feedback'…'I can't give you feedback right now... so, for me, it is to have a working space and put all my thoughts together and listen to them without distraction to come up with a decision. (Interview with P1, February 2021)

Though the physical interaction and practices of retrieval of documents and review of documents were the same for both the document preparation activity and the unscheduled meeting, the office worker chose to attend to the unscheduled meeting first. This disruption resulted in a rearrangement of the objects on and around the desk created by removing physical artefacts that related to the document preparation and adding those related to the unscheduled meeting. Additionally, a chair was added on the walkway next to the desk temporarily incorporating the walkway as part of the meeting area. The disruption of the space arrangement acted as a physical marker that the document preparation episode had been suspended and a meeting was taking place. The physical change also signifies the change of role of the desk from the workstation to the meeting table. CW1 captures the change in

the interview: "*Once we meet there, it signifies a meeting area and not an office. You could see we interrupted [*removed and set aside*] the papers that were around [*on the desk surface*]."*

The change of priorities by the office worker influenced the temporal arrangement of practices and in turn the spatial arrangement of objects in and around the workspace. The temporal rearrangement elevates the reason for the disruption to a meeting and not a visit (see Chapter 7). P1 explained, "*Yes it became a meeting someone else came in between and all of a sudden it was like an informal sectional meeting.*" The elevation of the visit to a meeting gives the disruption legitimacy and significance, and in turn, temporarily reassigns the desk from the roles it was fulfilling as a place of solo and collaborative work and supervisory control aimed towards document preparation to that of a meeting area.

7.8   The intersection of practices

The end of the episode is marked by the submission of the completed document. The submission is carried out both physically and virtually. The virtual submission comprises scanned documents and a soft copy of the appraisal being sent via email to meet the submission deadline. The physical documents are sent later by internal mail. The preceding practices of reading physical and virtual documents, receiving email on the computer, and speaking on the telephone all converge into a review of documents conducted by editing virtual documents on the computer, printing the virtual documents so that they become physical documents, and collating the physical documents. The virtual documents converge at the office worker's desk through his computer and the printed documents converge on his desk in the green folder.

The submission

P1 edits his appraisal on the computer to include information received from his co-workers. He retrieves reviewed physical documents from the green file and goes with them to the printer where he makes photocopies of them. CW1 is compiling the soft copies of documents, perusing each document required and sending it to the printer. P1 reviews the printed hard copies and finds one of them unsatisfactory. P1 goes to CW1's computer to correct the unsatisfactory document and sends it to the printer.

CW2 retrieves documents from the box file that contains previous appraisal records and goes to the printer to make copies and scan selected documents. P1 picks up the green file and the documents that are on his desk and joins CW2 at the printer. While standing at the printer, CW2 and P1 review the printed and copied documents together and arrange them into one batch of physical documents. They scan the batch of documents to P1's email. P1 hands over the green file to CW2 for compilation of the physical documents.

CW2 retrieving hard copies to be scanned.	*P1 and CW2 at the printer with the hard copies they are scanning them to virtual documents*
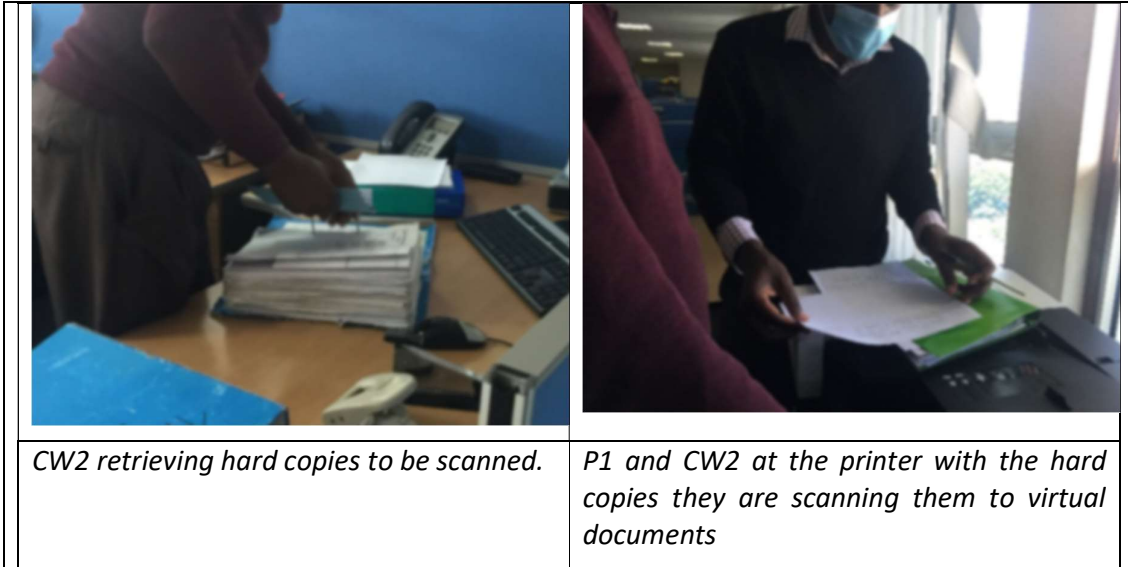
Image 7.3: translation of physical to virtual documents

P1 returns to the desk and opens the email window on his computer and retrieves the draft he started earlier in the morning. He is writing an email to forward a soft copy of his appraisal together with the scanned and soft copy supporting documents that they have collated with CW2. The documents form evidence of the achievements he has indicated in his appraisal. He completes the text of the email and starts inserting the attachments. He refers to the notes on the printed copy as he moves documents from various emails to this email. P1 sends an email to the GM [his supervisor] containing a soft copy of his duly completed appraisal and supporting evidence. He reviews the green file CW2 has compiled that contains the appraisal and printed supporting evidence.

(Field notes, February 2021).

P1 describes the submission:

> … it [the completed appraisal] becomes a document to be shared by the person who is to be communicated with. I have already shared it by email. Because I cannot be in their location physically, I have told them, 'Please receive a copy of the document (an attachment via email). Later you will receive a hard copy file.' What I sent I also filed in the shared folder as a soft copy. So, I have finished and deleted it from my list (of things to do in the notebook). (Interview with P1, February 2021)

The interconnection of collaborative and concentration work practices at the desk was enabled by the prefigured spatial arrangement of the desk, the objects and the supporting infrastructure. Practices such as making a phone call using the telephone extension, checking email on the computer, or printing were enabled by the prefiguration of the telephone extension and computer on the desk and the connection to the printer.

The incorporation of virtual and physical objects was preceded by the convergence of the practices of physical interaction and communication and online interaction and communication. The convergence is observed as being in sequence and not concurrent. The virtual objects, including documents received via email, were incorporated as objects used in practices such as printing. Printed documents received at various times were incorporated as physical objects and arranged in the folder. This sequence of printing practices and the arrangement of printed documents in a folder accommodates the physical attributes of the printer, as it prints one document at a time, as well as the work arrangement of the office worker in collating printed documents. Though practices may be assumed to be enacted concurrently, in actual time, they are enacted in sequence and seem to queue as objects are incorporated sequentially to fulfil various roles as work is accomplished.

While the spatial-temporal distribution of work practices beyond the participant's designated workspace is observed as work spreads to the workspaces of co-workers and other spaces such as the printing and filing area, the incorporation of objects and spaces is supported by their ability to fulfil complementary roles. Driven by the purpose of the work being accomplished, the (un)availability of prefigured infrastructure and the priorities and work norms of the office workers, what began as solo work with virtual interaction progressed to collaborative work with physical interaction. Unexpected circumstances, such as the change from virtual to physical interaction, brought opportunities for objects to play complementary roles in the convergence of practices and physical interaction of office workers as they carried out collaborative work. However, convergence of practices was found unsuited for practices that did not have compatible purposes at the spatial-temporal point where they intersected. The incompatibility of the purpose of the practices and subsequent conflict in meaning lent to practices brought out conflict in roles assigned to objects such as the desk and were resolved by the spatial-temporal arrangement of practices.

7.9   Preferences influencing the selection of practices and role of objects

P1 compiles the document as a virtual object, leading to the use of virtual objects by co-workers contributing to the preparation of the document. By jointly adopting the preference for using virtual objects, the office workers follow the selection of the determining office worker. It is also observed that the adoption of the preference to use virtual objects is not convenient for all office workers, as some information is held in physical objects. The additional practices of scanning applied to convert physical objects to virtual objects is an inconvenience to the office worker who does prefer to use physical documents.

The practices of scanning and retrieving virtual objects render temporarily redundant the use and primary storage of physical records. The online folder used for storage of virtual objects assigns the computer the additional roles of maintaining and retrieving virtual objects while the importance of the filing cabinet's prefigured role as a primary storage for physical documents diminishes. While the computer plays multiple roles such as emailing, data entry, visual display and storage for different purposes, on receipt of the instruction to submit virtual

objects, the office worker suspends other work being carried out using the computer and first submits the virtual objects. The preference of the office worker for the use of virtual objects is received as an instruction ordering the enactment of practices related to the translation and transmission of virtual objects using the computer. By responding to the instruction, the office worker directs practices and objects towards fulfilling the purpose of the work. The physical documents are translated to virtual documents that carry the meanings associated with preparing an appraisal document.

In adjusting to the accommodation of new norms, individual office workers rearrange practices and the roles assigned to objects to suit the significance of the work. By being involved in the preference for using the virtual objects, the office worker complies with an instruction and terminates ongoing practices in order to adopt new priorities, the first of which is to translate physical objects to virtual objects.

7.10 Summary

The summary of findings from the document preparation episode is as follows:

1. In the unfolding of office work only physical artefacts such as documents, files and notebooks were moved in practice. Tethered objects such as computers, telephone extensions and static-in-use objects such as desks, cabinets and partitions were immovable and their spatial configuration was in a temporal static state.

2. The episode was intended to involve concentration work only, but the worker's difficulty in accessing online data meant that the virtual objects were not readily available. The resultant inconvenience was resolved by the distribution of work within the office and collaboration with other co-workers to obtain the information required to accomplish the task. The urgency of the task necessitated a transition from concentration to collaborative work, incorporation of additional practices and spatial-temporal rearrangement of the practices.

3. In concentration work, the computer was the object that brought together virtual documents. However, the lack of data connectivity shifted the role of compilation of information from the computer to the desk and physical documents were used instead of virtual documents. The additional role of the desk as a point of compilation for physical documents was accompanied by the role of providing a venue for physical interaction, as the documents were brought by co-workers.

4. The assimilation of information submitted in physical documents, with information sent via email and communicated verbally on the telephone, saw the concurrent practices of working on the computer and speaking on the telephone carried out together with physical interaction.

5. The document preparation saw the convergence of interactive and non-interactive practices. The practices intersect spontaneously and are spatial-temporally

rearranged to be performed concurrently or in sequence. The spatial-temporal rearrangement of the practices, when they intersected, was guided by the purpose of the practices and work norms. Priority was given to practices whose purpose had urgency.

8 Chapter 8   Data analysis - Unplanned informal meeting episode

8.1   Introduction

The unplanned visit by co-worker CW5 to P1 took place during the document preparation episode (described in Chapter 6). The presence of the visiting co-worker from the region, CW5, created multiple simultaneous work requirements. To attend to both the visiting co-worker and to make progress with the document preparation, practices such as receiving and reviewing physical and virtual documents, reading and writing on the notebook, working on the computer and speaking on the telephone were performed concurrently with the physical interaction with the visiting co-worker. Attempts were made to fulfil multiple purposes through the performance of ongoing practices to satisfy the requirements of document preparation and the needs of the visiting co-worker. The multiple purposes were achieved for a short time through spontaneous interaction with the visiting co-worker that took place concurrently with practices related to document preparation. The concurrent practices were, however, not sustained. The document preparation episode was suspended and an informal unplanned meeting was organised to address one of the reasons for the CW5's visit.

In a typical day, unplanned activities intertwine with prior scheduled activities that the office worker planned to carry out during the day. In describing their typical day, office workers stated that they planned their day to perform tasks at a certain time within the day. However, they also carried out tasks that were not in their plan. The unplanned tasks arose from the activities of other office workers. The participants noted the unplanned activities were part of a typical day's work. P1 explains:

> I can't define it [a typical day]. I have my plans but before I start my planned activities, I get diverted into other things. People walk in, telephone calls. The only planned activities that take place are scheduled meetings. My first thing is to start my email; I start with emails from those from my supervisor and those from my immediate colleagues. Then I go to those from other people. If my supervisor has something to be done, then it supersedes mine. (Interview with P1, February 2021)

The Human Resources Officer noted, "So for you to plan your work, you have to start early before anyone comes to your desk. That is the time you can say it is your time alone when you can be able to work on your plans". (Interview with Human Resources Officer, June 2020).

In accommodating unplanned activities, the office workers anticipate that a typical day will have disruptions and give the first place on their schedule to the accomplishment of high priority work that might be significantly impacted by any disruptions that may arise.

> I usually start in the office. however, before I get out of the house [that is around 5:30am] I usually scan through the email. Just scanning through the emails, particularly from my boss, to see if there is anything that requires my attention. Because sometimes you may ignore those mails and find there is something required

from you before 7am. The same 7am [when you are arriving to work]. So if you have not gone through it you will be in a very funny [unexpected] situation. I have gone through that and what I usually do is that before I get out of the house, I just scan through the mails, if there is anything to be done from her [my boss]. I see if there is anything I need to do very fast before I even come [get to the office]. But otherwise, I try as much as possible to start my work when I am here. (Interview with Human Resources Officer, June 2020)

Not all disruptions, however, are foreseeable. In preparing for disruptions, office workers may adjust the temporal arrangement of work and may perform practices additional to or different from those planned, or reassign roles to objects resulting in a temporal-spatial rearrangement of practices and objects. This includes using their mobile phones to check work items before they get to the office.

At the intersection where the planned and unplanned work activities meet, the planned and unplanned activities may be performed concurrently or sequentially. Temporal arrangements of planned and unplanned activities are also dependent on the conflict or complementarity of roles assigned to objects and spaces when the planned and unplanned activities intersect. This episode examines the intersection of planned and unplanned activities. The participants and coworkers in this episode include:

Identifier	Role	Location
Participants		
P1	Projects Officer	Building A, 14th floor
Co-workers		
CW1	Projects staff	Building A, 14th floor
CW2	Records Clerk	Building A, 14th floor
CW5	Regional staff	Building A, 1st floor
CW6	Architectural services staff	Building A, 14th floor
CW7	Building Technician	Building A, 14th floor
CW8	Finance Officer	Building B, 1st floor
CW9	Security Installation Technician	Building B, 4th floor

Table 8.1: Participants and co-workers in the unplanned informal meeting episode

The scene

This episode takes place in an open office at the 1st cubicle on the southern wing of the 14th Floor of Building A. The cubicle has two rows of desks separated by a walkway (see floor plan in Chapter 6). A typical row has 3 desks. By his rank, the participant, P1, is entitled to have more floor area in front of him to accommodate visitors' chairs and cabinets. His row has only 2 desks, including his own, and the unoccupied desk in front of him is an extra desk that is unassigned.

Figure 8.1: Layout of P1's cubicle

The participant, P1, has been preparing his appraisal document which has a submission deadline. It is among the to-do items listed in his notebook that he plans to complete by the end of the day. The document preparation includes receiving physical and virtual documents from co-workers as well as reviewing and collating them. The participant goes to a co-worker's desk to check the status of a document whose preparation he assigned to the co-worker, and proceeds to the tea area where he serves himself a cup of tea.

10.30 am. While P1 is at the tea area a co-worker from the regional office on the 1ˢᵗ floor of the same building, CW5, arrives at his desk and starts chatting with the office workers in P1's cubicle. CW5 can see P1 walking along the central corridor to his desk and stands by P1's desk waiting for him. P1 walks into the cubicle at 10.31 a.m. carrying a cup of tea. P1 greets CW5 and they chat while standing along the walkway that divides the two rows of desks in the cubicle.

P1 hears his telephone extension ringing. He stretches across his desk to pick up the receiver as he places his cup of tea on his desk and sits in his work chair. CW5 sits at the visitor's chair across from him as he speaks on the phone. The call is from Finance Officer CW8 who is providing the information P1 requires to complete one of the documents in support of his appraisal. CW1 places a document on P1's desk. P1 acknowledges him but does not speak to him.

10.31 a.m. P1 returns to his desk and finds CW5 waiting to see him.	*10.31 a.m. P1 motions CW5 to sit on the visitor's chair. CW1 brings a document to P1 and places it on his desk.*	*10.31 a.m. CW5 sits on the visitor's chair. CW2 stands on the walkway and adds documents to the folder on P1's desk.*
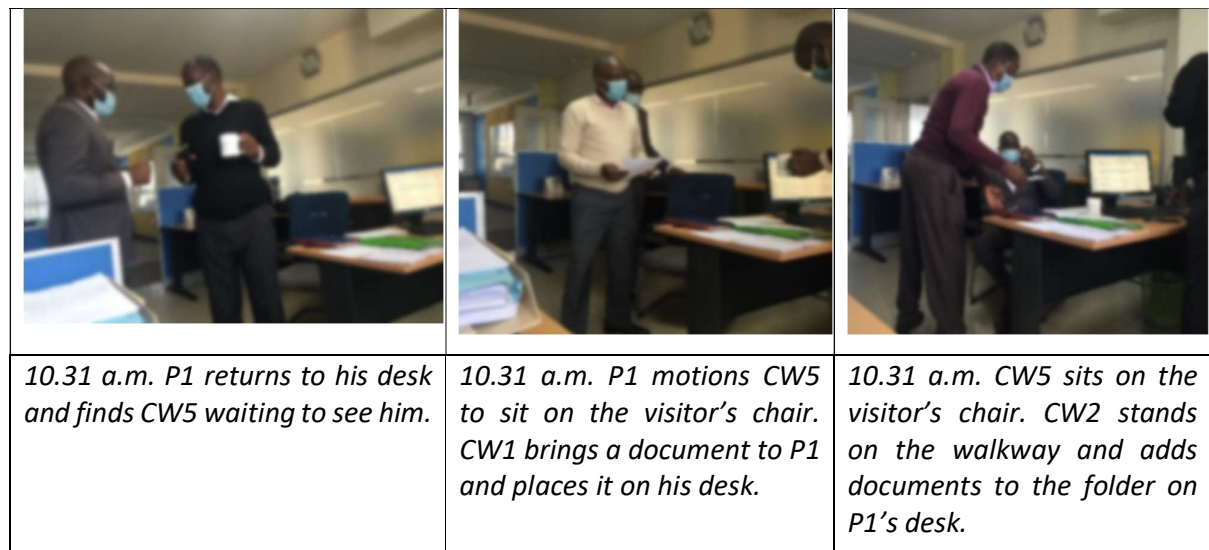
Image 8.1: P1 having tea while having a series of spontaneous interactions with co-workers.

P1 opens the to-do list in his notebook and refers to it as he speaks on the phone. The to-do list includes a list of items concerning the region that require feedback from Finance. P1 takes the opportunity of CW5's presence to discuss the region's items with the Finance caller. P1 concludes the telephone call and turns his attention to CW5, giving him feedback from the telephone conversation with Finance. CW5 informs him that his visit is about two projects being supervised by co-workers who work on the 14th Floor and report to P1. CW1 sits across the walkway and he overhears his project being mentioned.

As CW1 begins to give information about the project, CW2 comes to P1's desk with documents for P1's attention. CW2 speaks with P1 about P1's computer. CW2 and P1 are working on the computer together as CW5 speaks with CW1. P1 looks up to join the conversation between CW5 and CW1 while working on the documents on his desk. P1 asks where CW6 is. CW1 looks over the cubicle partition to check if CW6 is at his desk, but he is not there. As the discussion between CW1 and CW5 progresses, CW2 returns with additional documents. P1 and CW2 review the documents together.

At 10.43 a.m. CW6 walks onto the floor with an A3 size drawing in his hand. P1 calls him as he walks along the central corridor. CW6 detours to P1's cubicle and stands by P1's desk and near CW5. The drawing is not placed on the desk surface: CW6 and CW5 hold it and CW6 shows CW5 the amendments made to the drawing. CW5 is a user representative for a project whose drawing CW6 has been amending. P1 interrupts his interaction with CW2 and looks at the drawing. CW2 returns to his desk leaving CW6, CW5 and P1 discussing the drawing and the project. CW6 leaves at 10.46 a.m. and goes to his desk.
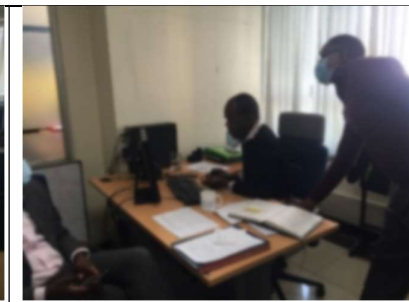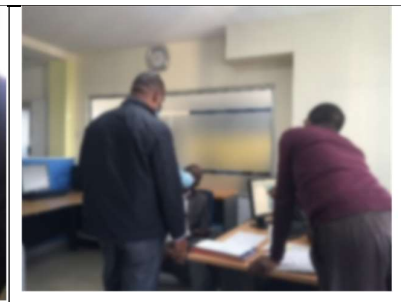
10.35 am. CW1 and CW5 hold a conversation while P1 is speaking on the telephone extension.	*10.43 am. CW2 and P1 work together on the computer as CW5 waits.*	*10.43 am. CW2 and P1 examine virtual documents in P1's computer screen. CW6 arrives and CW5 engages him in a discussion about the drawing he is carrying with him.*

Image 8.2: Concurrent practices being enacted at P1's desk

At 10.35 am. P1 continues receiving physical documents from his co-workers and reviews them as he speaks to CW5. At 10.45 a.m. P1 makes another phone call to follow up on a matter that CW5 has an interest in. CW5 moves his chair closer to P1's desk as though to have a more intense conversation. CW5 informs P1 that he also wants to discuss some decisions to be made about the project being supervised by P1's staff. P1 removes some of the documents on the surface of the desk between him and CW5 as a gesture to indicate that he is making room for a discussion with

CW5. He retains the document he is working on, a green file and a blue folder. At 10.46 a.m. P1 calls CW1 to come to his desk. He enquires about the status of the project from CW1. CW1 pulls his chair next to P1's desk as P1 clears away the document, file and folder that were remaining on the surface between himself and CW5. The part of the desk between himself and CW5 is clear for a meeting between himself, CW5 and CW1. P1 places a notebook and his cell phone within reach.
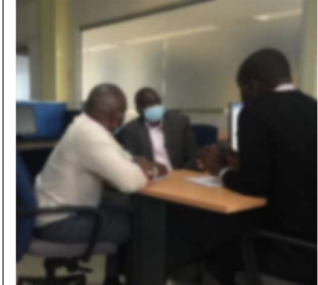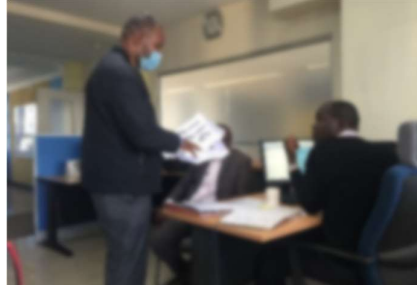
10.45 a.m. CW2 and P1 examine virtual documents on P1's computer screen as CW6 speaks with CW5 as he waits to include P1 in the discussion.	*10.46 a.m. CW2 leaves. CW6 continues with the discussion with CW5 and P1.*	*10.50 a.m. CW1 pulls his chair to P1's desk blocking the walkway. P1 clears the documents on his desk. The unplanned meeting with CW5 begins.*

Image 8.3: Spatial setup on and around P1's desk as collaborative practices unfold.

At 10:50 am., the two co-workers sit around the participant's desk with the A3 drawing laid out on the desk. The concurrent activities that were taking place at the participant's desk are replaced by an organised meeting. The cubicle is also quiet and the chatter along the cubicle walkway has stopped. The spontaneous interaction between co-workers at the participant's desk is replaced with an organised formal meeting. The organised formal meeting begins with P1 asking CW1 to bring the drawing for the project that they will be discussing. CW1 goes to his desk and returns with an A3-size drawing. He lays out the drawing and a notepad on the desk surface between the three of them. CW5 is served tea as the meeting progresses. P1 writes instructions for CW1's use on CW1's writing pad. He also requests CW7 to join the meeting. CW7 brings along his chair. CW1 and CW5 rearrange themselves around the P1's desk to give CW7 space near the desk. The meeting continues as CW7 takes notes in his notebook. CW7 and CW1 leave the meeting. CW5 stays on for a few minutes and leaves. The meeting takes 27 minutes and ends at 11.17 a.m.

(Field notes, February 2021).

8.2   The prefigured setup and norms of office work

The prefigured setup is arranged according to corporate office layout standards that provide guidelines on the desk size and office arrangement according to the office workers' rank and the nature of work they carry out.   The setting describes the prefigured setup in which the episode takes place. The situated case has office layout standards that are followed during the office setup. P1 explains:

> There is a standard for how the manager seats, the chief [section head] seats and how the other staff are seated. So we must maintain the standard so long as it is working. So we cannot be extravagant now that we have space. That is why we left this desk here so that if someone comes and needs somewhere to sit, they can get somewhere to sit. (Interview with P1, February 2021)

The spatial arrangement is not only assigned the role of differentiating the occupant of the desk, but it also communicates the significance of interaction within the space. Though the office has a standard setup, the size of the desk, its spatial positioning, the proximity of other desks and the objects on and around it, and how it is used communicate the identity of the person using the desk as well as the significance of their role. It is expected that the senior staff will have walk-in customers or will need to interact with other office workers at their desks. The absence of the half-height partition at the front edge enables the positioning of visitors' chairs in front of the senior staff desks. The arrangement of single or multiple desks within a cubicle assumes that junior office workers have less requirement for physical interaction at their desks than senior office workers, thus, by prefiguration, restricting the junior office worker to concentration work while enabling collaborative work between the senior office workers. While proximity between desks invites interaction among office workers occupying those desks, the desks that are far apart and have visitors' chairs before them suggest occupancy by higher-ranking office workers.

The spatial layout also communicates the norms of work and the relationship between roles assigned to office workers. The prefigured setup anticipates various work and non-work uses of space with the standard layouts providing each floor with a printing area, a meeting room, and a tea point that serve as shared facilities. Amongst other uses, the prefigured setup anticipates concentration work that requires privacy and quietness and collaborative work that involves meetings. Additionally, the provision of a tea point anticipates that work and non-work practices will intertwine. The interior designer explains the requirements stated by supervisors when an office setup is established.

> Most [supervisors] put their emphasis on functionality or functional dynamics. Mainly they emphasize staff who are interrelated, staff who do things in common or staff who have related roles and tasks. They ask, 'Can you place this number of people in this cubicle or workstation, could you ensure that their boss sits close to the team, could you have the printer at the centre of the floor where we can all share?' (Interview with Interior Designer, 12th June 2020)

Supervisors also sought to use the office to exercise control and authority as they oversee work.

> When am in the office, there are other peers, I have those who report to me, and I have my managers. If I want to have a discussion at my desk, am able to command the team that lets converge, let's have this and I have the authority and I have control of the resources because I am in charge. When am at home I miss the critics of my emails

how it is worded, to design, to people converging around and putting their heads together. (Interview with P1, June 2020)

Some office workers use the setup to enforce various work norms through supervisory control while at the same time carrying out collaborative work. The absence of interaction with co-workers in alternative workplaces, such as at home, suggests that the office also enables norms associated with physical interaction.

The organisation's work norms support the expectation that meetings are held in designated meeting spaces. This is demonstrated by the provision of a closed meeting room on each floor. During the interview, the interior designer explained,

> Based on the availability of space I consider meeting areas or collaborative spaces where people can come together either formally or informally. I try to provide for it based on demand and availability of space because there are floors where you cannot give a meeting room much comfort, compared with other floors. Meeting space is an important space to consider so that people can meet in small groups or large groups. (Interview with Interior Designer, 12th June 2020)

While the prefigured setup communicates the norms of work and the nature of interaction expected in that space, in the unfolding of work office workers set aside the prefigured norms and assign uses that are convenient to them. CW1 explains the meeting at P1's desk.

> But for P1's case we needed to get to the meeting and at the same time P1 was doing many things. It was not meant to take long …. So that is why it was necessary to just go to where P1 was instead of going to the meeting room. it was for convenience.... When one team seats around one area it is convenient. It also saves a lot of time instead of everybody going to the meeting room. As you can see at the same time P1 could take some urgent calls when we were in the meeting, rather than leaving your workstation to go to a different place. It saves time and convenience and attending to other matters around. Only that it cannot apply to everybody within the floor or the section depending on the number. You could see when CW7 was required he walked around [from the next cubicle] to where we were. (Interview with CW1, February 2021)

The prefigured setup differentiates spaces for solo work, collaborative peer interaction and supervisory interaction. However, in the unfolding of work, spaces are given new roles and lent new meaning. P1's desk, which is designed for solo work, is also used for collaborative work and the symbolic meaning it holds as a supervisor's desk is lent new meaning by the meeting practice. While the physical attributes of objects and their spatial arrangement communicate the symbolic meanings lent to the space and objects by organisational norms, the preferences of office workers for using the desk for a meeting assign new roles to the desk and lend it new meanings associated with supervision and the purpose of the work.

8.3 The intersection of practices – complementary and conflicting roles assigned to objects

The unplanned visit by a CW5 from the region brings unrelated activities together at P1's desk. P1, CW5 and other co-workers converge around P1's desk carrying out a range of practices that have different intentions. While CW5 seeks to hold discussions with P1 on items for his region, the other co-workers are supplying documents for document preparation as P1 collates virtual and physical documents. P1 chooses to keep all practices at his desk and not move the physical interactions with the co-workers to the meeting room.

During the interview, P1 explained his choice:

> If we go to the meeting room, then I leave the other activities completely, yet these activities run concurrently. So, I would have missed it on my to-do list. Probably I would not have done the activities I have done. Remember I even had an opportunity to respond by email when one of them was contributing. Because emails keep popping up and some come from senior staff, they require my immediate response. So, when it is not my turn [to contribute to the meeting], I can do one or two replies. (Interview with P1, February 2021)

The spatial arrangement around P1's desk accommodates a visitor's chair and allows additional space for physical interaction. P1 chooses to meet the CW5 at his desk and not at the meeting room, so that he can use objects on this desk that are not present in the meeting room. He intended to meet CW5 while continuing with the document preparation activities as well as other activities that were emerging. In addition to being a site for solo work, facilitated by the extra space, the visitor's chair and its location, the desk becomes a point of intersection for collaborative work, convergence for physical artefacts and a meeting venue. The solo practices of working on the computer, speaking on the telephone and reviewing physical documents intersect, at P1's desk, with collaborative work practices including organised and spontaneous interaction with CW5 and with other co-workers who work on the floor. As P1's desk serves also as the point of service for CW5, it provides a point of interaction for co-workers involved in addressing the issues raised by CW5 and a place of supervision where co-workers are instructed on the work to do. The objects on and around the desk complement each other by supporting the roles that they are individually assigned as the practices unfold.

To enable them to serve more than one purpose at a time, complementary roles are assigned to objects that fulfil concurrent practices. For example, at 10.43 a.m. the desk is assigned various roles, such as providing a venue for collaborative work, while practices associated with solo work, such as working on the computer, are carried out concurrently with physical interaction between co-workers. The concurrent spontaneous interactions between two sets of co-workers continue until 10.45 a.m. when CW2 leaves. While the two interactions are unrelated, because they take place at P1's desk, that desk is concurrently assigned complementary roles of workspace and meeting venue, enabling P1 to achieve his intention

to undertake multiple activities simultaneously. However, in the unfolding of office work, the intention to carry out the document preparation together with attending to the visiting co-worker turns out not to be a concurrent performance of practices but the sequential accomplishment of related practices performed by the office worker. As P1's desk becomes a point of convergence for interactions, co-workers included in the interaction come with their chairs to accommodate a series of spontaneous physical interactions. The above setting demonstrates how the spatial rearrangements on and around the desk take place spontaneously, and in sequence, as one set of interactions makes way for the next.

The complementarity of concurrent solo work and meeting venue roles arising from spontaneous interaction is not sustained: this necessitates the suspension of solo work and the arrangement of an organised meeting. When the organised meeting convenes at 10.50 a.m., the 'disorder' of spontaneous interaction ends. While CW5's visit was about a renovation project, and the co-workers involved were included in the resulting spontaneous interaction, there are decisions to be made on the drawings of the project. Due to the decision-making required, the interaction is elevated into a meeting that begins at 10:50 a.m. While the meeting is unplanned, P1 places higher importance on the decision-making significance of the design review of the renovation project and sets aside other activities. P1 said:

> I put all my thoughts on the activity. That was important because... I had to put all my thoughts so that I would not be distracted. You also notice that I would say (to those who called on the phone) 'I will give you feedback'.... 'I can't give you feedback right now'... so, for me, it is to have a working space and put all my thoughts and listen to them without distraction to come up with a decision. (Interview with P1, February 2021)

The concurrent spontaneous interactions taking place before the organised informal meeting are terminated by the rearrangement of documents and objects on and around the desk. The spatial-temporal rearrangement of objects in preparation for an organised meeting supplies a sequence of change in spatial configuration that involves clearing the interactive area of the desk of the physical artefacts used for other activities, adding a chair next to the desk and laying out an A3 drawing on the desk. Thus, while the role of the desk as a focal point of interaction continues, the meaning of the interaction changes from briefing to decision making. Initially, the roles assigned to the desk as seen as complementary as the office workers can progress other concurrent office work activities at the desk. However, when the new purpose of the visit and practice arrangement is understood, spontaneous interactions become unsuitable, and the meeting is organised.

The intersection of various ongoing practices at the desk results in the sequencing of their performance. Though the collaborative practices of examining virtual and physical documents both converge at the participant's desk, they do not take place concurrently. The performance of the practices is sequenced as practices queue.   The co-workers undertaking the collaborative work on the computer and those reviewing the drawing are all present at the P1's desk at 10:45 a.m. At 10.46 a.m. collaborative work at the computer ends and the review of the drawing continues. The participants attend to virtual documents first and then the

physical document. What was intended as a concurrent performance of complementary practices at the participant's desk evolves into the sequenced enactment of practices, as the office workers enact one practice at a time and the practices are sequentially terminated.

With the decision-making requiring the removal of distractions from the desk, the other roles assigned to the desk stop being complementary and are now viewed as distractions. The desk's role as a venue for spontaneous interactions amid solo work practices conflicts with the need for a quiet and organised conversation conducive to group decision-making. The seriousness attached to decision-making raises the importance of the interaction from spontaneous to organised interaction. The concurrent practices that seemed to complement each other have stopped and P1 focuses his attention on the decision that needs to be made. The interaction is given importance by the shift of purpose from collaboration to decision-making. Its importance is demonstrated by the arrangement of chairs around P1's desk and the removal of documents from the part of the desk surface that will be used for the meeting. Other activities are pending, to be carried out after the meeting. The concurrent activities are also rearranged into sequenced activities.

8.4   New meaning assigned during the enactment of practices

In ongoing practices, opportunities may arise to incorporate additional intentions of the office workers, resulting in the practices acquiring additional meanings as they are enacted. Such opportunities not only adjust the meaning of the practice as it unfolds but can also lead to temporal-spatial rearrangement of the practices. In this episode, temporal adjustment of meaning is occasioned by changes in the objective of a practice while the practice is ongoing. The meaning of a practice is observed as being adjustable and not fixed throughout the practice. The adjustment observed arises from an opportunity to fulfil more than one objective as practices are performed. Office work practices are, therefore, dynamic in terms of the meanings attributed to them.

At the beginning of the interaction between CW5 and P1, the practices being performed are devoted to document preparation. As P1 speaks on the telephone or works on the computer in the presence of CW5, he takes the opportunity to address items of interest to CW5. The inclusion of items of interest to CW5 results in the practices being performed meeting multiple objectives.

8.4.1   The telephone conversation

The telephone conversation

At 10.31 am., P1 is standing on the walkway speaking to CW5 when he hears his telephone extension ring. He reaches out to lift the receiver and places the cup on the desk. He motions CW5 to sit at the visitor's chair. P1 sits on his chair. On the desk are physical documents for the document preparation activity. Some documents are in the green folder while others

are on the top of the folder. Amongst the documents on top of the folder is a project schedule printed on A3 paper. He places this project schedule nearest to him. He speaks to CW8 about funding for various projects on the schedule. CW8 is in Building B. As he speaks on the telephone, P1 reads the project schedule on his desk and writes notes on it with a pen. He logs into his PC, goes to the email application, and responds to CW8: "I don't have that email."

As the telephone conversation progresses, P1 reaches out for his notebook and opens it as he speaks on the telephone. He opens the to-do list he had prepared the day before and marks various items. He asks CW8 about the status of funding for each item as he makes notes in the notebook. These are items for the region. As he speaks about documents from the region that require Finance approval, CW5 can overhear the conversation. CW5 makes a phone call on his cell phone to his co-worker in the region. CW5 concludes the cell phone conversation and gestures to P1. P1 requests CW8 to stay on the line as CW5 informs P1 that the physical documents from the region were sent to Finance. P1 relays the information to CW8 and asks CW8 whether he has seen them. The telephone conversation concludes with P1 asking CW8 if he has seen CW6 on their floor.

(Field notes, February 2021).

The practice of speaking on the telephone is performed to obtain information for document preparation. P1 rearranges the objects on his desk to bring the printed project schedule within reach and assimilates the information that CW8 is providing over the telephone by writing it on the schedule. While the adjustment of objects on P1's desk and handwritten notes on the project schedule signify that the telephone conversation has met its objective, after obtaining information for the preparation of the document, P1 uses the telephone conversation to obtain information required by CW5. The presence of CW5 at P1's desk while the telephone conversation with CW8 is taking place necessitates the ordering of the spontaneous practices about to be enacted by CW5, beginning with his phone call. The opportunity that presents itself to CW5 to obtain feedback from CW8 motivates CW5 to use his mobile phone to call his co-worker on the 1st floor about the call P1 is making to CW8.

As the telephone conversation between P1 and CW8 progresses, it lends new meaning to the objective that CW5 seeks to achieve from the ongoing practice. The new meaning is also lent to CW5's mobile phone and the telephone call to his co-worker. The telephone conversation between P1 and CW8 acquires further new meaning from P1's additional objective, which is to enquire about the presence of CW6 on CW8's floor. The new meanings that arise out of the additional objectives are influenced by the existing practices and objects and have the potential to influence the temporal-spatial arrangement of the other practices and the objects that support them.

8.4.2 Spontaneous physical interaction

At 10.43 am CW6 walks into the office. CW1 sees him and notifies P1 that CW6 has arrived. P1 calls out CW6's name as CW6 walks along the corridor past his cubicle. CW6 detours to P1's desk carrying a drawing. He finds CW5 seated at P1's visitor's chair and CW2 standing next to P1's desk. CW2 and P1 are reading from P1's computer screen as P1 uses the keyboard and mouse to review and approve documents sent to him virtually.

CW6 stands beside CW5 waiting to hear the reason P1 has called him. CW2 and P1 are working on the computer. As CW6 waits, CW5 asks CW6 about an assignment he was doing for the region. CW6 opens the drawing he is holding and begins to respond to CW5 as he points at the drawing. The drawing is related to the assignment CW5 is enquiring about. CW5 is one of the users of the project being designed. CW6 points to the drawing and shows CW5 the suggested changes. CW5 and CW6 discuss the drawing for 2 minutes while P1 converses with CW2.

CW2 goes back to his desk leaving CW6 standing beside P1's desk. P1 continues with the virtual documents they were working on with CW2. He makes intermittent interjections into the conversation that CW5 and CW6 are holding about the drawing. P1 completes his approval of the virtual documents, turns his chair to look at the drawing CW6 is holding and fully joins the conversation between CW5 and CW6. P1 listens to CW5's suggestions and instructs CW6 on what to do next. The conversation progresses for about a minute. CW6 leaves P1's desk and proceeds to his desk. CW5 continues sitting in the visitor's chair conversing with P1.

(Field notes, February 2021).

Between 10.43 am and 10.45 am, CW2 and CW6 are standing side by side next to P1's desk while CW5 is sitting at the visitor's chair. CW5, CW2 and CW6 are at P1's desk for different reasons. The reason for CW6's presence is not immediately clear until CW5 enquires about an assignment given to CW6. The enquiry progresses to a design review where CW5 plays the role of the user. The physical interaction between CW2 and P1 continues concurrently with the physical interaction between CW5 and CW6 for 2 minutes. By the time P1 joins the interaction with CW5 and CW6, the interaction has escalated in significance from a general enquiry to a user design review.

P1 recounts the interaction with CW6:

> In that particular case, he was coming in and I saw an opportunity to talk to him before he sat down. Because I saw an opportunity and he had it [the drawing] in his hand then we had to discuss it. I am sure he would still share it later on. So when he came with the feedback I told him, 'Let's go on and get the bills.' So he (CW6) has concluded but that document is still going to another level of processing. (Interview with P1, February 2021)

The discussion between CW6 and P1 would ordinarily have been a routine design review conversation, but the presence of CW5 changes the interaction to a design review with a user

(CW5). The change from a routine design review to a review of the design with a user raises its importance. The physical presence of CW5 changes the significance and arrangement of the design review to a user design review that is carried out immediately through physical interaction between CW6 (assigned co-worker) and CW5 (the user) at P1's desk.

The temporal rearrangement of design review activity from being carried out later to being brought forward to the present resulted in concurrent practices at P1's desk from 10:43 a.m. to 10:46 a.m. as the discussion on the drawing was carried out concurrently with collaborative work on the computer. While the drawing may have been viewed as an additional document to be reviewed, the importance of its review was emphasised by the presence of CW5 in his capacity as the user. The opportunity of a design review with the user legitimises the bringing forward of the design review activity.

The change of the physical interaction from an enquiry to a design review with a user does not change the spatial arrangement on and around the desk. CW6 holds the drawing with his hand and does not place it on the desk surface. He also remains standing throughout the engagement. However, its new significance raises the importance of the physical interaction, and the design review conversation continues, even though there is ongoing collaborative work on the computer. Instead, the collaborative work on the computer is completed and attention is turned to the design review discussion around the drawing. During spontaneous interactions, urgent matters such as reviews of physical and virtual documents take precedence as co-workers bring the documents to the attention of the participant by physically bringing documents to his desk or pointing them out on his computer screen. The concurrent practices at P1's desk convert it from an individual workspace into a collaborative space and place for the exchange of documents and verbal communication.

The physical and virtual documents received and reviewed at the participant's desk include documents of interest to the visiting co-worker and documents for use in the ongoing document preparation activity. Due to the multiple objectives the office workers seek to fulfil by telephone conversation and the additional significance it acquires, the spatial-temporal arrangement of practices changes, with more time being devoted to the telephone. Additionally, the spontaneous interactions around P1's desk rearrange space by adjusting the objects on and around the desk to accommodate multiple objectives that lend additional meanings to practices being concurrently enacted.

8.5 Resolution of conflicting roles assigned to objects through spatial-temporal rearrangements

The unplanned informal meeting takes place amidst document preparation and spontaneous interactions between co-workers on the floor and the visiting co-worker from the region. Though the role of the desk as a meeting venue for the unplanned informal meeting is enabled by its being free-standing with space for visitors' chairs around it, as the practices associated with solo work are carried out, the desk's role as a meeting venue conflicts with some roles of the desk as a personal workspace.

Conflicting roles assigned to the desk are resolved by spatial-temporal rearrangement of practices and, later on, rearrangement of objects on and around the desk to accommodate the informal meeting.

The informal meeting

P1's desk is a freestanding 1600mm L-shaped desk with a right return and drawers. The right edge of the desk is along a full-height fixed partition that separates the open office from a team that occupies a closed office that is before it. On his desk are a desktop computer, a telephone extension, folders, diaries and a notebook. The computer's central processing unit is on the edge of the desk and the screen and keyboard are near the center of the desk's work surface. The computer cables have been passed through the desk grommet and others are passed along the edge of the desk near the wall. Behind the participant's desk is a fabric work chair, a free-standing coat hanger with his jacket, and a coat cabinet used by his co-worker. In front of his desk is a fabric cantilever visitor's chair, a 900mm high glazed cabinet containing files and unoccupied space in front of his desk that gives his workspace additional floor area.

| *P1 at his desk* | *P1 and CW5 at P1's desk* |
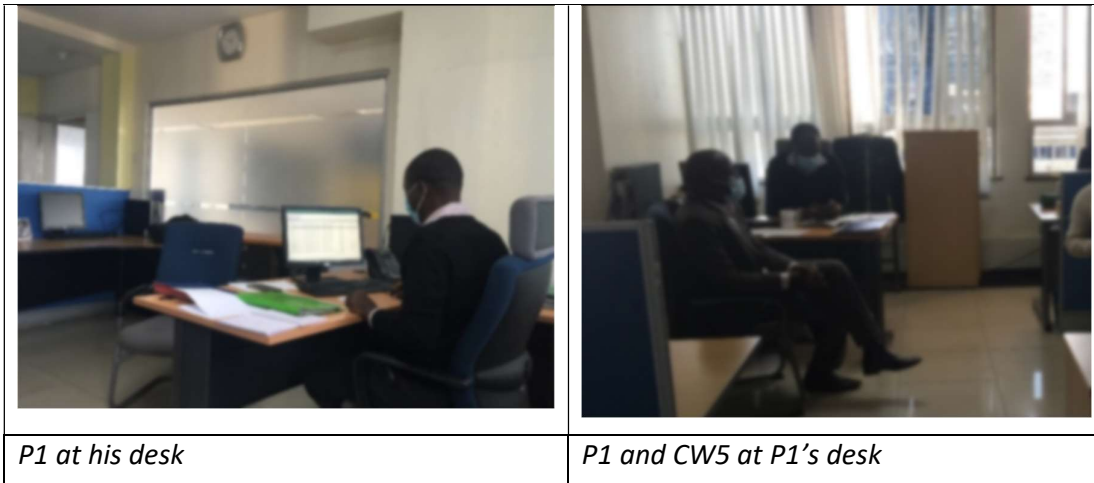
Image 8.4: P1's workstation before and after the arrival of CW5.

CW5 is visiting from the region and has been sitting on the visitor's chair next to P1's desk since 10:31 a.m. P1 has been working on his appraisal document while interacting with CW5 and other co-workers who are working with him on the appraisal and items of interest to CW5. He removes his appraisal document and cell phone from the left-hand side of his desk table and places them on the right-hand side. He also moves his cup to his right. The left-hand side of the desk surface, that is the space on the table between him and CW5, is now clear. He opens his notebook and places it before him as he calls CW1 to join them at his desk. CW1 drags his chair to P1's desk. CW1 has also come with a writing pad.

At 10.51 a.m., the meeting begins. P1s leads the conversation and CW5 makes suggestions on the scope for the renovations project. P1 tells CW1 to bring the drawing printed on A3 paper and spread it on a desk surface between them. CW1 goes to his desk, comes with the renovation drawing, and takes them through the scope of the project. CW5 asks questions.

CW1 answers and P1 gives additional information They start discussing details of the scope shown in the drawing.

*Five minutes into the meeting, CW5 is served tea. As CW5 takes tea, P1 uses his cell phone to call CW9 from another department and get clarification on a security installation item in the drawing. *The CW9 requests to be called on his extension. P1 makes the call using his telephone extension, speaks on the phone and gives feedback to CW5 and CW1. They discuss the options as P1 writes in his notebook. A ring from P1's cell phone interrupts the discussion. He answers the call, speaks briefly and quickly turns his attention back to the meeting where he speaks to CW1 as he writes instructions on the complimentary slip pad that CW1 uses as a notepad. CW5 steps away from P1's desk to answer a call on his cell phone. P1 continues writing instructions as he converses with CW1. CW5 returns and seats. As he sits, he asks P1 about an ongoing tender. P1 makes a phone call using his telephone extension and gives CW5 feedback. They resume conversing about the renovation project and P1 recaps the instructions that he has written for CW1 to action. P1 informs CW5 that they will share the design revisions via email.*

CW5 brings up an outstanding matter on another project. P1 says that CW7 was working on it. CW1 stands and calls CW7 who sits in the next cubicle. CW7 stands and starts walking towards P1's desk. On entering the cubicle, he turns back to his desk and drags his chair from his desk to P1's desk. CW5 and CW1 move their chairs to make room for him.

At 11.13 am CW7 joins the meeting. The meeting expands from 3 attendees to 4. They discuss the matters that CW7 is bringing up and suggest to him how to address them. P1 opens a new page on the complimentary slip pad and writes the scope of work that CW7 should handle. The expanded meeting takes 4 minutes. At 11.17 a.m., CW1 and CW7 return to their desks, dragging their chairs with them. CW5 and P1 continue conversing as P1 looks at the list of items in his notebook.

The meeting ends at 11.19 am. P1 resumes preparing his appraisal document.

(Field notes, February 2021).

The physical attributes of the desk, such as its L-shaped surface, the positioning of the right-hand desk return along the fixed partition and the position of the 750mm deep work surface on the left-hand side of the desk along the walkway, enable its compartmentalised use. The shape of the desk provides space on its surface for objects that are not in immediate use and objects that are static-in-use, away from high-traffic space near the walkway. The physical documents, files, folders and other physical artefacts in immediate use are placed on the centre and on the left-hand side of the desk. Other objects not in immediate use are placed on the right-hand desk return while objects that are static-in-use, such as the central processing unit and telephone extension, are placed at the far right-hand side of the desk.

The compartmentalised use of various parts of the desk is demonstrated during collaborative work and informal meetings, as various segments of the desk are assigned different roles as practices unfold. The left-hand side desk surface may be considered as the interactive area, while the right-hand side of the desk surface may be considered as the temporary storage area for physical documents and other objects placed on its surface. The closeness of the interactive area to the walkway enables it to be used for the assembly of physical documents

received from co-workers and for physical interaction with co-workers. The high frequency of interaction results in frequent rearrangement of objects on the desk to accommodate the work being carried out.

An interactive area of the desk is used for the assembly of physical objects, such as printed documents, during solo work.	*Desk surface on an interactive area cleared of physical objects for the meeting.*	*The interactive area of the desk is used as a meeting area during informal meetings. The meeting space spills over to the walkway.*
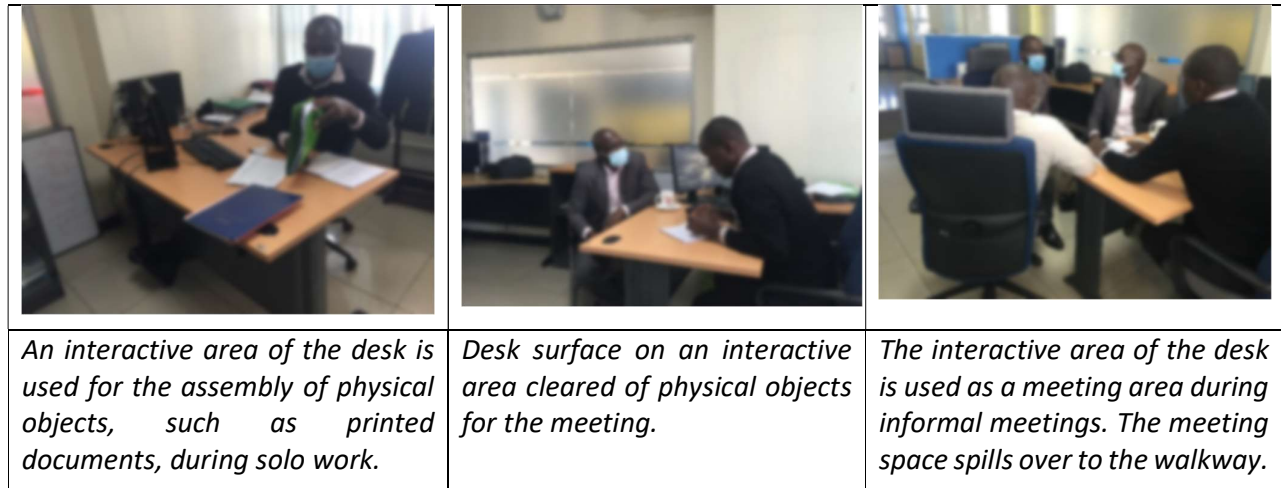
Image 8.5: Changes in the spatial arrangement of objects to enable changing roles
(Field notes, February 2021).

As the interaction extends from the assembly of physical objects to the assembly of co-workers, the desk transitions from a solo workspace to a meeting area. Additionally, the individual space of the participant expands into the walkway as the co-workers attending the meeting arrange the additional chairs around this desk. The walkway temporarily becomes an additional space that is incorporated into the meeting. Despite the temporary expansion of his space, P1 considers his individual space to be the space around his desk and chair:

> I think it's on this tile [points at the floor tile next to the edge of his desk]. One foot behind my desk. Because I was even complaining. This is CW1 [coat hanger cabinet behind his chair] and I was asking 'Why are you putting this thing in my house?' But of course, being the person in charge of the section, my space ends at the end [of where the section staff usually sit]. I can stand and call all of them. But this [the edge of his desk] is where my personal space ends. The rest is the common area. (Interview with P1, February 2021)

The walkway that divides the two rows of desks within the cubicle is considered as collective space and the access to individual desks within the cubicle is incorporated into the collaborative activities to serve as a space for physical interaction. During collaborative activities, the collective space is incorporated into individual space, despite the configuration of the workspace providing individual and collective spaces within the cubicle. The use of the collective space during the collaborative activities incorporates the walkway as part of the participant's workspace, temporarily changing the roles and boundaries of individual and collective spaces. The collective space is appropriated into individual space by the use of the

desk for collaborative work. Additionally, the individual space is appropriated to collective space as the office worker loses their personal space to collaborative work.

The temporality of spatial boundaries between collective and individual space creates conflict in the use of space, necessitating spatial rearrangement of practices and objects on and around the desk. While the desk is prefigured for individual work with one working chair assigned per desk, the role of the desk evolves as office work unfolds. The evolution of the desk from solo to collaborative work occurs as work unfolds. Though the beginning of the informal meeting is unplanned, it is marked by rearrangement of the space around the desk and the dominant place taken by the participant to signal the beginning of the meeting. The extra space around the participant's desk enables spontaneous convergence of collaborative activities at the desk, with one co-worker conversing with a visiting co-worker while the participant and the other co-worker use the computer. As well as being a workbench for computer-related activities, the desk concurrently provides a surface for the assembly of documents and becomes an object around which office workers can meet. The desk enables physical interaction between office workers by its spatial positioning relative to the walkway. As the solo work and spontaneous interaction continue simultaneously and undeterred, the individual workstation role of the desk diminishes as it conflicts with the collective activities that are going on around it. The rearrangement of chairs around the desk enables a change of the collaborative work from spontaneous interaction to an organised informal meeting.

The segmentation of the desk into the work surface and repository spaces and the incorporation of common space around the desk into the participant's workspace enables the desk to perform the additional roles assigned to it. The segmentation provides dedicated spaces for both planned activities and spontaneous interaction on the left-hand side of the desk, while maintaining the right-hand side as a repository for physical artefacts and accommodation for the static-in-use objects as well as those not in immediate use. While the segmentation of space resolves the conflict of unrelated roles in the same space by separating roles of different parts of the worksurface, the temporary change of spatial boundaries during various collaboration work activities enables the spatial-temporal arrangement of objects that support multiple roles assigned to the desk.

8.6 Summary

The visit by the co-worker from the region results in the unscheduled inclusion of the visiting co-worker's agenda in the ongoing activities. As the participant seeks to address the agenda of the visiting co-worker as well as accomplish his original work assignments, the visitor's agenda is incorporated into the participant's procedures, including telephone conversations and spontaneous physical interactions. The agenda of the visiting co-worker results in additional purposes in the participant's physical and virtual interactions. The additional purposes are opportunistic, as they take advantage of ongoing interactions, causing them to take longer, or incorporate other people and documents. The additional purposes in the interactions are spontaneously interwoven into the initial purpose of the interaction. It is

observed that the telephone conversation and spontaneous physical interaction incorporate opportunistic purposes that arise from the visit of the co-worker.

Though the telephone conversation and spontaneous physical interaction incorporate opportunistic purposes arising from the co-worker's visit into existing interactions, the purpose of the organised informal meetings arises solely from the co-worker's visit. The request for a decision to be made on a drawing raises the importance of the interaction from a general consultation to the formation of a decision. The interaction sheds its spontaneous arrangement to become more of an organised interaction. Instead of the co-workers standing around the participant's desk, they sit around it. The interaction also has a start time that is marked by the participant clearing his desk and the co-worker bringing the drawing, which requires a decision to be made.

The following is a summary of findings from the episode:

1. While the prefigured setup is configured to enable the organisation's norms of office work, in the unfolding of work, office workers seek convenience by assigning new roles to the spaces and objects in the setup. Driven by the need for convenience, the preferences influence the roles assigned to spaces and the meaning conferred on spaces and objects.

2. The practices devoted to the accomplishment of the purpose of the visit by the co-worker from the region intersected with practices devoted to document preparation. The preference for carrying out the practices concurrently was constrained by spatial arrangement and shaped by the varied significance of the practices. On their intersection, the practices were carried out in sequence, and not concurrently as originally intended. In the unfolding of work, the unplanned informal meeting with its new decision-making significance took place, suspending the document preparation practices.

3. The meaning of a practice may be clarified or enhanced as it evolves, resulting in changes in the practice structure. During the interaction, the importance and purpose of the co-worker's visit were clarified and activities that began as spontaneous physical interactions changed to an organised meeting that responded to the significance of those intentions.

4. While practices were being enacted, opportunities to fulfil other purposes, beyond the initial purposes of the practices, arose and adjusted the meaning of the practices as they were being performed. The new meanings that arose from the additional objectives that the practices were intended to fulfil caused adjustments to spatial-temporal arrangements as the work unfolded. The ongoing practices originally devoted to document preparation were used to fulfil the purpose of the co-worker's visit. Incorporation of the items related to the visiting co-worker into the telephone conversations and physical interactions expanded the time spent on individual practice, the number of persons involved and the extent of subsequent virtual and physical interactions.

5. The evolving role of the desk saw it assigned interactive and non-interactive roles: some complemented each other, and others conflicted with each other. The conflicts were resolved by the segmentation of desk surface space and the incorporation of walkways and chairs to support interaction roles assigned to the desk.

9 Chapter 9   Data analysis - Whiteboard episode

9.1 Introduction

This episode was observed on 22nd February 2021. Unlike other episodes that comprise office work activities carried out at office workers' desks, in this episode office workers are observed as they take part in a scheduled activity where a whiteboard is being updated. The episode takes place in the designated office of P2 on the 14th floor of Building A. The whiteboard hangs on a partition within the open office setup on the floor where P2 sits and is visible from the office workers' workstations. The whiteboard session is a collaborative activity observed in a shared space within the office. Though the whiteboard session involved 17 office workers, only the following participants and co-workers were closely observed.

Identifier	Role	Location
Participants		
P2	Administration Officer and Team Leader 1	Building A, 14th floor
Co-workers		
CW10	Property Officer	Building A, 14th Floor
CW11	Projects Supervisor 1	Building A, 14th Floor
CW12	Office Assistant	Building A, 14th floor
CW13	Projects Supervisor 2	Building A, 14th floor
CW14	Team Leader 2	Building A, 14th floor
CW15	Planner	Building A, 14th floor

Table 9.1: Participants and co-workers in the whiteboard updating episode

Described by P2 as a 'dashboard meeting', the whiteboard updating session is the first departmental activity of the week where the progress of workers' assigned tasks and their status updates are handwritten on the whiteboard. The session brings together office workers in the department to update each other on the progress made the previous week on key tasks and to commit to the action they will take in the coming week. The tasks and updates are handwritten on the whiteboard. CW12, who was present during the session, explained what was going on at the whiteboard:

> We have a board on which we put the milestones of every week. If we have some projects that are ongoing, we check what we achieved last week and what we are going to achieve for the next weeks or months. (Interview with CW12, February 2021)

The episode is examined in order to provide an explanation of the roles played by the whiteboard in the accomplishment of office work and the whiteboard's influence in shaping the arrangement and use of office space around it. Additionally, the purpose of the activities carried out on the whiteboard is examined to reveal the linkages between the whiteboard and the spatial-temporal arrangement of office work.

The setting

A 2-meter by 1.5-meter whiteboard hangs on hooks fixed to the solid full-height partition that separates the meeting room from the open office. The open office is divided into northern and southern wings by a corridor that runs from the entrance to the floor to the emergency exit at the other end of the floor. The full-height partition marks the beginning of the first cubicle on the right of the northern wing of the open office. The open office is arranged into cubicles using 1200mm high movable partitions. Unlike other cubicles that are furnished with desks that are assigned to individual office workers, the cubicle where the whiteboard is located is a shared space with a shared printer and an unassigned desk.
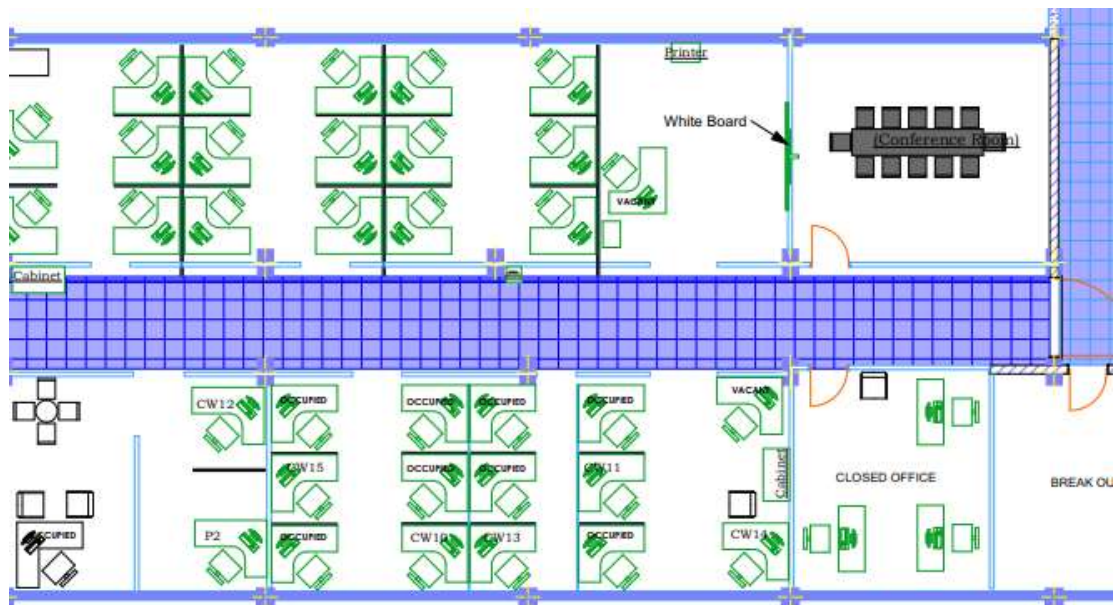
Figure 9.1: Layout of Building A, 14th Floor, showing the location of the whiteboard in relation to the seating arrangements for P2 and his co-workers.

The department where P2 works is accommodated in the southern wing, but workers can see the whiteboard from their desks. The northern wing is occupied by staff from another department. The printer is near the window in the same cubicle as the whiteboard. The walkway to the printer from the corridor has the whiteboard on the right and the open office on the left. Therefore, staff using the printer pass in front of the whiteboard.

117

The whiteboard is being updated.	*Office workers using the printer as the whiteboard is updated.*

Image 9.1: Whiteboard updating and printing taking place in the same cubicle

The whiteboard is a prominent feature on the wall and visible from other cubicles as it is centered on the wall both vertically and horizontally. Though the whiteboard is easily demountable it is usually not removed from its position. The whiteboard is divided vertically into two segments. The first segment contains a list of tasks each of the 3 teams is working on and takes 75% of the space on the whiteboard. The second segment is further divided horizontally into 4 sub-segments that include the following items: a 'bring ups' part containing items that emerged from other departments; a 'risks and opportunities' part where identified risks are listed; a list of the corporate focus areas; and a blank portion used to paste printed notices.

Every Monday at 8 a.m., teams belonging to the department converge at the shared cubicle where they update the status of work tasks written on the whiteboard. The dashboard meeting is a mandatory activity, and the staff are expected to participate in the discussions and follow through on the tasks they are assigned. The people at the meeting discuss items written on the whiteboard. These written items are tasks that have been given a high profile and have been escalated to the whiteboard for closer attention. Each team reports the milestones achieved on various tasks listed on the whiteboard and assigned actions to be taken during the week. The assigned actions are written on the whiteboard against the tasks of each team. The whiteboard serves as a visual representation of each team's work.

On the day of the observation, 17 office workers from the same department are gathered in front of a whiteboard that is mounted on a wall at the end of the office space. Some office workers are standing while others are seated on chairs that they have pulled from their desks. Others sit on the unoccupied desks or lean on the half-height desk divider that separates the space they are using from the open office cubicle next to them. Some office workers are standing behind those who are seated. The whiteboard is divided into various parts with ongoing assignments written on them including information to be communicated to the team. A section of the whiteboard also has information and notices printed on A3 and A4 papers pasted on it.

CW10 is leading the whiteboard session and stands next to CW1,1 who is writing the updates on the whiteboard. Other co-workers sit or stand around the whiteboard to see what is being written and give their comments. The office workers provide updates on the items written on the board and read them out from their notebooks or printed documents or speak from memory. When a task is read out by CW10, the office worker assigned that task gives the task status and the next action to be taken. Each task update is discussed in the order of the items listed on the whiteboard. The previous status is rubbed out and the reported status is handwritten on the milestone column of the whiteboard using a blue whiteboard pen. The activity they also plan to do in the coming week to progress their assignment is also handwritten on the whiteboard against the item being discussed. As each item is discussed, the office workers present ask questions and give suggestions for activities to be done. The assigned office worker notes the suggestions in their notebook as CW11 wipes out the previous action and writes the new action on the whiteboard. Additional items are added by wiping out completed tasks to make room for the additional items.

As the session ends, the performance of office workers on the tasks being updated is ranked by placing happy-face emoji magnets on those who have performed well and sad-face emoji magnets on those who have not performed well. At the end of the session, the leader reads out the corporate focus areas and other notices that office workers need to be informed of. The whiteboard session ends at 10:22 a.m. Office workers who have carried their chairs to the whiteboard session return with them to their desks.

The whiteboard updating session is collective activity by members of P2's department that is an alternative to other ways of monitoring office workers' performance of office workers, using virtual or physical documents. P2 explains:

> You can do it through manual tracking but at some point it's not as interactive as the board. Because at the board everybody is looking at your issues. When we did tracking initially then you limit the team that would sit as we discuss the tracking cos either [because] you are limited to the sectional heads, but now at the board you have the whole team there. The ones who are making the decision and those who are implementing. The whole team can appreciate that, and even when someone is following up something, they can appreciate where you are coming from. When am saying this thing is urgent…. You can do it with tracking but the board has more impact. Then every day that you are passing there you see your issues. It's visual. You can see you are the one trending. You improve on your performance. (Interview with P2, February 2021)

The weekly whiteboard updating session is an accepted collective norm of P2's department whose intention is distinguished by the use of the whiteboard to record the status of ongoing important tasks. One of the participants of the whiteboard updating session expounded its function as follows:

> We have a board which we put the milestones of every week. If we have some projects which are ongoing, we check what we achieved from last week and what we are going to achieve for the next weeks or months. (Interview with CW12, February 2021)

The whiteboard, though movable, remains in its position throughout the week as it remains hanging on a fixed full-height partition. Though its physical attributes allow it to be movable, by remaining hanging on a full-height partition, the whiteboard becomes spatially static both when in use and when not in use, taking on the characteristics of a fixture on the partition. The physical attributes of the whiteboard enable it to serve as a display and writing surface for office work information. Additionally, its fixity during use enables the whiteboard to be written on and fulfil its function as a writing surface. Being a surface from which writing can easily be erased, the whiteboard acts as a slate where old information is erased and new information is added. The information written on it remains displayed for a week with the whiteboard serving as an object referred to by the office workers as '*the dashboard*'. Additionally, office workers in the department refer to the collaborative activity of updating the whiteboard as '*the dashboard meeting*'. 'The dashboard' thus connotes an object where one sees the important tasks that need to be done. The whiteboard, without inscription, is a white writing surface. The significance of the information written on the whiteboard lends meaning to the whiteboard, defines its use and defines the space that it occupies.

Explaining what it means to have something written on the whiteboard, P2 noted:

> It means that something is urgent; it needs to be sorted out immediately. You don't need to dilly-dally cos it has an impact on someone else's process. It means if you don't work on that then it will affect something else along the line. We don't put everything on the board, we put the things that require attention; not that the rest do not need attention. (Interview with P2, February 2021)

Though the whiteboard is interactively used only for 2 hours on Monday morning during the collaborative activity where it is updated, after the updating session the whiteboard remains affixed to the partition and spatially static as a fixture that displays the information written on it. During the week, the whiteboard passively hangs on the wall in the cubicle it shares with the shared printer. As the cubicle hosts the printer and the whiteboard, conflicting and complementary roles are assigned to the space during both interactive and passive uses of the whiteboard. Office workers use the printer with the whiteboard in the background as a constant reminder of their work activities and tasks assigned. The temporality of interactive and passive uses of the whiteboard and the information displayed on it lends various meanings to the whiteboard and the cubicle it occupies. The spatial-temporal meaning of the space and its influence on the configuration and use of the cubicle is observed as both the printer and whiteboard roles compete.

9.2   Temporal roles and meanings

During the updating session, the whiteboard is viewed as an object connected with accountability, supervision, education and information gathering. The team leaders consider the whiteboard as a supervision tool and the updating session as a meeting where accountability is allocated, and priorities are communicated and recorded. Office workers consider the whiteboard as a tool that communicates to their colleagues the activities they

are doing, helps them learn from colleagues in other work disciplines and provides information about the status of work being carried out by other teams.

The information on the whiteboard has different purposes for different office workers. During the updating session, as the interaction amongst office workers continues, the Team Leader sets expectations of what is to be achieved and gives instruction and guidance, while the office workers being supervised give feedback on their past week's achievements and receive guidance and instructions on the work to be achieved in the coming week. P2 explains the importance of the interaction at the whiteboard:

> The whiteboard helps because, if there are issues to be followed up, you are able to pick them up at the beginning of the week so that you are able to run with them. also, on your issues you are able to see what is falling between the cracks because sometimes you have forgotten about an issue and when it gets to the board it means you have to run with it and can't keep reporting the same status. So, it actually puts you on your toes and arranges your week in a certain way. (Interview with P2, February 2021)

During the interactive session, the whiteboard provides a visual display and reference for the exchange of information amongst co-workers as it concurrently plays the roles of conveying, receiving and combining information. The whiteboard plays the role of displaying written communication collated from verbal communication among office workers. The verbal instructions and feedback that are shared during the interaction are translated into written information on the whiteboard. The communication role assigned to the whiteboard as a visual display during the interactive period catalyses the discussion by enabling the office workers to compare new and old information in the ensuing discussion. This catalytic role of the whiteboard as a reference object during the discussion complements its role of aiding supervision that continues after the updating session.

When the updating session is complete, the whiteboard continues to hang on the wall passively communicating the information written on it. This information includes the next steps of the listed tasks that inform the activities to be carried out during the week. As the interaction at the whiteboard progresses, the office workers use the information given by their co-workers in different ways. For some, the information provided enables the activities they are carrying out, while for others the information changes the activities carried out during the week.

The weekly update transforms the whiteboard into a dashboard that provides a visual display of the department's high priority tasks and their progression. As the entry of a task to the whiteboard connotes priority and urgency, it also reprioritises tasks that are not listed on the whiteboard. P2 explains '*We don't put everything in the board, we put the things that require attention; not that the rest do not need attention… There is a lot of work behind what is written on the dashboard [whiteboard]*'. The purpose of the whiteboard updating session as a process that prioritises and maintains accountability also results in the reprioritization of tasks that are not listed on the whiteboard. The capture of a task on the whiteboard influences the temporal arrangement of the office worker's activities during the week as they

progress those that are visible on the whiteboard. The collective prioritization and accountability that arises from the whiteboard session continues for the remainder of the week as office workers progress their actions in a quest to return favourable feedback during the next whiteboard meeting.

The different roles of the whiteboard, such as record keeping, reference, documentation, and supervision, have different purposes. The notices on printed sheets of paper displayed on the whiteboard have purposes such as raising urgency and knowledge sharing. The roles of the whiteboard may be ascribed to the physical attributes of the whiteboard such as its size, finish and vertical positioning on the partition, which enable it to display the information written on it. However, the reasons why the information is displayed are influenced by the context of the discussion as the office workers interact around the whiteboard. While the written information serves to inform workers of the next milestone, the conversation taking place gives the information's context, which may include informing or assigning accountability. The context of the discussion is temporal, lending temporal meaning to the whiteboard as each task is discussed and new information is written on the whiteboard. The following was observed as office workers ranked the tasks on the whiteboard:

10.09 am. CW10 announces that it is time to rank the best-performing and least-performing activities. He picks an unhappy face emoji magnet and asks the staff where it should be placed on the dashboard [whiteboard]. There is debate on the worst-performing activities. They settle for one of the activities assigned to Property. There is some protest from the person assigned but it is agreed and the matter is closed. CW10 picks up the magnet and places it on the whiteboard. He picks the large happy face emoji magnet and asks the staff which activity has progressed exceptionally well. Some suggestions were made amongst the staff present. Some staff members say that none of the activities has made exceptional progress. It is agreed that none of the activities deserves a happy face emoji, and the emoji is set aside. He picks the small emojis and they are placed accordingly across the whiteboard with the consensus of the group.

(Field notes, February 2021)

The ability of the whiteboard to take emoji magnets enables collective decisions on the ranking of performance of tasks to be displayed, giving the whiteboard the function of a scoreboard. The presence of emoji magnets also catalyses the discussion and leads to collective choices about the relative performance of different teams by providing feedback on satisfactory and unsatisfactory performance and communicating the expected performance. The temporal meaning of the whiteboard as a scoreboard, an object representing accountability, elevates it to a performance-ranking object. As the whiteboard passively hangs on the wall after the updating session, it continues to display information that is referred to by office workers throughout the week. P2 explains that after the interaction during the whiteboard updating session on Monday morning, the office workers extended the interaction from the whiteboard to their desks.

There is a lot of interaction after the meeting. They go for their tea and just before lunch (between tea and lunch), there is a lot of interaction. Then there is a lull on Tuesday and Wednesday then on Friday, you see people at the board. (Interview with P2, February 2021).

As the role of the whiteboard evolves with the interactions during and after the whiteboard updating session, the whiteboard means different things to different people. CW14 explains:

There is a lot of peer accountability on the board. Sections trying to pin each other down and people trying to defend their position on a matter. That is a lot of interaction on Monday. Once the board is done, people go back to their sections and continue with their sections but on the board, other sections [people from other sections] comment on other sections' work. The board represents the activities of the whole department. Without the board, we would not interact much with other sections. (Interview with CW14, February 2021)

In addition to the information exchanged having a wide range of different meanings to the office worker, including accountability and supervision, the information also exchanged also prioritized the activities of the office workers in the coming week. The prioritisation is suggested by the phrases '*put on your toes'* and *'arrange your week in a certain way*'. The communication roles during the interactive period are extended to influencing the temporal arrangement of work activities that will follow during the week, as the workers' priorities are informed by information given during the updating of the whiteboard. P2 also explains that when an item is on the whiteboard it means that something is urgent, so needs to be addressed immediately. '*You don't need to dilly dally cos it has an impact on someone else's process. It means if you don't work on that then it will affect something else along the line.'*

The presence of a task on the whiteboard gives it visibility and raises its status by drawing it to the attention of others apart from the assigned office worker. CW14 explains how he uses the whiteboard as a Team Leader: '*When something graduates to the dashboard [whiteboard] it means that it needs to be followed more keenly and needs to have an outcome. Not all items are on the dashboard so when something is on the dashboard it means it needs to be monitored closely.*' The list of tasks on the whiteboard not only informs team leaders like CW14 of the status of important tasks but also enables the maintenance of accountability amongst the office workers, as the weekly progress update of the tasks assigned to each office worker is recorded on the whiteboard.

The interaction around the whiteboard has different meanings influenced by the context of the discussion. In defending the status of one's task, answering questions from co-workers and giving the information to be written on the whiteboard, the office worker may view the purpose of the whiteboard as an accountability tool. The display of assigned tasks provides a public reference for the tasks on which individual workers are expected to provide feedback during the next updating session, aiding supervision.

In addition to the whiteboard catalysing discussions that lead to prioritization and accountability of work, the discussions at the whiteboard catalyse knowledge sharing and learning. P2 explains:

The rest of the members are able to know what you are doing and when you go to them for advice or input, they understand where you are coming from as opposed to you having to restart the whole process from zero and explain your situation. Also, it's a learning process: you get to learn things, even technical words you have heard from somewhere else. When someone talks about something, even in lands or projects, you get to understand what they mean. Because when you are out there, people do not understand whether you are property or projects: you become able to give an answer on behalf of the bigger team. (Interview with P2, February 2021)

While knowledge sharing and learning seem to be a by-product of the main role of the whiteboard, which is to keep records and document the key tasks and their progress, office workers place importance on the knowledge received during the interactive session. Because they learn from others as they give information or receive feedback, guidance and instructions, the office workers may also perceive the purpose of the whiteboard as also being informative. CW12 notes:

Yes, it helps everyone in the department to know what the other colleagues do and if the other colleagues know they can help each other when one person is on leave the other person can assist him. (Interview with CW14, February 2021.)

Knowledge exchange and sharing information on the important tasks and assignments of individual office workers is valued by office workers, who feel empowered to attend to tasks on behalf of their co-workers. The interdependence of co-workers when progressing tasks assigned to them implies that the accomplishment of office work is largely collaborative, even when its performance contains solo work activities. The temporal arrangement of the office workers' practices is shaped by the collective choices made during the whiteboard updating session; it established the department's priorities and ranks the progress of tasks being undertaken.

The whiteboard's use as a visual display of key departmental tasks and their progress assigns it the temporal roles of catalysing collaborative work during the interactive session and acting as a reminder and reference during the passive period of display during the week. Though the temporal meaning assigned to the whiteboard during the updating session may differ according to the discussion going on, across the ranks of office workers, the whiteboard is a representation of priorities, accountability and supervision.

9.3 Spatial-temporal arrangement of information exchange

The whiteboard gives identity to the space as a place of convergence of practices leading towards the exchange of information amongst office workers. The discussion of the information displayed on the whiteboard becomes a point of information exchange for office workers.

9.3.1 Interactive integration and dispersal of information

The whiteboard updating session acts as a point of integration of information on office work activities that were carried out the previous week and those to be carried out in the coming week. The whiteboard displays the tasks and information given by office workers with respect to the tasks assigned to them. Additionally, the outcome of practices carried out in the accomplishment of tasks assigned the previous week, such as preparing a document, sending an email or having a meeting, is recorded on the whiteboard as the current status. The office worker giving an update on the tasks assigned refers to handwritten notes or printed documents that they have brought with them for the session. The outcomes of practices carried out in the previous week are converted into notes that are then transferred through practices enacted during the updating session. The status written on the whiteboard during the updating session includes information that is transferred by the office worker from various sources, such as physical and virtual documents, as well as orally via telephone or face-to-face conversation.

The integration and dispersal of information on the whiteboard is observed as P2 gives their team's report during the whiteboard updating session.

Reporting during the whiteboard updating session

P2 attends the whiteboard updating session every Monday at 8 a.m. During each session, she gives an update on tasks assigned to her and takes feedback from co-workers. The tasks listed on the whiteboard are categorised per section and updated in the sequence in which they are written on the board. The department has 3 sections: Property, Services and Projects. P2 is the team leader of the Services section. Some of the tasks undertaken by her section are assigned to her.

At 9:12 am, the Property section finishes giving their updates and the Services section is the next in line. The meeting leader (CW10) reads out the tasks assigned to P2 (P2). CW10 turns to her and requests the status of activities carried out last week towards accomplishing the task he has read out. The respondent verbally gives a status update of the tasks assigned to her and informs the team of the subsequent action she will take on the outstanding steps of the tasks. She refers to a small notebook that she is holding as she speaks.

The response given by P2 on one of the tasks elicits a discussion amongst the office workers present. One of the co-workers, CW13, asks questions and seeks clarification on where the facility inspection forms she has mentioned are submitted and whether he can access them for the preparation of maintenance budgets and planning of work. P2 says the forms are being submitted in the shared folders and can be accessed online. P2 also says that the forms have been revised and an email was sent out informing staff in the regions to use the new forms and that the information will be used for planning work. CW11 seeks clarification on what he is to write on the board; P2 restates the status and next action as CW11 writes it on the board using a blue pen. P2 also responds to a question raised on the status she has given regarding the task on repurposed furniture. She adds that a drawing for the area being furnished is being prepared. Another staff member asks whether the furniture will be used only in one location. The Acting Manager, CW14, interjects, responding that the

---

> *Transport office is just one location, and if this operation is successful, other locations will be furnished.*
>
> *At 9.50 CW10 moves on to items assigned to the Projects Section. The activities of one of the items under Projects require input from P2's section. CW10 gestures to P2 to respond. She gives the status as CW11 writes. She is requested to take on a certain task. She acknowledges that she will do it and it is written on the whiteboard. The input is discussed as a substantive issue and is required to be a stand-alone activity on the whiteboard.*
>
> *10.00 The discussion on the dashboard items is concluded and CW10 draws their attention to the right side of the board. The person who is supposed to give the status of the listed items is not in the meeting. P2 is asked to check and report next week. The staff member responsible was expected to report on the status of the items not closed and get assistance or guidance from the meeting.*
>
> *(Field notes, February 2021)*

During the two hours of interactive use of the whiteboard, the information being reported by office workers is integrated into the whiteboard's content as the information is written on. Information is also dispersed from the whiteboard as office workers take note of the information being written on it. Additionally, subsequent office work activities are ordered as the next steps are written on the whiteboard and tasks assigned. This temporally interactive role of the whiteboard enables concurrent integration and dispersal of information obtained from practices that were enacted the previous week. The role of the whiteboard changes from providing a record of the milestones and tasks to displaying the record of weekly assignments given to office workers, with team leaders considering the whiteboard as a tool for reference and supervision as well as a work program. Additionally, the whiteboard acts as the object used to document information dispersed to office workers. CW14 explained:

> The whiteboard gives direction for the week and the continuity of the programs that we have. It keeps everyone on track [so] nothing falls into the cracks. If we miss the dashboard, then you cannot even follow up on what people are doing. (Interview with C14, February 2021)

Since the space on the whiteboard surface is finite, previous information must be erased to make way for the writing of new information. The intersection of new and old information is resolved through the sequenced arrangement of writing practices.

9.3.2   Passive integration and dispersal of information.

During the interview, CW12 elaborates on the use of the whiteboard for reference.

> For example, we take our documents to Building B [a different building housing corporate departments]; you can't be able to remember all those documents, so you go and refer to the board and know that document is in a particular department. It

helps me track every document to know if I am doing my work well and to check if I can track all the documents where they are. When I check the board, I can know where they left the document. (Interview with CW12, February 2021)

Image 9.2: Updated whiteboard hanging on the wall.
(Field notes, February 2021)

Though the whiteboard is passive, the information displayed on it influences the selection of practice by office workers as they seek to fulfil the commitments they made before the next updating session. P2 explained the interaction with the whiteboard during other days of the week.

> People interact with it [the whiteboard] on Friday. If you have noted your issues, you can interact within two days [of the updating session] and check what other issues you have left out. But sometimes, being human, your week becomes so busy that you interact with it on Friday because you need to report on Monday. That is why sometimes people are not prepared on Monday because they looked at it on Friday and were not able to pick up on their matters ... could not close on their matters… But when they interact with it in the course of the week by the time it gets to Monday you have a feel of where your matters are. (Interview with P2, February 2021)

While the whiteboard is in the background during the week, its information directs the actions of the office workers throughout the week. The integration and dispersal of information at the whiteboard assign the whiteboard the role of connecting practices and knowledge used to progress activities.

9.4   Spatial-temporal apportionment of space

The whiteboard hangs in a prominent place and is visible from workstations in the open office where the office workers sit. Its visibility and prominence make it a key feature of the open office and it gives temporal identity to the cubicle where it hangs. Both the whiteboard and

the printer give temporal identities to the cubicle when they are being actively used. Additionally, both the whiteboard and the printer are accessible and used by staff in the open office, rendering the cubicle a shared space for staff whose designated office is the open office on that floor. Though the printer and the whiteboard share the cubicle, their use influences the identity of the cubicle. Additionally, the amount of space taken up by each object is not limited to the actual space it occupies but extends to the space occupied by office workers when they are using either of these objects. Therefore, the space in the cubicle is temporally apportioned according to its dominant use at a certain time, the object of focus and the spread of office workers across the cubicle as they use these objects.

While the spatial-temporal apportionment within the shared cubicle can be examined by observing the use of space in the cubicle, the temporal apportionment of space on the whiteboard's surface also provides an opportunity to examine spatial arrangements as work unfolds. The spatial-temporal apportionment of space on the surface of the whiteboard represents spatial arrangements arising from the collective priorities of the office workers, while the spatial-temporal apportionment of space in the cubicle signifies spatial arrangements arising from the dominant use of the space between the printer and the whiteboard at a particular time.

9.4.1   On the surface of the whiteboard

Office workers make collective choices of the priorities and importance to be accorded to tasks and thereby negotiate the spatial arrangement and space apportioned to various segments on the surface of the whiteboard. Office workers negotiate the spatial arrangement on the whiteboard as they give space to tasks that they consider important.

Space reallocation on the surface of the whiteboard.

As the Projects Section updates the status of their tasks, a discussion ensues amongst the office workers, concluding that one of the tasks assigned to Projects should be reassigned to the Services Section. CW10 notifies P2 that the task has been reassigned to her. P2 acknowledges the reassignment. CW11 starts to write the task next to a related task assigned to P2 by squeezing it alongside a task assigned to P2. However, one of the office workers protests that inadequate space is given to it and requests that the reassigned task should have a separate row as a new task. It is agreed that CW11 should find time later to reorganize a portion of the segment on the whiteboard and draw a row for it.

The updates on the tasks are completed. CW10 moves on to bring up items that came up in previous meetings but have not been concluded. CW11 asks if one of them should be rubbed out as it seems to be complete. One member of staff says it should not be rubbed out until its completion is confirmed. The item is retained on the whiteboard.

The discussion moves to the list of risks indicated on the whiteboard. CW15 asks that the space left at the bottom of the whiteboard be used for writing the opportunities arising from the risks. She points at the A4 paper pasted on the whiteboard and says that the

opportunities that were identified and listed on that paper should be on the board so that they can be reviewed at every meeting. CW10 and CW11 peruse the A4 paper that contains information used in the ISO audit, including the risks to be mitigated by the department and opportunities to be exploited. CW10 reads out portions of it. CW11 says he will write them on the whiteboard later.

Image 9.3: Office worker draws an additional row on the whiteboard

As CW10 leads the final part of the updating session, CW11 steps away and comes back with a one-meter ruler. He rubs off some information from the first segment of the board and draws an additional row to make room for the new task. He rewrites the information he had rubbed out and writes the new task on the additional row. At the bottom of the second segment, below the list of risks, he creates an additional box which he entitles 'opportunities'.

(Field note, February 2021)

The available space on the whiteboard is used according to the importance given to the tasks being recorded. By adding a row or a box on the whiteboard, office workers are raising the priority of an item and requiring that it be given attention. As office workers negotiate for the creation or retention of space for tasks that they consider important, they also adjust the priorities of other tasks by modifying the space allocated to them or removing them from the whiteboard. The allocation of space on the whiteboard reflects the collective priorities of the office workers and is driven by the meaning that the office workers attribute to the whiteboard and to the updating session. In using the whiteboard as an accountability tool, office workers demonstrate the importance of a task by giving it dedicated space on the whiteboard.

The finiteness of space on the whiteboard surface demands the reservation of space for the most valuable information and the removal of unrequired information. The space provided for information may suggest the priority of actions to be carried out. Negotiation to remove or retain information on the whiteboard involves the reprioritization of some tasks in favour of more important ones. While the removal of information is usually intended to create space for more current information and vital tasks, information may also be removed to avoid accountability and supervision. CW14 notes:

If it was their choice [the staff], they would rub certain things off the dashboard because it is all there, and people point them out. (Interview with CW14, February 2021)

In avoiding accountability and supervision, office workers also negotiate to prevent information being included on the whiteboard. The finiteness of the whiteboard surface causes the drawing of new boundaries to accommodate additional information and reduce spaces provided for less prioritised information. The spatial-temporal arrangement of information on the surface of the whiteboard is negotiated and shaped by the collective priorities and misgivings of the office workers.

While the spatial-temporal arrangement of the whiteboard is being negotiated and information updated, according to category, the whiteboard is segmented to accommodate each category, giving more space to the categories that generate the highest number of important tasks. The space given to each category changes over time as space is created for tasks that are prioritised by removing tasks that are agreed to have less priority. The continuous change of space allocation in each segment of the whiteboard represents the collective attributions of priorities by the office workers in the department.

9.4.2   In the cubicle

The cubicle where the whiteboard hangs also accommodates a shared printer that is used by office workers on that floor and also, from time to time, by office workers from other floors. The cubicle has two unallocated desks. It has multiple uses and the space within it is identified with printing, which is the dominant activity, as the printer is actively used throughout the week while the whiteboard is actively used for only 2 hours at the start of each week. However, during the whiteboard updating session, the cubicle is considered a meeting area and is taken up by office workers attending the dashboard meeting: for that time, the cubicle is 'owned' by P2's department.

To P2's department, the space in the cubicle is broadly identifiable as space around the whiteboard. Workers from other departments, however, identify the cubicle with the printer. With printing being carried out throughout the day, the space is commonly referred to by office workers as 'at the printer'. When the whiteboard session is going on, however, the space is referred to as 'at the whiteboard' and the activity as 'having a meeting'. The temporary dominant use of the cubicle as the gathering space for the whiteboard session limits and restricts access to the printer. When the whiteboard updating session is over, office workers visit the whiteboard individually or in small groups to read the information displayed on it and the space takes on the label of 'being at the whiteboard'.

Whiteboard updating session	Office worker printing after the whiteboard updating session	Office workers referring to information on the whiteboard after the whiteboard updating session
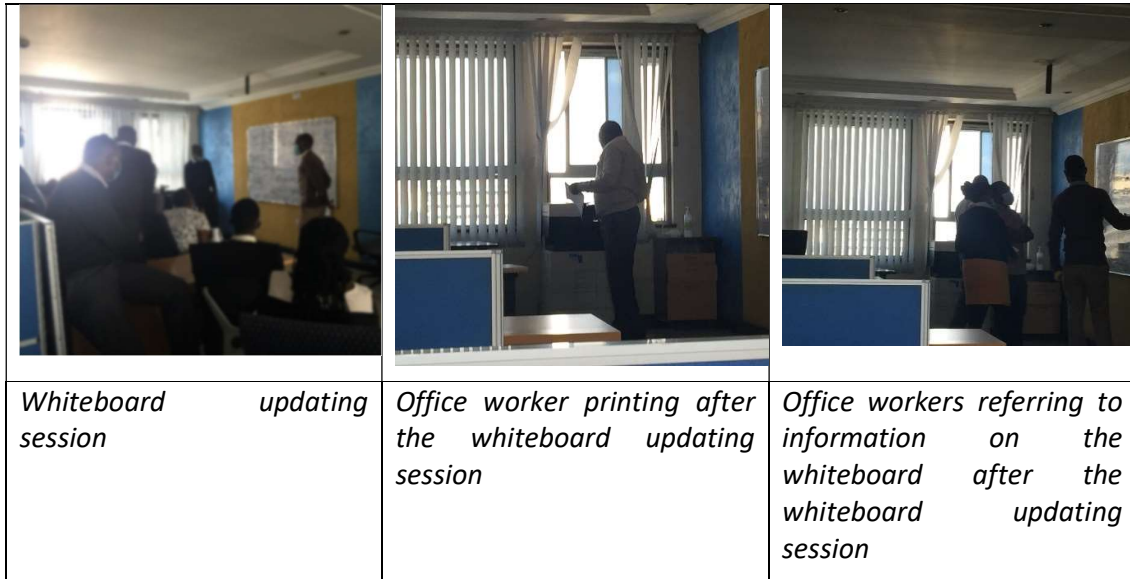
Image 9.4: Uses of the cubicle during and after the whiteboard updating session
(Field notes, February 2021)

Both the whiteboard and the printer are movable, yet they are also static as they are connected to fixed building components. The printer data and power connections tether it to the external wall on which the connecting cables are plugged. The short length of the cables limits the distance to which the printer can be moved from the external wall, resulting in the printer being at the far end of the cubicle where it is accessible only in front of the whiteboard. When the whiteboard hangs on the fixed partition, it becomes static, though it can be removed. Though the whiteboard is removable, its role as a visual display is fulfilled during and after the updating session due to its static-in-use attributes. The static in-use attributes of the printer and whiteboard result in the space having conflicting roles while the whiteboard updating session is going on. These conflicting roles were observed during the following episode:

At 9.46 a.m. as P2 is giving the status of a task written on the whiteboard, a member of staff from another floor walks in and approaches the printer. The printer is next to the window past the whiteboard, and access to the printer must be through the area where the staff are gathered to update the whiteboard. The staff member hesitates as CW10 gestures to him to carry on and pass. He passes in front of the whiteboard, proceeds to the printer, prints and leaves.

(Field notes, February 2021)

The temporal identification of the space is noted by CW14 during the interview:

> On Monday when we have meetings [updating the whiteboard] other office users [using the printer] interrupt the session. It's like they are getting into a meeting room, and they have to say, 'Excuse me'. (Interview with C14, February 2021)

131

During the whiteboard updating session, access to the printer is negotiated between the office workers who wish to use the printer and those attending the updating session. The 'permission' to interrupt the meeting is demonstrated by office workers making way for those who are approaching the printer. Though the printer space is incorporated into the whiteboard session, when the printer needs to be used, the printer space is segmented by the attendees of the updating session moving away from the printer and making way for it.

With the whiteboard catalysing information exchange, the space around the whiteboard can be viewed as a location for the exchange of information that draws together office workers in the department. As the cubicle accommodates the information exchange activity, and subsequently hosts the whiteboard for the rest of the week as a visual display of information being exchanged, the roles allocated to the cubicle by virtue of hosting the whiteboard are temporally arranged. The information exchange activity draws many office workers from the department: they collaborate by giving and receiving information used to update the whiteboard. During this activity, the office workers present take up the entire cubicle as they stand or sit in front of the whiteboard. Once the information exchange is complete, however, and the whiteboard updated, the office workers visit the whiteboard as a visual display to refer to or read when going to the printer. The meaning lent to the cubicle at various times is influenced by the roles it fulfils.

On Monday mornings, the cubicle hosts physical interaction between office workers as they undertake the activity of updating the whiteboard. This restricts access to the printer for approximately 2 hours. For the rest of the week, printer access is unrestricted, but the use of the wall on which the whiteboard hangs is restricted and the whiteboard is not removed. The view of the whiteboard from the open office is also clear and unobstructed throughout the week. Additionally, the passageway in front of the whiteboard remains unobstructed as it also serves as access to the printer and as space for office workers to stand when they visit the whiteboard to read and refer to the information on it. Throughout the week, after the updating session, the cubicle hosts the whiteboard as a passive visual display that is constantly present throughout the week reminding office workers of tasks to be accomplished, and at the same time hosts the printing of virtual documents, transforming them into hard copy. While the presence of a whiteboard does not limit the use of the printer, it apportions the spaces that are assigned to the use of the printer and the whiteboard at various times, lending the cubicle space temporal meanings according to its dominant use.

9.5   Negotiated meaning of space

The collective temporal identity of the cubicle meeting area is accepted by office workers who are not in the whiteboard updating session: this is demonstrated by their request for permission to access the printer. The negotiation for space apportionment is observed when the whiteboard updating session runs concurrently with printing: the use of the cubicle for the whiteboard updating session restricts access to the printer for the office worker seeking to use the printer while the whiteboard updating session is in progress. Office workers who want to use the printer seek permission from those updating the white board to pass among

them and use the printer. This lends additional meaning to the cubicle space as a restricted area when the whiteboard updating session is in progress. The priorities and meaning of the space are negotiated between users of the whiteboard and the printer respectively.

Office workers who sought to use the printer during the whiteboard updating session associated printing with urgency and did not reschedule the printing practice by waiting for the whiteboard updating session to end.   Office workers in the whiteboard updating session granting access to the office workers who wished to print acceded to immediate negotiation for the apportionment of space for printing while enacting practices intended to implement the collective norm of whiteboard updating. The different meanings lent to the printer and printing practice are passed on to the space and they negotiate with the meanings lent to the whiteboard.

9.6   Summary

The whiteboard episode departs from the observation of the accomplishment of work to the observation of the exchange of information through the enactment of practices.   The highlights of the examination of the whiteboard episode are as follows:

1. While the whiteboard episode may be examined as a standalone episode, it illustrated the convergence of practices enacted elsewhere and enables the exchange of information related to high-priority tasks being carried out by office workers. The whiteboard's role in information exchange and the temporal arrangement of office work lends it various temporal meanings during the collective accomplishment of office work.

2. Verbal information is exchanged, written out and displayed on the whiteboard while virtual documents are printed at the printer. In the performance of office work, workers on that floor use the cubicle to host information processing and exchange, both passively and interactively highlighting the office's role as a venue for information exchange.

3. While the printer and whiteboard may be seen to compete for space, the spatial rearrangement when these objects are in use is complementary: while space is apportioned to the predominant use, both printing and whiteboard updating proceed concurrently. The predominant use, however, lends meaning and identity to the space.

4. The experiences of office workers as they interact with the whiteboard suggest it is an enabler of collaborative work, and a tool used for communication, supervision and establishing accountability. The multiple roles of the whiteboard during the updating session and as a passive display object include record-keeping, reference, documentation, and supervision. They give a glimpse of the possibility of multiple roles played by other static-in-use objects in the office environment.

5. While the visual display on the whiteboard is a record of the performance of office work and becomes a point of reference for office workers as they execute their work, the office workers associate the whiteboard updating session with raising priorities, communicating urgency, and assessing the importance of actions to be carried out, as well as knowledge sharing. This lends the whiteboard a wide range of meanings, since it is an object whose functions include being used for learning, ranking practices, monitoring performance, supervision, and establishing accountability.

10 Chapter 10   Planned formal meeting episode.

10.1 Introduction

This episode was observed on 2nd March 2021 in P3's enclosed office in Building B. Unlike the unplanned informal meeting that was spontaneous (see Chapter 7), this meeting was planned with attendees having agreed on the meeting time and agenda in advance. The observation includes both the preparation preceding the meeting and the meeting itself.

Of interest in this episode is an examination of the spatial-temporal arrangements of scheduled and spontaneous activities, the changes in work norms and their influence on the roles assigned to objects and spaces as office work is performed. Unlike the informal unplanned meeting episode where activities transitioned spontaneously, this episode's main events compose a scheduled prior planned meeting and include the preparation for the meeting.   However, in the unfolding of scheduled work, spontaneous work activities are carried out that also assign roles to objects and shape spatial-temporal rearrangements of the objects. While the office setup is prefigured according to organisational norms and standards, in the unfolding of work changes to work norms and conventions may influence changes in the conventional roles assigned to objects and spaces and reconfiguration of office space.

The participants and co-workers in this episode are:

Identifier	Role	Location
Participants		
P3	Security Manager	Building B, 4th floor
P4	Audit Manager	Building B, 4th floor
Co-workers		
CW16	Investigating officer 1	Building B, 4th floor
CW17	Investigating officer 2	Building B, 4th floor
CW18	Lawyer	Building B, 2nd floor
CW19	Communications staff	Building B, 3rd floor
CW20	Safety Manager	Building A, 14th Floor

Table 10.1: Participants and co-workers in the planned formal meeting episode

The setting

This episode takes place in an enclosed office on the western wing of Building B's 4th floor. P3 is the Security Manager and has an enclosed office because of the nature of his work. Other employees of his rank and those of lower rank sit in an open office setup. The office is partitioned using a full-height half-glazed aluminium partition and is sandwiched between the meeting room and the open office. The office is furnished with an executive L-shaped desk solid of wood, coordinated with a full-height half-glazed cabinet, a 4-drawer

wooden filing cabinet and a side pedestal. Although the office is enclosed, the door is left open to enhance air circulation as recommended in the COVID-19 mitigation measures.

The desk is larger and of higher quality than the desks used by P3's peers. Unlike the standard 1600mm long L-shaped desks used by the staff in the open office, this desk has a 2-meter work surface and a continuous 1600mm long left-sided return with a fixed 3-drawer under-desk pedestal and meeting module. The desk seats are in the middle of the office facing the corridor. The full-height half-glazed cabinet leans on the partition between the office and the corridor. Next to the half-glazed cabinet is a 4-drawer wooden filing cabinet positioned along the partition between his office and the meeting room.

Figure 10.1: Floor Layout for Building B, 4th floor

P3's desk is oriented to face the corridor with his back to the external windows. Behind him are a pedestal with tea accessories, a water dispenser and a whiteboard leaning against the wall below the window]. In front of him are 2 leather visitors' chairs. On the desk surface in front of him is a three-tier in-tray with the manager's folder next to it. He uses the desk surface in front of him when working with physical documents. The physical documents spill over to the meeting module on his right-hand side. The desk surface continues to the desk's left return. On the left return is a laptop, telephone extension, communication RFS radio, a bottle of sanitizer and stationery. The laptop and telephone headset are connected to data from the same port whose socket is affixed to the external wall.
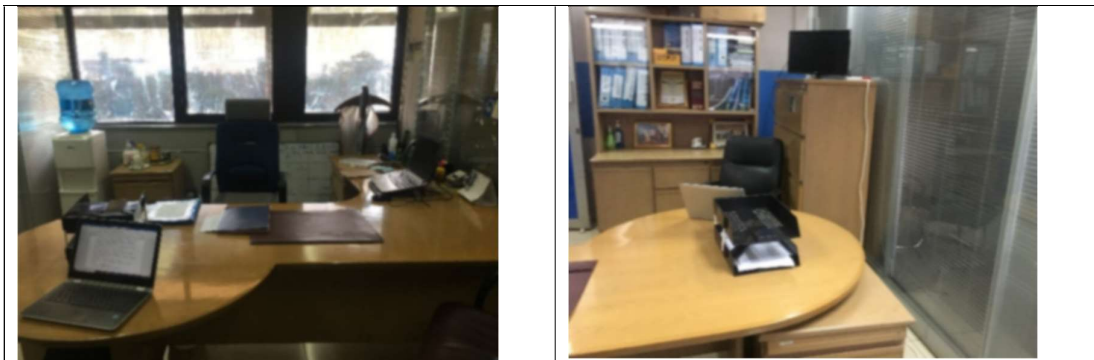
P3's desk with a left return.	*Meeting module that extends the right-hand side of P3's desk*

Image 10.1: P3's office setup

The official reporting time is 7.45 a.m. A meeting with 4 co-workers [P4, CW16, CW17, CW18] is scheduled to take place at 8.00 a.m. in P3's office. On this day, P3 arrives at 7:00 a.m. to prepare for the meeting and to see the MD before the MD's office becomes busy. He opens his office, unlocks his drawer and retrieves his laptop. He connects the laptop to data and power and logs into his email as he settles down at his desk. He also retrieves a blue spring file and the manager's folder from his drawer and places them on the desk surface in front of him.

In preparation for the meeting, P3 studies physical and virtual documents related to the case for investigation [case 1] to be discussed in the meeting.   The physical documents are contained in the blue spring file while the virtual documents are email attachments that he accesses from his laptop. He also makes telephone calls to the attendees on their mobile phones confirming to them that the meeting is still on as scheduled. One attendee, P4, says he is already in the office. P4 occupies the same floor as P3 but P3 was not aware P4 was in the office. P3 calls P4 using the telephone extension and informs him that CW18 cannot be reached on the telephone, but the meeting will continue as planned. As he prepares for the meeting, he is interrupted by a telephone call from the MD's office. He goes to the MD's office, returns after a few minutes and continues studying the meeting file. CW19, who works on another floor, walks into his office holding documents and a booklet of blank forms, one of which is partially filled in. P3 completes the incomplete portions of the form as he discusses it with CW19. CW19 leaves his office. P3 continues to read the document in the email as he refers to the physical file.

The meeting does not start at 8 a.m. as scheduled. CW17 has not yet arrived. P3 calls the 2 available co-workers [P4 and CW16] on the phone and informs them that he will call again when the meeting is ready to begin; then he continues reading his emails.

At 8:10 a.m. P3 makes a call to CW19 on his extension and discusses an email relating to the form he was completing. He completes the call and continues reading emails. At 8.17 a.m., he receives a call on his extension from CW19. He refers CW19 to information contained in an email he has sent to her. He turns his attention to another email and, at 8:21 am, he lifts his mobile phone from the desk surface and makes a call to CW20, who is in another building. He puts CW20 on speaker and refers to his email as he speaks to him. CW20 gives him information on a safety incident case [case 2]. P3 takes notes in his notebook as he speaks on the telephone.

At 8.25 a.m., the awaited co-worker [CW17] arrives. P3 calls P4 and CW16 to join him in his office. The 3 available co-workers walk into his office at different times. P4 walks in first and sits on the available chair. CW16 and CW17 were using chairs from the waiting area outside P3's office. The existing chairs are rearranged to make room for the additional 2 chairs.

The meeting starts at 8.35 a.m. P3 sets aside the Manager's folder and places the blue file on the desk surface in front of them. P3 and the 3 attendees refer to various documents in the blue file as the discussion proceeds. They also refer to the information on the cover document on the file. P3 and one other co-worker write notes In their notebooks as the meeting progresses.

At 8.45 am, P4 leaves P3's office and P3 continues the meeting with the remaining 2 co-workers. They discuss the need to add a specific letter to the case file. P3 says he will take

that up immediately and begins to make a call on his telephone extension [to ask for a letter to be put in the file]. The call goes unanswered. As he hangs up, the extension rings. He announces that he has been called by the MD. He stands and CW16 and CW17 also stand and walk out dragging out the chairs they came with. CW17 carries the blue file with him. P3 picks up his notebook and pen and leaves immediately. The office is rearranged to its former state.

The meeting ends at 8.48 a.m.

(Field notes, March 2021)

Ahead of the planned meeting, P3 arrives in the office before designated working hours to prepare for the meeting and undertake other office work tasks. The accomplishment of the scheduled tasks is dependent on aspects such as the physical presence of co-workers in the office building and the prefigured office setup. With the office being prefigured for certain roles, the physical attributes of the space and objects play roles in enabling and constraining enactment of office work practices and accomplishing the intentions of office workers as office work unfolds.

While the functional role of a desk is easily identifiable by the presence of objects used for accomplishment of work, the size of desk, office space and accessories such as cabinets as well as the spatial position of the desk all signify that the rank of P3. Though the filing of physical documents within office workers' individual workspace has diminished with the use of virtual documents, the cabinets remain in the workspace where they give identity to spaces as well as providing surfaces for the display of information and as well as accommodating mementos and other personal objects that identify the hierarchical and professional rank of the occupant of the space. While the cabinet is not incorporated in the enactment of practices during the episode, it plays a functional role in enhancing visual privacy between the corridor and P3's office and symbolic role of identification of the rank of P3.

10.2 Preparation for the meeting – the intersection of scheduled and spontaneous practices

The meeting preparation takes place in P3's office before official work hours and is carried out by P3 alongside other office work practices.

At 7.22 a.m. P3 turns to face the front of his desk. He places the file on top of the correspondence folder. He opens the file and peruses documents in it. The file contains the original documents concerning a case for investigation [case 1]. The case is coming up for hearing and P3 is preparing for a meeting to get into the facts of the case.

7.26 a.m. he turns to the laptop, goes back to his email window and searches for a specific email.

7.27 a.m. He opens the attachment of the email, reads it, and turns his attention to the file. He moves his fingers on the papers and intently reads a hand-written statement.

> *7.30 a.m. He makes notes in his notebook, still perusing the handwritten documents in the file. The notebook is on his right-hand side.*
>
> *7.32 a.m. He continues by perusing the printed copies of documents in the file. His notebook is on top of the folder and his pen is at hand ready to write. The manager's folder is still on the desk.*
>
> *7.33 a.m. P3 turns to the laptop, opens the contact window and dials an extension. He talks to the person he is calling (P4) on speaker. He informs him that he cannot reach CW18 [who was to participate in the 8 a.m. meeting] on the telephone, but the meeting will continue since CW17 is on the way.*
>
> *(Field notes, March 2021)*

The preparation for the meeting includes reading the file, reading the email correspondence, speaking on the telephone and taking notes. The work practices converge at a spatial-temporal position as P3 enacts multiple practices. P3 explains the preparation for the meeting.

> I had requested the file so that I could study it. I got it yesterday. I had actually come early today because I knew I was to see them at 8 a.m. together with the chairman of the appeals committee and legal. But we had a conversation with legal (who didn't come to the meeting) and they gave their guidance. (Interview with P3, March 2021)

Central to preparation for the meeting is studying the investigation file and email correspondence related to the case [case 1]. During the interview, P3 explains the purpose of the file and the email communication:

> The file was a case that we are pursuing in court and a perspective had come that we need to convert one of the accused to be a witness so to give proper guidance I needed to know the critical aspects of the case and the criminal liability so that we are in agreement. I needed to go through the statements and see whether his is [this is a case of] criminal liability. The documents in the file originate from investigating officers. There was some information from stores on the particulars of the case that were in the email, which I needed to check so that we are clear. (Interview with P3, March 2021)

P3's preparation for the meeting includes practices such as reading the file, reading the email correspondence, speaking on the telephone and taking notes. The desk is the main object in the office and is placed in the middle of the room with all other objects arranged on or around it to complement its use. The objects on and around the desk are prefigured for the performance of solo and collaborative office work, and are rearranged as practices intersect and the office worker transits from one practice to another. The rearrangement of objects at the intersection of practices aids the accomplishment of complementary practices and also resolves conflict between practices as P3 is transiting from one practice to another.

10.3 The role of objects at the intersection of practices

In preparation for the meeting, P3 enacts various practices that converge at his desk. The desk is assigned the role of a workbench with tools such as the laptop, telephone extension and notebook placed on it, complementing other objects that have been incorporated into the meeting preparation practices, such as the physical file.

10.3.1 Complementarity and conflict at the intersection of practices

During the observation, P3 undertook scheduled activities that were interrupted by unscheduled tasks that arose out of emails he read, face-to-face interactions with staff, and telephone calls. These unscheduled tasks were incorporated into ongoing scheduled activities. To perform the unscheduled tasks alongside the scheduled, the office worker incorporates the objects around him into the activities and assigns them more than one role and purpose.

P3's solo work contributing to meeting preparation revolved around the use of his laptop computer, physical documents and the telephone. P3 considered work emails as being the most frequent channel of receiving information, with the telephone being used for "*giving feedback and getting clarity on the report*". In ranking the most important objects, P3 notes:

> The computer there is where correspondence mainly comes through. The traffic that comes through the email is more than the hard copy correspondence through the folder. In terms of traffic, the computer is most important. (Interview with P3, March 2021)

P3 also considered the folder and notebook as significant and explained their roles:

> The folder is used to carry the memos and correspondence that require my action or my signature. As I get tasks, the notebook acts as my diary and when I make a decision, I also document [it] so I can easily refer [to it] if any clarity is required. Being a diary, there are things that I need to follow later, so I document them and review those activities that are still open, then I close [undertake the task], or those that are being carried forward to the next day because it is not possible to close them within the day. (Interview with P3, March 2021)

P3 incorporates the mobile phone and notebook as objects taking up various roles arising at the intersection of reading, emailing, telephoning and notetaking practices. Though the laptop, notebook and mobile phone are present at the intersection of these practices, the intersection arises from the telephone call by P3 to CW20 while reading the email sent by CW20. Notetaking arises out of the need to write down information being exchanged in the telephone conversation. Though the telephone conversation and the notetaking may seem spontaneous, they are made possible only by the readiness of the pen at hand, the mobile phone and the notebook on P3's desk. The proximity of the laptop screen to the notebook on the desk gives a convenient spatial arrangement for reading from the computer screen and

140

writing in the notebook. Also, the loudspeaker is a functional attribute of the mobile phone that enables P3 to free his hands to write in the notebook while reading his email and speaking on the mobile phone. The prefiguration of the objects at the intersection of the practices and the readiness of their respective physical and functional attributes enables the concurrence and spontaneity observed.   As P3 interacts with objects through bodily movements such as picking up a pen, repositioning a notebook or using the computer mouse, he makes continuous spatial-temporal (re)arrangements of objects on the desk surface in order to accomplish the task. The complementarity of objects and roles at the intersection of practices is enabled by the spatial-temporal arrangement of objects and their physical attributes.

As the three practices converge, the mobile phone is assigned the role of transferring spoken information arising from the email while the notebook enables the recording of information being passed on via telephone. While individual objects may be viewed as connecting objects as they complement each other in the transfer and translation of information from email to verbal to handwritten forms, they play the role of boundary objects in individual practices. The laptop is the end object of the email as it is received and read from the laptop, and the mobile phone is the last object, transferring signals between the two co-workers. Upon the office workers' reception of verbal communication through the mobile phone, the notebook is at the end of the transfer of information as the information is written on it. At the spatial-temporal intersection of the practices, the performance of action is a collaboration between the bodily movement of the office worker, the spatial configuration and physical attributes of the objects and artefacts that are incorporated into the practice, and the temporal arrangement of doings and sayings. The act of reaching out for a pen and concurrently speaking on the telephone is fulfilled by the spatial-temporal assembly of the pen, notebook, telephone and office worker.

The precision of the spatial-temporal assembly of objects, artefacts and bodily movement is dependent on the prefigured setup and readiness of the objects and space for prefigured and anticipatory roles. The prefigured and anticipatory roles play complementary roles, which may be viewed as primary and secondary roles, towards facilitating the concurrent and spontaneous performance of practices.

These observations suggest that the office work is dynamic and while objects at the intersection are assigned primary roles that they are prefigured for, they are also assigned secondary roles that are influenced by the circumstances and 'what is going on' at the time of performance of the work practice. P3 uses the notebook to record valuable information and tasks to be done. At the time of taking the notes, P3 is recording key information from the conversation that he intends to use when carrying out the task related to the information he is receiving on the telephone. The notebook's primary role at the time was to keep a record of the discussion. P3 also considers that he may not carry out the tasks on the same day but may carry the task forward to the next day. This leads the notebook to the secondary role as a repository of the tasks to be carried out at a later date.

The concurrent and spontaneous performance of practices at their spatial-temporal intersection may be seen as mundane and effortlessly occurring in the intertwining of everyday office work practices such as reading, writing and working on the computer.

However, the roles assigned to the objects may differ depending on 'what is going on' and the trigger for the spatial-temporal intersection. The concurrent reading, writing and working on the computer may be undertaken to transfer information, transform information from written to spoken and vice-versa or to translate the information from one medium to another.

At the intersection of practices, the arrangement of activities may lead to spatial-temporal complementarity or conflict in the roles assigned to objects. In this episode, it is observed that the telephone complements the computer in providing clarity and feedback, but the information received and passed on via the telephone conversation does not occur in spatial-temporal concurrence with the email communication. The recipient of the telephone call may not be within reach of their computer and may not clarify information when requested. While the physical and functional attributes of the objects may be ready to play the roles required, the spatial-temporal arrangement of activities of the office worker determines the accomplishment of the practices.

Enabled by their respective physical and functional attributes, the laptop, mobile and notebook complement each other at the spatial-temporal intersection of the practices they support. The concurrence and spontaneity of the practices result in an overlap and intertwining of doings and sayings that comprise the email reading, telephoning and notetaking practices in the spatial-temporal convergence of the three practices. At the spatial-temporal point of intersection, information is converted from spoken to written or visa-versa and the objects used complement each other and are assigned complementary roles. The performance at the intersection of practices requires spatial-temporal matching of the roles assigned to objects and activities. The success of performance at the intersection is dependent on, amongst others, the spatial-temporal alignment of the readiness of objects and office workers.

10.3.2 The negotiation between scheduled and spontaneous practices

As the scheduled practices, such as reading the investigation file before the meeting, intertwine with spontaneous practices, such as making telephone calls, the scheduled and spontaneous practices may overlap. The successful performance of scheduled and spontaneous practices is enabled by the complementary roles assigned to objects and spaces as work unfolds. While the roles to be assigned to the objects may initially be predetermined, emerging roles are assigned as objects in the performance of work are aligned with or required to depart from their prefigured functions. In the unfolding of work, office work practices are dynamic: spontaneous and scheduled practices are enabled or constrained by the prefigured roles of objects.

The planned meeting also scheduled work practices for other attending office workers. P3 had previously informed P4 that they would have a meeting and P4 had scheduled the meeting as part of the day's activities. P4 explains his work schedule:

> I get to the office by 6:15 a.m., at the latest 6:30 a.m. Then I start with anything that was pending from the previous day. I clear that first.. Today, I started with a call from

one of my colleagues reminding me of a meeting to be held in his office. (Interview with P4, March 2021)

While the meeting and meeting preparation practices had a scheduled time and place, P3 carries out practices unrelated to the meeting preparation as he waits for the participants of the meeting to arrive. The delay in the meeting's commencement frees time for spontaneous practices unrelated to the meeting.

8.21 a.m. P3 opens another email, calls the author (CW20) on his mobile, and puts the caller on speaker. He asks CW20 about a detail that he had indicated in the email he sent yesterday. As the call continues, he goes to the messages window in the cell phone and checks some information as he speaks. He makes a note in his notebook. He informs CW20 that they should write a letter.

(Field notes, March 2021)

During the interview, the P3 explains:

> So, whatever I get the results from the team I hand them over to the respective client or department that requires the service. If need be, to clarify things, you see me calling them to clarify information that is required. One of the calls was another case [case 2] that CW20 was following up and I needed to know because he wanted to get information about the mobile phone that was stolen during the incident. So I was giving feedback and getting clarity on the report. (Interview with P3, March 2021)

Studying the file and reading an email containing information on the case are scheduled practices in preparation for the meeting for case 1. After reading the email related to case 1, P3 proceeds to read an email on case 2 that is unrelated to case 1, the subject of the meeting he is preparing for. He also proceeds to make a telephone call to the author of the email on case 2. The telephone call is a spontaneous practice intended to obtain more information on case 2 from the person whose email he has opened. While the two cases are unrelated, the telephone and laptop are prefigured objects that have the readiness to be assigned roles for different purposes. P3 makes the transition from preparing for a meeting on case 1 to seeking additional information on case 2 without any change of configuration.

While the transition between the scheduled practice of reading the email about case 1 and the spontaneous practice of reading the email about case 2 does not require changes to the roles assigned to the office setup, the transition from the preparation of the meeting to the enactment of the meeting reassigns the role of the office setup. Though the meeting is scheduled, the office setup is rearranged to transition from meeting preparation to the meeting practices.

10.4   The meeting – Changing roles of the prefigured setup

The meeting

8.25 a.m. CW17 arrives and looks in P3's direction from the door but doesn't go into the office. He gets P3's attention, however.

8.28 a.m. A call comes through on P3's mobile phone. He speaks on it as he motions CW17, seated in the waiting area, to come into his office. The partition of his office is glazed, and P3 can see through the partition.

8.29 a.m. P3 calls on the telephone extension P4 [P4 is seated at his desk on the same floor as P3]. P3 wears his face mask as he waits for CW17 and P4 to get into his office.

8.30 a.m. CW17 and P4 get into P3's office. There is one available chair. P4 seats on the available chair and CW17 goes out and gets a fabric visitors' chair from the waiting area and into P3's office. They sit down and start the meeting. The investigation file is opened and displayed in the middle of the desk. This is the same file P4 was studying as he prepared for the meeting.

8.35 a.m. CW16 joins the meeting and brings into the office a fabric visitor's chair from the waiting area. P3 continues speaking as CW17 opens his diary in preparation for making notes.

8.38 a.m. CW17 makes notes as P4 speaks.

8.42 a.m. CW16 and P4 point to the information written on the top document of the investigation file. They refer to the information on the top page.

8.45 a.m. P4 leaves and P3 continues the meeting with CW16 and CW17. They discuss a particular letter that needs to be added to the file.
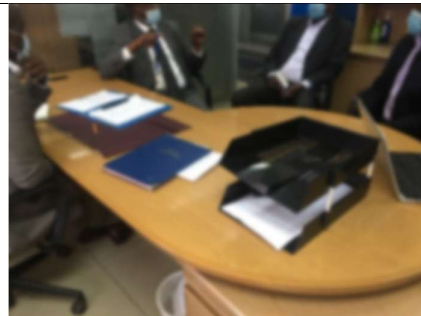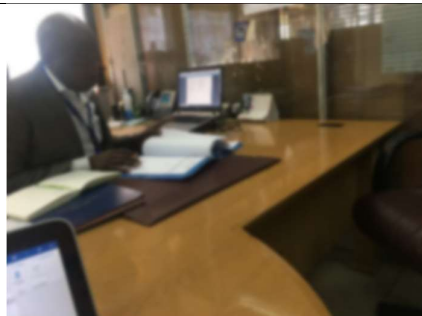
8.00 a.m. P3 studying the case file before the scheduled formal meeting	*8.37 a.m. Spatial arrangement during a meeting with the additional chairs arranged around the desk and the case file spread open on the desk.*

Image 10.2: Spatial arrangement of office when P3 is preparing for the meeting and when the meeting is taking place.

8.46 a.m. P3 makes a telephone call using his extension [to ask for the letter]. The call goes unanswered. As he hangs up, the extension rings. P4 announces that he has been called by the MD. He stands and CW16 and CW17 also stand and leave the office dragging out the

> *chairs they came with. P4 picks up his notebook and pen and leaves immediately. CW16 carries the file with him.*
>
> *The office arrangement is restored to the way it was before the meeting.*
>
> *(Field notes, March 2021)*

The importance of the meeting was described by P3:

> Two of the persons [CW16 and CW17] in the meeting are investigating officers who have the file in court, and they are the ones who will defend the case in court, so I needed to loop them in so that we are on the same page so far as the case is concerned. P4 was a chairman of the committee handling the matter (Interview with P3, March 2021)

In the transition from solo work preparing for the meeting to the planned formal meeting at his desk, P3 invites the meeting participants into his office and requests them to bring in the chairs from the waiting area. He keeps the investigation file on his desk.

P3's choice to use his office for the meeting instead of the meeting room was explained during the interview:

> This one is quite spacious, and I can have a meeting of 3 or more people. The other was smaller. Especially in the wake of corona [COVID-19 pandemic], this is more spacious, and I don't need to book a meeting room so it's convenient for me. (Interview with P3, March 2021)

P3's former office was smaller than the current office, limiting the range of roles to which the office could be assigned. The spatial limitation of P3's former office prevented the improvisations that could have adapted the office to collaborative work meetings. His current larger office increases his choices for the meeting location and expands the roles assigned to the office.

10.4.1 Expansion of prefigured roles

Prefiguration of the office setup makes it compatible with organisational norms such as hierarchy and work procedures. The enclosed office fulfils its prefigured role as an individual workspace for solo work during the preparation for the meeting and the spontaneous practices that emerge during the meeting preparation. During the episode, the primary role of the office as an individual workspace is temporarily disregarded, as the meeting practices take prominence. The prefigured role of the office as an individual workspace is suspended and gives way to the scheduled role as a collaborative workspace. During the change from solo to collaborative practices, the space is converted to take up additional roles by adjusting the spatial arrangement of various objects that are on and around the desk, such as chairs and physical documents. The adjustment of objects is observed when additional chairs are brought from the waiting area into the enclosed office, the manager's folder is removed from

145

the surface of the desk and the blue case file is placed on the front segment of the desk. Therefore, objects that were static-in-use during solo work became movable objects during meeting practices. However, the spatial position of the fixed objects such as partitions, and static-in-use objects such as the desk and cabinets, as well as tethered objects such as the telephone extension and laptop, are adopted as the prefigured setup for the meeting practices. The setup is lent the meanings associated with meeting being held.

As the meeting practices are incorporated, the setup is assigned new roles and lent new meanings, necessitating adjustment of the movable objects. The incorporation of readily available movable objects and adoption of the prefigured set up of fixed and static-in-use objects modifies the overall spatial arrangement, changing the individual workspace to a meeting set up. The ease with which the space is reconfigured by using the movable objects expands the prefigured role of the office as additional roles are incorporated.

In the incorporation of additional roles, the prefigured roles are temporarily suspended. The expansion of the prefigured roles of the individual workspace is driven and enabled by convenience. However, the additional role of the meeting could not be carried out at the same time as the concentration work. The nature of the meeting required setting aside solo concentration work. Consequently, the role of the office as an individual workspace was suspended.

Readily available objects enable the ease of expansion of the prefigured roles and provide basic configurations for anticipatory roles assigned to objects. It is observed that the desk is assigned the anticipated role of the meeting table due to the ease of incorporating additional chairs and arranging them around the desk. During the meeting, the roles of the existing visitors' chairs in the office and waiting area are reassigned: they take up the roles of meeting chairs. The visitors' chairs are therefore on standby to fulfil the anticipatory role of meeting chairs. Driven by convenience, the objects in and around the enclosed office are assigned roles and rearranged to accommodate the expanded role of the office.

10.4.2 Readiness and anticipatory role of the objects

The enclosed office setup consists of fixed and movable objects assembled to form a workstation that is self-contained, with filing cabinetry, a tea and water point and a meeting module. Unlike open offices, where the filing area, tea and water point are shared, the enclosed office contains the individual service points for its occupant. The fixed full-height partitions that enclose the office and large objects such as the desk and cabinets, which make up the static setup of the enclosed office, are spatially arranged and prefigured for anticipated concentration and collaborative work activities. In addition, the fixed partitions, the cabinets and desk remain in a fixed spatial position until the office floor is reorganised, rendering the cabinets and desk 'static' objects, although they are movable. The enclosed office makes the setup ready for confidentiality associated with the meeting's purpose.
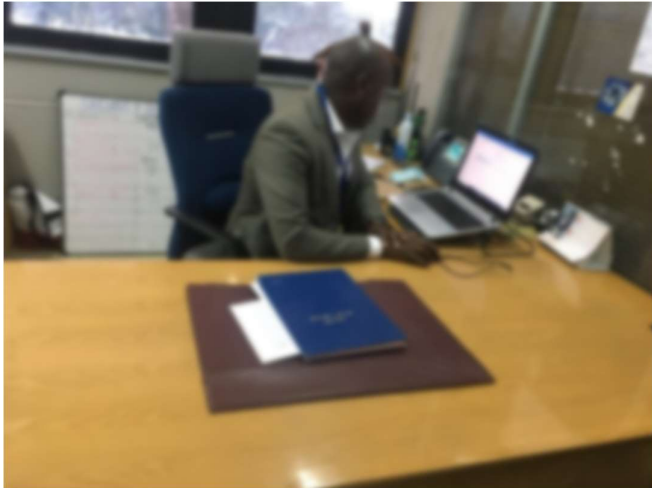
Image 10.3: P3 carrying out concentration work
(field notes, March 2021)

The prefigured setting of a left-return desk with data and power cables that provide a convenient connection between the laptop and telephone extension forces the office worker to carry out concentration work, such as working on the computer, on the left return and turn to the front of the desk when working using physical documents. While the physical limitations, such as the length of the cables connected to office equipment, have a major effect on the apportionment of space on the desk surface, other factors, including the office workers' choices and the modifications they make, contribute to defining the range of roles assigned to various segments of the desk surface. According to the initial observation, the desk surface is divided into three segments: the meeting module, the front surface and the left return. While the desk surface is continuous, the three segments of the desk are identifiable by the shape of the desk, the objects placed on the segment and the seating position of the office worker when they are working. During the observation, the office worker carries out collaborative work on the front surface of the desk and uses the left return to carry out concentration work. Visitors' seating is provided at the front while objects for individual use, such as the radio, reference documents and personal hand sanitisers, are located on the left return, out of visitors' reach.   The presence of the reference documents, notebook, laptop and telephone extension on the left return anticipates concentration work to be carried out on the left return by the office worker turning from the front of his desk to his left to face the laptop on the left return.

The physical attributes of the swivel chair used by the office worker ease his bodily movement of the office worker, enabling him to turn easily from facing the front of the desk to facing the left of the desk. Facilitation of swift transition between segments of the desk provides a quick transition from concentration to collaborative work. Additionally, the ease of transition enables swift reassignment of roles as adjustments require minimal spatial-temporal rearrangements. The ease of spatial rearrangements of static-in-use objects expands the anticipated roles of the office from concertation to collaborative office work, enabling the office to fulfil the role of a meeting room and impacting the spatial choices of the office worker.

10.4.3 Office workers' preferences – convention versus convenience

Conventionally, meetings are held in designated meeting areas. The interior designer explained, '*Meeting space is an important space to consider so that people can meet in small groups or large groups*'. The enclosed meeting room next to P3's office communicates meeting norms including, the use of a meeting room. In this episode, a formal meeting is executed with a sense of informality; with the organisational norms that require the use of the designated meeting spaces being relaxed.

The meeting was critical to P3 and his co-workers, necessitating prior scheduling and preparation by P3. While the meeting rooms are available to any office worker, subject to prior booking, prior planning of this meeting did not include the booking of a meeting room. The spatial-temporal arrangements of the meeting are treated with informality and without significant prior arrangement, while the content is treated with formality and required prior preparation. Though the meeting arrangements are treated with informality, this does not diminish the more formal intention of the meeting, the need to prepare for it and the importance of the content being discussed.

Though it is conventional to use the meeting room for a prior planned meeting, using P3's office sets aside the organisational norms of formal planned meetings. The convention of carrying out meeting practices in a meeting room is supported by the availability of meeting rooms on every floor of the office building. In the quest for convenience, P3 uses the enclosed office and its furniture setup for a meeting. The attributes of the enclosed office with full-height partitions provide acoustic privacy and partial visual privacy. Additionally, the desk is designed with a meeting module. However, on its own, the desk, despite the meeting module, is insufficient to host a confidential meeting without the full-height partitions that separate P3's office from the rest of the floor. P3 explains the nature of the information he handles:

> It [the door] needs to be closed because of the nature of the work and information that I handle. Sometimes I have to debrief a suspect or an informer: this is done in an enclosed place where it has the least effect on the other people and where the other person is comfortable so that they can give the information. (Interview with P3, March 2021)

P3's decision to use his office is enabled by the readiness of P3's office to host a closed-door meeting. While his decision to hold the meeting in the enclosed office is influenced by physical attributes of the office, such as its size and closed partitions that provide sufficient space and privacy for the meeting, the intended convenience is achieved by the ease of using the space. During the meeting, P3 uses his bodily movement to shift from the portion of the desk surface segmented for concentration work to the one segmented for collaborative work. Having the various segments of the desk within reach for interaction with bodily movements enables the office worker to minimise his movement in the office as the segments of the desk are within arm's reach, so that he does not need to get up from the chair. The physical attributes of the chair complement the desk and office setup in providing convenience to P3. Convenience may be understood as minimising movement between one activity another, and the easy

intertwining of scheduled and spontaneous work activities within the office workers' workspace.

The choice to go for convenience instead of convention renders the meeting room temporally redundant for meetings that can be held in the enclosed office. While the objects' physical attributes may provide complementarity that facilitates readiness for additional roles other than those anticipated, the additional roles may not be limited to those envisaged during the design and setup of the office. The additional roles assigned to office spaces and objects may arise out of the choice to perform a practice by exploiting opportunities in the temporal-spatial arrangements enabled by readiness for conventional and anticipated roles. Selection of convenience over convention enables the office worker to weave in spontaneous work activities within scheduled work activities without leaving the space and improvise the space by reconfiguring the movable objects. The modifications made by reconfiguring movable objects on and around the desk were considered by the office worker as less inconveniencing than holding the meeting in the meeting room. In using convenience as the reason for using his office for the meeting, P3 considers that it is less cumbersome to reorganise movable objects in the office than to use the meeting room.

While the use of the office for meeting activity may be attributed to the office worker's convenience, it also supports change in office work practices and changing roles of the prefigured setup. P3's decision to hold the meeting in his office is based on his preference, and his co-workers' enactment of meeting practices at P3's office motivates the other office workers to a make collective choice to use P3's office. While the collective choice may be viewed as the subscription to PS's convenience, it also demonstrates the relaxation of norms attributed to the use of meeting rooms. The flexibility of meeting locations renders the designated meeting spaces temporarily redundant and expands the roles of other spaces of the prefigured setup.

10.5 Summary

In the unfolding of work, changes to work norms and conventions impact the conventional roles assigned to objects and spaces in the prefigured setup.   In this episode, observations are made of the spatial-temporal arrangement of work as it unfolds, the complementarity of objects and the roles they are assigned. The highlights of the analysis are summarized as follows:

1. While workers are seeking to provide convenience, the objects and spaces may be assigned roles that were not anticipated during their original prefiguration. Additionally, objects and spaces may become temporarily redundant in the roles they were designed to play, as the prefigured roles become suspended or superseded by new norms.

2. Office work norms have the potential to evolve and make redundant prefigured office environments that are set up according to organisational work norms. The office worker, in seeking convenience, overlooks the conventional work norms and

reconfigures the space to suit immediate needs. While prefiguration may be based on past organisation standards and working procedures that influence the setup of the physical environment, the reconfiguration of the physical environment is enabled by the flexibility of the prefigured setup. The flexibility in the modification of spaces and adjustment of movable objects enables office workers to express their collective choices as they seek convenience at the workplace.

3. Office workers consider suitably prefigured office setups to be those that support the dynamic nature of office work. While the objects play distinct roles and support different practices, in the accomplishment of office work tasks the roles assigned to objects and spaces are shaped by temporal arrangements of practices being performed. However, temporal arrangements of practices are also enabled by the prefiguration of objects and the physical and functional attributes of those objects. It is observed that scheduling and interruption of schedules are part of temporal (re)arrangements that impact temporal structures of work practices, including concurrent and sequenced enactment. The temporal arrangements of office work are continually evolving during the unfolding of work as office workers seek to adapt the setup to the work requirements. These temporal arrangements are enabled or constrained by the potential of the prefigured configuration of space to undertake the roles assigned and the complementarity of the additional objects incorporated to support the temporal roles assigned to the space.

4. The arrangements of the office may be largely static, but arrangements on and around the desk are dynamic and change as work unfolds. The static-in-use objects, such as partitions and cabinets, remain in the background: their role is diminished as other objects such as laptops, telephones, files, and chairs become actively used. Though the laptop, telephone, files and chairs do not have a significant impact on the arrangement of the floor layout, due to their physical attributes, including their comparatively small size and portability, their influence on the accomplishment of a task raises their significance, and their configuration within the office acquires importance. The temporal deflection of focus from the static-in-use and concentration of focus on the actively used objects fluctuate with the unfolding of work as other objects come in and out of focus.

5. In carrying out various activities, office workers process and convey information for specific purposes, using objects to which they assign roles. The information is processed and conveyed between office workers, transferred from one object to another, and converted from one medium of communication to another through convergence and transition of office work practices. Performance of office work, whether planned or spontaneous, brings about convergence or transition of practices as work unfolds. Convergence of practices is observed where practices are performed concurrently at the same place and time, while the transition between one practice to another is observed where the practices are performed in sequence.

11 Chapter 11   Summary of Findings

The data and analysis in chapters 7 to 10 showed that, in the unfolding of office work, there were linkages between the prefigured setup of the office and norms of office workers, the choices they made and the spatial-temporal rearrangements of the physical environment that take place as work unfolds. The study results show that the prefigured setup, by applying organisational norms, supported the performance of its anticipated roles in the accomplishment of office work. However, office work is dynamic and as it unfolds the roles assigned to objects in the prefigured setup are adjusted to suit personal preferences as individual office workers seek convenient ways of accomplishing their work. Convenient ways of working rearrange office work practices, modify the roles assigned to objects, reassign roles to the physical attributes of the objects and spaces, and adjust the office setup. The study also demonstrates that the prefigured setup is gradually reconfigured to accommodate new norms that emerge as individual preferences are retained, and new collective norms emerge.

This chapter presents the findings from the four episodes.

11.1 Finding 1: the prefigured setup shaping and being shaped by norms and preferences.

The host organisation for the situated case (described in Chapter 6[6.2]) has written and unwritten rules that guide the actions of workers and the setup of places where various activities are carried out in the accomplishment of work as observed in setup of the document preparation episode in Chapter 7(7.2). While individual office workers may have personal preferences and norms that they apply at the micro level, the office setup and organisational norms of the place of work give directives, instructions and objectives that inform what office workers do in individual workspaces. The study found that though office work is dynamic and evolving, the objects and spaces provided for individual workers' use are prefigured in the enforcement of regulations and guidelines for the achievement of corporate objectives.

In a quest for uniformity in office arrangement and to ensure compliance with organisational norms, office workers are expected to use spaces and objects as provided in the prefigured setup with minimal adjustments to the spatial arrangement. An examination of the prefigured setup shows that it not only provides space and objects for the accomplishment of office work, but it also communicates, interprets, and enforces compliance with organisational norms.

11.1.1 The prefigured setup

The setting in each episode describes the prefiguration of the designated office and helps provide an understanding of roles assigned to the objects as the practices are performed. The prefigured office setup is observed through the spatial configuration of fixed and movable objects and is distinguished by attributes such as space allocated to individual workstations and shared spaces, partition heights, physical attributes of furniture and equipment, and distance between workstations. The prefigured setup comprises both fixed and movable objects. The fixed objects include objects that make up the building structure as well as fixed components such as fixed partitions, electricity and data connections, inbuilt cabinets, and fittings. Movable objects include desks, chairs, computers, and telephones, and are not affixed to the building structure. Though computers, printers and telephone extensions are movable, they may be tethered to the building structure by power and data cables. In the prefigured setup, fixed and movable objects have pre-assigned functional and symbolic roles that include enabling work practices, defining the type of space and rank of the occupant (see document preparation episode Chapter 7[7.2] and unplanned informal meeting episode Chapter 8[8.2]).

The fixed objects are arranged together with movable objects whose spatial configuration does not change as work unfolds. Since the fixed objects are spatially static, during day-to-day use of the space they remain in the background, playing the pre-assigned roles of shaping and defining spaces while concurrently performing the complementary roles of supporting other objects during the enactment of practices. This is observed in the intersection of practices during document preparation episode (Chapter 7[7.3, 7.8]) and unplanned informal meeting episode (Chapter 8[8.3]). These spatially static movable objects become static-in-use objects during the enactment of work practices. They include large movable objects such as desks and cabinets as well as computers and printers that are tethered by cables terminating in fixed building components such as walls and floors. In all the episodes, the position of desks, cabinets, telephone extensions, printers and desktop computers remained in the same spatial position while practices were enacted. Since the functionality of a computer depends on its connection to data and electricity, it becomes predominantly static-in-use as a tethered object on a desk that is also static-in-use. This demonstrates that, as work unfolds, the static-in-use objects become 'fixed', retaining their spatial position during the enactment of office work. Though fixed and static-in-use objects complement each other in their assigned primary roles, such as providing form and shape to spaces, as observed in the planned formal meeting episode Chapter 10(10.3.1), they are also assigned the secondary roles of enabling practices as they are enacted and supporting the functionality of the space.

11.1.2 The prefigured setup, norms and preferences.

The prefigured setup is shaped to encourage and enforce compliance with the organisational norms by providing spaces whose configuration enables desired action and constrains undesired action. This is observed in the setup of the document preparation episode Chapter

7 (7.2) and unplanned informal meeting episode Chapter 8(8.2). By using physical attributes of objects, the prefigured setup restricts and allows access to spaces and shapes the enactment of office work practices in those spaces. For example, the closed office setup for high-ranking office workers limits top management's accessibility and interaction with office workers, while the open office setup for office workers in other ranks encourages face-to-face interaction between co-workers. This suggests enforcement of norms related to interaction with diverse levels of authority across the organisation. Additionally, the provision for each office worker of a workstation that comprises a desk, chair, desktop computer and telephone extension suggest the requirement for each office worker to work from their assigned workstation.

The norms of office work that are set by the organisation, such as reporting structures, modes of receiving, doing and submitting executed work, modes of interaction with co-workers and supervision are enabled and at the same time predetermined by the spatial arrangement of the office set up. As observed in the unplanned informal meeting episode, Chapter 8(8.2), though the application of organisational norms is part of the office workers' everyday experience, some norms are intangible and made visible and tangible through the office configuration and availability of infrastructure for use. In everyday work, norms are made visible in the office setup through the arrangement of space, signs, and notices as well as finishes, as the office is set up to anticipate the roles that it will fulfil as demonstrated in Chapter 10(10.4.2). The office setup takes its cue from the organisational norms and gives physicality to the 'dos and don'ts' of office workers. At the same time, the organisational norms influence the physical setting and conduct of office workers at the workplace.

As the organisational norms inform the organisation's office design standards at a macro level, they also influence the setup of the individual worker's workspace at a micro level. The spaces observed show how prefiguration is intended to meet organisational norms and maintain uniformity of workspaces across the organisation. At the office worker's workstation, the movable objects were observed to complement the standardised prefigured setup of the entire office floor while enabling the enactment of everyday practices at the individual worker's workspace at a micro level. This demonstrated that the prefigured setup at the macro level shapes the spatial-temporal arrangement of movable objects at the micro level as the complementary movable objects are recruited to enable everyday performance of practices in the prefigured spaces.

Though the prefigured setup is aligned with the organisational norms, it may conflict with personal preferences. The open plan setup and use of half-height partitions to demarcate cubicles enable conversations between co-workers while confining office workers to the spatial extent of their desks and marking personal spaces between office workers. The arrangement of clusters of desks in cubicles and the demarcation of cubicles supports collaboration between office workers and enables supervisors to see their subordinates at their desks. However, it impairs visual and acoustic privacy when carrying out concentration work. The prefigured setup thus enforces organisational norms by both constraining some office work practices and enabling others. Additionally, as observed during the planned

formal meeting in Chapter 10(10.3.2) office workers minimise the constraints imposed by the setup by rearranging their workspaces.

The objects in the prefigured setup that communicate the organisation's norms are considered as functional or symbolic everyday objects with physical attributes that communicate norms through size, colours, shapes, and textures: these objects are visibly positioned to fulfil their functional roles as well as perform the symbolic roles of communicating norms (see description of the office setup in Chapter 8[8.2]). In addition to the use of finishes on objects, the office of the most senior person on a floor was identifiable by its spatial position in relation to shared spaces and objects. It was also observed that the presence of shared objects communicated a sense of common space where informal talk and office chatter were allowed, contrasting with the quiet surroundings of the office of the high-ranking staff. While the functional role of a desk does not change, its symbolic role changes with its size, the finish of the complementary objects and its spatial position in relation to the spatial position of other objects.

Finishes and furnishing that form part of visual displays show that various organisational norms are given various levels of prominence in the spatial arrangement of the prefigured setup. It was observed that the corporate norms concerning work regulations, hierarchy and corporate identity are communicated in the prefigured setup at a macro level by the spatial configuration of fixed and static-in-use objects. The fixed objects in the prefigured setup, such as columns, are assigned the roles of providing structural support to movable and static-in-use objects such as movable partitions, cable trunking and sockets for data and electricity, signage, and information boards. As fixed objects fall into the background to support movable and static-in-use objects, the supported movable and static-in-use objects take prominence in the appearance of the setup.

The study found that the prefigured setup communicated changes to organisational norms, such as the organisational structure and work regulations, through the reconfiguration of fixed and static-in-use objects. The changes in organisational norms were demonstrated by the modification of spaces at the macro level, such as refitting, reorganisation and rebranding. It was observed that reconfiguration at the macro level includes rearrangement of the fixed objects such as partitions and power and data infrastructure, and static-in-use objects such as desks and cabinets, as well as tethered objects such as telephone extensions and computers. The prefigured setup remains static, in the background, and the organisational norms it represents also remain in the background, though communicated and enforced by the prefigured setup. Once rearranged, the fixed and static-in-use objects form the new prefigured setup that reflects current organisational norms. This prefigured setup demonstrates the organisational norms at a macro level and provides the physical environment.

The study found that in the enactment of office work practices at a micro level, the prefigured setup at the macro level remains static as practices are enacted, forming the backdrop against which the micro level operates. As observed in Chapter 10(10.4.2), the movable objects, such as files and chairs, were constantly moved without changing the prefigured setup comprising the fixed, static-in-use and tethered objects. This illustrates that in the day-to-day use of the

space at a micro level, the prefigured setup is static, and the spatial rearrangements of movable objects is more dynamic, reflecting individual preferences as work is enacted. This also illustrates that the macro level remains static during the enactment of practices at the micro level. As the prefigured setup facilitates enforcement and communication of the norms by distinguishing the nature of work enactment in the various spaces and the relationships between office workers of different ranks, it also provides objects employed in the accomplishment of work. The arrangement of these objects is continuously adjusted as office workers apply their preferences and the roles assigned to the setup change.

11.2 Finding 2: office work practices are dynamic as they unfold.

The data analysis in the document preparation episode and the unplanned informal meeting episode Chapter 7(7.6) and Chapter 8(8.4) respectively showed that the enactment of office work practices led towards the exchange and processing of information for different intentions. In the accomplishment of office work, office workers give and receive information in different modes, such as verbal exchange, physical printed and handwritten documents, virtual documents, and email. Office workers transferred, transformed, and translated information through practices such as working on the computer, printing, emailing, speaking on the telephone, interacting with co-workers, having a meeting, and reading and writing on paper. As observed in the planned formal meeting episode Chapter 10 (10.2), though these practices are identified as individual practices, in the unfolding of work, practices are intertwined and enacted concurrently, as scheduled and spontaneous practices intersect.

11.2.1 The spatial-temporal arrangement of practices is dynamic.

In the accomplishment of work, multiple practices are enacted within a spatial-temporal arrangement and the office worker is continually incorporating additional practices in the existing practices being enacted and terminating others. The study found that in the unfolding of office work, office work practices are dynamic, and their spatial-temporal arrangement is ever-changing.

11.2.1.1 Convergence and transitioning of practices.

In the unfolding of work, practices are continually being incorporated and terminated as scheduled and spontaneous practices are enacted. This is observed in the document preparation, unplanned informal meeting and planned formal meeting episodes in Chapter 7 (7.4), Chapter 8(8.3) and Chapter 10(10.2) respectively. During information exchange, office workers transition from one practice to the other and concurrently enact multiple practices. Practices converge and transition as information is translated from one type of document to another, transferred from one office worker to another or transformed from verbal to written

information. The convergence and transition of practices are observed at the spatial-temporal interface where practices intersect and result in the incorporation or termination of practices.

While practices being undertaken by office workers may seem the same, the convergence and transition of practices are not standardised. Nonetheless, these changes involve the recruitment and setting aside of objects as well as the 'doings' and 'sayings' of the office worker. The data shows that the incorporation and termination of practices, like the recruitment and setting aside of objects, does not have a specific pattern and varies as work unfolds. In the document preparation episode (Chapter 7[7.8]), the incorporation of the spontaneous convergence of practices is observed in the unfolding of work. Though the converging practices complement each other in the exchange of information between co-workers, the office worker incorporates each practice to fit its unique purpose in the information exchange. The non-standard nature of the processes by which practices are incorporated and terminated illustrates that the enactment of office work practices is dynamic, and their sequence is continually changing. The additional practices incorporated into existing practices not only run concurrently with those already being enacted but also take over from existing practices or create a transition between practices being enacted in sequence.

11.2.1.2 Spontaneity at the intersection of office work practices

As the practices enacted converge and transition, they spontaneously intersect at a spatial-temporal position. While the intersection may be expected to occur at designated and prefigured spaces, such as the office worker's desk, it was observed that office work practices intersected at the time and place where information was exchanged (see Chapter 7[7.8]). Though office workers select the place and time of exchange, in the unfolding of work, adjustments and new spatial-temporal positions of exchange emerge. It was observed that, despite the scheduled spatial-temporal arrangement of practices on a typical day, office workers adjusted the order of practices to allow certain practices to converge as they were terminated or transitioned to other practices. The spatial-temporal point of intersection of converging practices is dynamic, as the arrangement of scheduled and spontaneous practices is always changing. The transition between the document processing episode and the unplanned informal meeting episode (Chapter 7 [7.7] and Chapter 8[8.1]) demonstrates that while informal meeting practices are spontaneous, the intersection of practices serves as a point of convergence from which practices continue to be enacted concurrently, transition or are terminated. Additionally, planned informal meeting episode Chapter 10 (10.2) demonstrates that the practices that intersect during concentration work are aided by the complementarity of practices enabling concurrent enactment as office workers enact multiple practices and incorporate additional complementary objects. The transition and termination of practices at the point where they intersect arises out of the change in the office workers' intentions and the complementarity of incorporated objects (see Chapter 10 [10.3.1]).

11.2.2 The meaning of practices is dynamic.

In the transition of practices, it is observed that, while the 'doings' of office workers continue, the meaning of what they are doing changes. The change of meaning is signalled by what the office workers are saying, the objects they employ and their spatial-temporal arrangement. Chapter 8(8.1) describes the beginning of the unplanned informal meeting where the change from physical interaction to a meeting is marked by the verbal announcement of the start of the meeting and the rearrangement of objects on the desk surface. In some instances, however, the change of meaning is achieved without any change in the spatial-temporal arrangement of the objects. In the whiteboard updating episode (see Chapter 9[9.2]), practices intersect as information is exchanged and the meaning of the practices being enacted changes according to the information being orally conveyed and written. The different intentions arising as practices intersect range from giving and receiving instructions to learning and attributing accountability. Though the objects do not change, the meaning of the practice changes.

In the enactment of office work, office workers attribute great importance to the purpose of the work, as it guides the selection of the practices as well as influencing decisions on where and when the practices are to be enacted. Though the purpose of the work is identified before the practices are ordered, it may change during the practice, changing the meaning of the practice while it is being enacted as observed in the unplanned informal meeting episode (Chapter 8[8.4]). The mid-stream change of meaning influences the termination or retention of ongoing practices that have already converged and also spontaneously incorporates other practices to complement the ongoing practice.

In the unfolding of work, practices converge as new practices are incorporated and enacted alongside ongoing practices to accomplish intended work. When the purpose of the work changes, it lends new meaning to the practices that have already converged. The change of meaning may result in the incorporation of new practices or the reassignment of ongoing practices to achieve the work's new purpose. The change in the physical interaction from an enquiry to the formation of a decision results in the incorporation of a meeting practice that is accompanied by note-taking and the study of documents, amongst other processes towards document preparation (see Chapter 7[7.7]).

At the convergence of practices, individual practices are connected by shared objects and meaning. In this instance, however, incoming practices were observed to influence existing practices by lending them additional meanings, which affected the collaborative practices enacted in the accomplishment of the document preparation episode before it transitioned to the informal unplanned meeting. It is observed that the practices that include physical interaction with co-workers, like speaking on the telephone and working on the computer, facilitate convergence and lead workers to share the meanings associated with document preparation. However, the presence of the visiting co-worker changes the meaning of the physical interaction and, in turn, changes the meaning of telephone conversations and computer work done in his presence (see Chapter 7[7.6] and Chapter 8[8.4]). While the

'doings' of the converging practices physically continue, the 'saying' changes to reflect the intention of the visiting co-workers. The convergence of the practices results in changes in the meaning of the practices being enacted.

11.3 Finding 3: The change of setup is driven by convenience and norms.

Though the enactment of office work practices is shaped by the prefigured setup, as the practices unfold, the prefigured setup is gradually modified to accommodate the changes in the spatial-temporal arrangement of practices and incorporate new objects that are recruited into the practices. This is observed in the informal unplanned meeting episode and the formal planned meeting episode (see Chapter 8[8.5] and Chapter 10[10.4] respectively). Modification of the prefigured setup is observed from the changes in the spatial configuration of objects over a period as well as the changes in the roles assigned to the objects. While the change of roles may not always change the spatial positioning of an object, it is observed that the change of roles assigned to objects adjusts the spatial position of the complementary objects that are incorporated to support the new roles.

The study found that in the accomplishment of work, individual office workers enact office work practices within the spatial-temporal order that is predetermined by the organisational norms, routines of the office worker, instructions and deadlines to be met, while incorporating choices driven by their individual preferences. In implementing their preferences, office workers seek convenience and, in the process, may develop new individual norms of work.

11.3.1 Convenience, individual norms, and preferences

The observation of everyday practices of office workers suggests that office work entails the exchange of verbal and written information in physical or virtual interaction with the prefigured setup enabling formal and informal exchange of information through in-person and virtual communication (see document preparation episode Chapter 7 [7.4]). Informed by the organisational norms at the macro level, the individual office worker's workstation at the micro level is configured to host the work processes to be executed by the individual worker as solo concentration work or in collaboration with other co-workers. The prefigured setup anticipates predictable sequences of work with the typical workstation at the micro level arranged with objects primarily for concentration and varied degrees of collaborative work. Additionally, the individual office worker's workstation is set up within the prefigured setup with objects that are incorporated into the practices as they are ordered and enacted towards an intended outcome. As observed in the document preparation episode (Chapter 7 [7.9]) and the planned formal meeting episode (Chapter 10 [10.4.3]), the prefigured setup provides a platform to incorporate additional objects used in the enactment of practices at the micro level as office workers exercise their preferences.

While the extent of collaborative and concentration work expected at the micro level is identifiable by the space and objects provided, the use of virtual objects and virtual collaboration has changed identifiers for setups assigned for collaborative and concentration work. Despite the expectation that collaborative work is carried out by higher-ranking office workers, the work practices of lower-ranking office workers were observed to be collaborative through both virtual and physical interactions. The open office setup and low-level partitions between them enable the low-ranking office workers to collaborate physically without leaving their desks. Additionally, the sharing of virtual objects such as scanned documents and email replaces the need for the physical exchange of physical objects such as printed documents and handwritten notes. By choosing virtual collaboration using email and telephone or physical collaboration by conversing over the partition, the office worker applies individual preferences to working methods, and the physical markers of collaborative work, such as the presence of visitors' chairs or larger office space, become redundant. The nature of collaborative work is determined by the intentions of the office worker and practices that the office worker chooses to enact in the accomplishment of the work assigned (see document preparation episode Chapter 7[7.9]).

The study observes that, in the pursuit of convenience, office workers consider the work expectations, personal comfort and the purpose of the work when choosing the practices to be enacted. Deadlines, complexity, sources of information, modes of instruction and the submission of work outputs are considerations made in selecting the order of the practices to be enacted and the objects to be incorporated. In the quest for convenience, office workers adjust the order of practices by combining, eliminating, or engaging in additional practices. The individual choices of use of virtual objects are incorporated into the organisational norms of practices related to the replacement of physical objects by virtual objects, adjust the arrangement of practices enacted, and eliminate movement of physical documents and the physical interaction that relates to their exchange. The work that would have been collaborative by physical interaction becomes collaborative by virtual interaction, making redundant the physical objects that are identified with collaborative work.

The acceptance of these preferences by co-workers suggests that the pursuit of convenience deselects objects and setups that are prefigured and encourages co-workers to adopt new norms. As observed in the document preparation episode Chapter 7(7.4 and 7.6), office workers are observed to avoid inconvenience. They prioritise expediency by incorporating their personal mobile phones and physical interaction at their desks over the use of the telephone extension and meeting rooms provided in the prefigured setup: thus the selection of practices influences the use and redundancy of physical objects. Additionally, by preferring practices that achieve multiple objectives and can be enacted alongside other practices, office workers minimise their actions and seek practices that can be enacted with less difficult physical movement. In seeking expediency, the office worker pursues personal convenience and sets aside organisational norms and the prefigured setup. Observations of office workers show that the prefigured setup places objects for incorporation into the selected practice in line with organisational norms. However, in pursuit of convenience, the preferences of individual office workers influence the selection of practices that are not anticipated in the prefigured setup, thus creating new norms. The new norms may incorporate new objects and

reconfigure the spatial-temporal arrangement at the micro level to accommodate the new objects. Additionally, the new norms may render some existing objects in the prefigured setup temporarily unnecessary for their prefigured role (see the planned formal meeting episode Chapter 10[10.4.3]).

While convenience may be tied to the preference of the office worker and their ease of bodily movement around the prefigured setup, it was observed that convenience was considered as the ability to carry out multiple practices and transit between different practices within a short time and with minimum modifications. The selected objects are assigned functional and symbolic roles that complement the roles assigned to other objects incorporated into the practices being enacted. In fulfilling the convenient spatial-temporal arrangement of practices, the physical attributes of selected objects are employed to complement each other. Though practices required to perform the work are initially arranged to make use of the physical attributes of objects in the prefigured setup, as work unfolds these attributes are reassigned roles that meet the convenience sought by the office worker.

11.3.2 Concurrent and conflicting roles in the quest for convenience

While the arrangement of work tasks in the typical day of individual office workers is drawn from 'to-do' lists of work tasks to be accomplished and organisational norms to be complied with, office work is also characterised by unpredictable and emerging work requirements. The departure from the planned order of the 'to-do' list and the incorporation of personal preference in the order of practices is observed in the rearrangements on and around the office worker's desk as objects are recruited and set aside by the office worker (see unplanned informal meeting episode Chapter 8[8.3]). Though, on their initial observation, office workers give priority to the work that can be accomplished using available objects, further examination shows that a sense of urgency, the rank of the person requesting the work and the purpose of the work are potentially important contributors to the reprioritization, merging and rescheduling of work tasks.

The accomplishment of office work includes the exchange of the intended information within the required time. As illustrated in the whiteboard updating episodes, the actions and intentions of works are intertwined with information exchange as office workers seek to transfer or transform information within a given time (see Chapter 9[9.3]). In the unfolding of work, the practices that support the exchange of information are carried out concurrently to minimise the time taken in the processing and communication of information, while related practices are carried out concurrently and in close sequence. To support the desired temporal structure of practices, the prefigured setup is reconfigured to provide a spatial-temporal arrangement of objects and practices. The arrangement seeks to provide ease and convenience during the enactment of practices as well as to support complementary roles assigned to objects used in the concurrent and sequenced enactment of practices.

In the quest for expediency, office workers seek convenient ways of combining practices, such as speaking on the telephone while taking notes or working on the computer. The spatial-

temporal convergence of practices is enabled by the ability of objects to support concurrent practices. As the concurrent practices intersect, objects incorporated in the enactment are assigned complementary roles in the temporal-spatial arrangement of the objects. The convergence of practices is also observed as the office workers carry out scheduled and spontaneous work in fulfilment of a wide range of purposes. Despite the scheduling of work to be accomplished, during the performance of work, practices may be called upon spontaneously to accomplish an emerging or urgent work requirement or to complement or support ongoing practices as they are enacted. This was observed when office workers, while working on the computer, spontaneously obtained more information, sought clarification from a co-worker, or gave a response to a co-worker via a telephone call (see document preparation episode Chapter 7[7.3]) and planned formal episode Chapter 10[10.3.1]). The preference of the office worker to speak on the telephone while working on the computer results in the spatial-temporal intersection of the two practices. The objects used in the practices of working on the computer and speaking on the telephone are prefigured and on standby, ready to be activated by the use to which they are put.

As office workers adjust the temporal order of practice for the expediency of work, practices converge and intersect. At the intersection of practices, the practices enacted concurrently compete for time and space, resulting in conflict and further rearrangement of practices. While the enactment of concurrent practices is enabled by the complementarity of the roles and the ability of the objects to be used interdependently, it was observed that the intended enactment of concurrent practices was not always successful at the point of intersection. Instead of the concurrent roles assigned to objects in the enactment of concurrent practices complementing each other, some roles conflicted with each other. The conflict at the intersection may arise from conflict in purpose for the practices that converge and the inability of the object to take on complementary roles that support the concurrent enactment of practices. The unfolding of the document preparation episode to the informal unplanned meeting episode (see Chapter 7[7.7] and Chapter 8[8.1]) demonstrates the quest for convergence of document preparation work and face-to-face interactions with co-workers. The convergence is sustained as the practices for document preparation and face-to-face interaction intertwine at the office worker's desk. However, the conflicting purpose of the practices resulted in the termination of the document preparation practices and the conversion of the face-to-face interaction to an informal unplanned meeting. The conflict is resolved by rescheduling the document preparation.

In the spatial-temporal arrangement of practices, the objects selected are assigned roles that promote practices' connections with the exchange of information. The significance and purpose of the information being exchanged lend meaning to the practices and the objects selected to support them. The significance attributed to unfolding practices is not static and may differ with the importance of the information being processed. The meaning lent to the practices being enacted contributes to the choice of objects assigned various roles in the processing of information. For example, as observed in the document preparation episode (Chapter 7 [7.6]), the inclusion of the mobile phone as an object of prominence makes the telephone extension temporarily redundant, given the significance of the information

required by the office worker. Additionally, the personal mobile phone acquires connotations of urgency as it takes on the role of a work tool, changing work practices and norms.

As emerging work requirements disrupt the planned order of tasks, the practices ordered in fulfilment of the work are rearranged to accommodate the new tasks. Additionally, objects incorporated in the enactment of practices are assigned additional roles or temporally reassigned to the enactment of new work requirements. In shifting to a new order of practices, expediency is a key consideration in the selection of practices and objects used in the enactment of the practices. Office workers make selections based on proximity, suitability, ease of use, the comfort of bodily movement when using the object and convenience, in preference to other available options. Where existing spatial arrangements and objects within reach provide insufficient convenience, the objects are set aside, and practices rearranged. In the quest for convenience and expediency, the prefigured roles of objects become redundant as office workers use alternatives better suited to their purposes.

In the change of individual office workers' norms, objects in the prefigured setup may be assigned alternative roles and spatially rearranged. As shown in the planned formal meeting episode Chapter 10 (10.3), observation of the office setup suggests that individual preferences of office workers in the selection of objects influence the practices enacted by their co-workers and in turn the collective preferences of the group. This demonstrates that individual norms are interconnected and the choice of one office worker influences the action of the other co-workers in the group, contributing to changes in collective norms. While the prefigured setup is designed to support the conventional organisational norms of formal interaction in meeting rooms, the collaborative work at the desk enhances the convenience sought by the office worker by expanding the role of the desk at the micro level to enable physical interaction (see Chapter 10[10.4.1]).

Objects in the prefigured setup that do not fulfil the intention of the work and/or provide the desired convenience are rendered temporarily redundant while other objects are incorporated in the setup or assigned roles different from those for which they were prefigured (see document preparation episode Chapter 7[7.7]). The temporal incorporation and redundancy of objects are observed at a micro level as office workers make choices aimed at convenience. The data analysis in Chapter 7(7.4) illustrates that the readiness of objects and the supporting infrastructure affirms the choices of the office workers and upgrades the preference from an individual norm to a collective norm as other co-workers retrieve documents online. Similarly, the inability of objects to justify this preference prevents retention of the practice and a new norm is not developed. It was observed that failure of ICT infrastructure demonstrated a lack of readiness for the enactment of practices that used virtual objects, thus causing the retention of the use of physical objects and the practices related to their use. The retention of preferences and their potential development to norms are enabled by the readiness of the setup and constrained by its lack of readiness.

11.4 Finding 4: Readiness of spaces and objects enables to respond to the dynamic nature of office work practices.

As office workers implemented their preferences and sustained new norms, the readiness of objects to take up assigned roles emerged as one of the determinants of the successful enactment of practices (see document preparation episode Chapter 7[7.4] and planned formal meeting episode Chapter 10[10.3 and 10.4.2]). While different objects have different states of readiness, the study found that readiness went beyond the capability of the physical attributes of the object, and it extended to the suitability of the object and its spatial-temporal arrangement for accomplishing the purpose of the practices being enacted. As practices are ordered, the readiness of objects to take up potential roles is assessed, and objects that meet these requirements are incorporated into practices.

11.4.1 'Object readiness' as a factor of meaning

Though some practices may seem the same, they are distinguished by the purpose of the work and its implications for the office worker. The notion of the meaning of the work informs the reason for the selection of the practices and the objects that are recruited in their enactment. Phrases such as '*giving direction for the week'* and '*preparing my annual appraisal'* signify the meaning lent to the practices being enacted and inform the objects incorporated and their roles. The intention of the work influences the information exchanged, the mode of exchange and the expected output. To achieve the purpose of the work, office workers select practices to be enacted and objects to be used.

The objects in the prefigured setup are configured and connected to complementary objects for readiness to take up roles when they are assigned. The incapability of the assigned object and related complementary objects renders the setup unavailable for intended work and may result in the reassignment of roles to alternative objects. While addressing the inconvenience of insufficient readiness, office workers rearrange their practices as they seek alternative objects that are ready. Similarly, in the quest for convenience office workers select existing configurations that will save time. Though readiness may be understood in terms of the ability of the physical attributes to carry out their functional roles, the objects must also be capable of fulfilling their symbolic roles. The desk was observed as a workstation with a functional role fulfilled by its physical attributes and the presence of complementary objects such as computers, telephone extensions and movable objects such as documents and notebooks. Since desks, chairs and space arrangement have additional symbolic roles in communicating the significance of rank and authority, their readiness goes beyond functionality to having finish and style that communicate rank and authority as observed in unplanned informal meeting episode Chapter 8(8.2). This demonstrates that, in addition to readiness to fulfil functional roles, objects are also required to be ready to fulfil concurrently symbolic roles, such as communicating the rank of the office's occupant.

The inability of physical attributes to achieve the intention of the practice depicts the setup's lack of readiness; however, it creates opportunities for modification and spatial-temporal rearrangement of the practice, assigning new roles to other objects in the setup. In the document preparation episode Chapter 7(7.5), it was observed that the importance of the task and its urgency exposed the inadequacy of the prefigured infrastructure for the required concentration work, resulting in a change to collaborative work and the assignment of new roles to objects and spaces. The spatial arrangement anticipated collaborative work and was ready to receive modifications facilitating the assignment of roles related to collaborative work. The setup lent new meaning to the office, changing it from a concentration workspace to a space of interaction as the work was transformed from concentration to collaborative work.

The implementation of preferences is supported by the readiness of the object to meet the functional and symbolic requirements of the meaning of the work practices being enacted. The seniority of the requestor of the work, and its urgency, confidentiality, and purpose, as well as its importance to the office worker are factors that suggest the significance of the practices enacted in fulfilment of the work. The formal planned meeting episode demonstrates the readiness of the closed office for confidential discussion and provides the closed office as an alternative to the meeting room, enabling the office worker to implement his preference of having the meeting in his office as it also meets requirements for privacy and confidentiality. The significance of the work, such as the level of confidentiality, required the office worker to select practices and spatial arrangements suitable for the information being exchanged, which required privacy and restricted access (see planned formal meeting episode Chapter 10[10.4.3]). While objects are ready to fulfil roles in collaborative work, they also need to be ready to fulfil the functional and symbolic roles associated with the work's significance.

As the prefigured setup at the macro level reflects the organisational norms, at the micro level the prefigured setup enables the enactment of practices assigned to it by the office worker. The physical attributes of the prefigured setup are assigned functional and symbolic roles contributing to the accomplishment of the purpose of the work being undertaken. While the prefigured setup at a macro level may seem static, the temporal roles assigned to objects and spaces in the setup are constantly changing as the purpose of the practices being undertaken changes. As this happens, temporal roles assigned to the physical attributes of the prefigured setup also change. The setup's readiness to fulfil the purpose of the practices being enacted and its flexibility for modification create opportunities for objects to fulfil additional functional and symbolic roles. In the time and place under observation, individual workstations were ready for concentration work and could easily be modified for collaborative work, providing opportunities for the objects to fulfil additional roles in supporting meeting practices.

The intended outcome of work and the purpose for which it is carried out contribute to the spatial-temporal arrangement of the practices to be enacted and the objects to be incorporated or omitted. At the selection of the practices that will meet the intended outcome, the spatial-temporal rearrangement of practices, the interlinkage between the

objects recruited in the enactment of the selected practices and the availability of supporting infrastructure may uphold or impede the enactment of the selected practices (see the planned formal meeting episode Chapter 10[10.3.2]). Objects in the prefigured setup that play complementary roles as intermediary or supporting objects in the enactment of practices enable the interlinkage. Though objects have prefigured roles, as work unfolds new roles are assigned to objects, based on their capability to fulfil the purpose of the work.

Though the spatial arrangement of objects in a setup may be ready to take up prefigured roles, as shown in the document preparation episode Chapter 7(7.4) the failure of one of the objects to perform its function limits the ability of others linked to the practice being enacted and changes practice arrangements. The lack of readiness of the physical attributes of the objects assigned to achieve the intended objectives is resolved by reassignment of roles to other objects or relocating the practices to a suitably prepared spatial-temporal setup. The importance of a task to the office workers can be ranked by the priority which they will accord to the search for alternative objects. Driven by the purpose of the work being undertaken and the need to find convenient ways of accomplishing it, office workers were observed to select other objects that would give them the same result. Therefore, the lack of readiness does not always result in the spatial-temporal rearrangement of practices; it may also result in the selection of alternative objects that meet the intended objective of the office worker. The purpose of the work brings out the objects' lack of readiness and inadequacies in fulfilling practices and confirms the suitability of the alternative objects selected.

11.4.2 Complementarity and conflict in readiness

Readiness is not limited to the enactment of a single practice but also includes the ability of the setup to support the convergence of practices. In the quest for convenience office workers may concurrently carry out multiple practices that necessitate expansion of the prefigured roles assigned to objects, as objects are assigned complementary roles. It was observed that at the intersection of scheduled and spontaneous practices that were concurrently enacted, complementary roles were assigned to physical attributes of objects that acted as connectors of practices and enablers of bodily movements in the concurrent enactment of practices (see Chapter 7[7.5 and 7.8] and Chapter 10[10.3.1]). The spatial-temporal assembly of objects on the desk at the interaction of practices enables the concurrent enactment of practices and transition from one practice to another as required.

Though the prefigured setup may be ready for multiple practices, meaning lent to practices rearranges the order of practices and secures the prefigured setup for the prioritised practices. Noting that preferences may bring along practices that conflict with or complement other practices being enacted, as the practices to be progressed are prioritised, the importance of ongoing practices is weighed against the incoming practices. Observation of the whiteboard updating session in Chapter 9(9.1) shows that the use of the printer while the whiteboard updating session is going on temporarily gives the printing practice equal priority to writing on the whiteboard. However, in the document preparation episode, the practices devoted to document processing are suspended to make way for an informal meeting, as the

purpose of that meeting temporarily elevates its importance, setting aside the document preparation (see Chapter 7[7.7]).

The episodes observed suggest that the spatial-temporal order of practices is guided by the purpose of the practices and how they connect. The temporal order of practices gives preference to the work compatible with the existing setup, bearing in mind its time sensitivity. It is observed that an existing setup may be used for work for which it was not prefigured, and the purpose of the setup changes to adapt to the work to which it is assigned. The conversion of individual office workers' desks to meeting areas gives the desk the temporal identity of a meeting space and lends it temporal meaning for the purpose of the meeting. However, the spatial-temporal arrangement of objects and the objects themselves must be ready for the roles to which they are assigned. As unanticipated practices are prioritized, modifications of the prefigured setup are made, and it acquires new meaning that comes from the purpose of the work to which it is assigned. The modifications expand the roles of the prefigured setup at the micro level. If ready for modifications, the existing setup is deployed to support ongoing and anticipated practices enacted in the accomplishment of new work (see Chapter 10[10.4.2]). The meaning of the setup also changes according to the new work to which it is assigned.

While objects may have functional and symbolic suitability for the prefigured role, in the application of individual preferences, the objects in the prefigured setup may be assigned roles that complement or conflict with the prefigured roles. The suitability of the prefigured setup for supporting preferences is observed in the transition between the document preparation episode and the informal meeting episode, where the prefigured setup supports interaction between co-workers collating information for the document preparation episode, which is carried out alongside collaborative work (see observation in Chapter 8[8.5]). However, as the collaborative work transits to decision-making, the significance of the interaction converts the practice into a meeting. The preference to hold the meeting at the office worker's desk is supported by the continuity of the setup that supports collaborative work. In contrast, preferences may support the prefigured setup roles that conflict with the prefigured roles. As observed in the whiteboard episode (Chapter 9[9.4.2]), the conflicting roles at the printing cubicle during the whiteboard updating session demonstrate the occasional incompatibility of roles assigned to spaces.

While the prefigured setup has physical attributes suitable for planned roles according to organisation norms and the work being performed, the setup also anticipates additional roles that it may take up upon modification. In addition to the physical attributes of the objects and their spatial arrangements, the purpose of the practice and its significance to the office worker determines the readiness of the setup. While readiness may be viewed as the physical ability of the setup to take on additional roles, it was observed that readiness might include the setup's ability to support anticipated roles and its ease of modification. The convenience of the office worker contributes to the temporal constriction and expansion of assigned roles as the office worker seeks to achieve their comfort while practices unfold.

11.5 Finding 5: Reconfiguration is shaped by change in norms and roles assigned to objects and spaces.

As office workers seek convenience, they introduce personal preferences into the selection and arrangement of objects, creating new work norms. The readiness of objects to fulfil assigned roles has the potential to enable the retention of individual and collective norms at the micro level. However, readiness on its own is not enough, as new norms may compete or conflict with existing norms, necessitating the reconfiguration of spaces. The study found that, firstly, the stability of the norms was enabled and constrained by the spatial-temporal arrangements of objects, and, secondly, the progression of individual norms to collective norms necessitates the rearrangement of practices and, in turn, the reconfiguration of objects as they are assigned new roles. As the collective norms stabilize, they have the potential to influence the reconfiguration of fixed and static-in-use objects and create new setups at the macro level.

11.5.1 New norms, new roles

The preferences of office workers are supported by the capacity of the prefigured office to take up new roles and spatial-temporal rearrangements that enable the new roles. The office's flexibility at the micro level allows the office worker to rearrange movable objects spatially, combine complementary practices and reschedule conflicting practices. While the flexibility of the workspace at the micro level may be viewed in terms of physical attributes of objects, such as the portability of movable objects, multiple functionalities that the objects fulfil and the ease of incorporating other objects, flexibility includes the ability to accommodate temporal meanings lent to practices and objects and temporal roles assigned to objects as work unfolds (see unplanned informal meeting episode Chapter 8[8.4] and whiteboard episode Chapter 9[9.2]).

The preferences of individual office workers expand and constrict the roles assigned to the physical attributes, shaping the adjustments made to the individual workstations at the micro level. By incorporating additional objects in the setup and overlooking objects they consider redundant, the office worker allows their preferences to assert the spatial-temporal order of practices that serves their convenience when accomplishing a task. However, these preferences do not constitute new norms, as they are limited to the individual office worker. Unlike other individual preferences, such as use of a mobile phone instead of a telephone extension, the whiteboard episode (Chapter 9[9.1]) illustrates a norm of a group of office workers occupied in information exchange using the whiteboard as a visual display. The updating of the whiteboard every Monday at 8 a. m. serves to illustrate the retention and repetitiveness of the collective task: it is not an individual preference but a collective norm that applies the collective choices of office workers in assigning roles to objects and spaces.

Though the convenience of individual office workers at the micro level may be viewed as limited to influencing their personal preference, in the unfolding of work it influences the

options of their immediate co-workers. The preference of one office worker has the potential to influence the subsequent action of co-workers by expanding or limiting their options in the selection of practice and subsequent recruitment of objects used. In the planned formal meeting episode (Chapter 10[10.4.3]), an office worker's decision to use his office for the meeting is driven by his convenience and other co-workers comply with his choice. Additionally, in the document preparation episode (Chapter 7 [7.9]), the individual preference to submit the document by email compels the other office workers to convert physical documents to virtual documents in compliance with the chosen mode of submission. The decisions to have a planned meeting at the desk and use virtual objects begins as a set of individual preferences that incorporate other office workers and are repeated in other situations. Individual preferences may not be collective preferences, but a compliance with the preference of one office worker. In comparison, in the informal unplanned meeting (Chapter 8[8.2]), holding a meeting at the supervisor's desk was both convenient for the supervisor and agreeable to co-workers who shared a cubicle with the supervisor, as the co-workers also benefitted from the convenience of reducing the transition time between their workplace and meeting as they accept the convenience sought by the supervisor. The collective convenience observed demonstrates collective preferences.

As individual preferences are incorporated into the performance of office work, office workers negotiate organisational norms that conflict with emerging individual preferences and new norms and arrangements. While the negotiations do not take place at the same time, the accumulated outcomes of past negotiations are incorporated into the current norms. The study observed conflict between the organisational norms and the preferences of the office workers as office workers preferred to sit with colleagues in their own social network (see document preparation episode Chapter 7[7.2]). The continuous rearrangement of the office setup includes the negotiation between office workers, the organisational norms, individual preferences and emerging new norms as the use and meaning of space are negotiated (see whiteboard episode Chapter 9[9.4.2, and 9.5]).

In the enactment of practices arising from preferences, some objects are observed to have various levels of readiness and flexibility enabling them to perform the new roles, while others require spatial-temporal rearrangements. The conversion of individual preferences to collective preferences or compliances is supported by the readiness of the objects for the additional roles and the ability of the spatial-temporal arrangement to accommodate modifications for the performance of adjusted roles. For example, while all desks have various prefigured roles of collaborative work, not all desks are used for meeting practices. The desks prefigured for high-ranking staff accommodated the meeting with office workers, with additional visitors' chairs being placed in the extra space around the desks (see description in the unplanned informal meeting episode Chapter 8[8.2] and planned formal meeting episode Chapter 10[10.4]). As the individual preferences become repeated and engrained into work performance, the new collective norms that they create influence longer-term spatial rearrangements at a macro level as the office workers seek to reduce the modification required each time the new norm is performed. Driven by collective intentions, individual preferences are extended to become collective preferences as office workers seek to experience greater convenience, or at least to avoid being inconvenienced. By conforming

to the preferences of the proposed higher-ranking co-worker, office workers seek to avoid being inconvenienced by the implication of non-compliance. Furthermore, where there is mutual agreement, by being agreeable to the preferences of the proposing co-worker, office workers seek to participate in the expected convenience. Subsequently, over time, collective norms of groups of office workers are developed that reassign the roles assigned to objects.

11.5.2 Spatial-temporal reassignment of roles and rearrangement of objects

It is observed that the ability of preferences to become norms is influenced by, amongst others, the convenience sought, the inconvenience avoided, and the readiness and flexibility of the prefigured setup. As observed in planned formal meeting episode (Chapter 10[10.4]), as new norms adjust existing norms, spatial-temporal adjustments are made to accommodate the functional and symbolic roles of objects in the setup. The norms of work influence the selection practices and the objects incorporated in the enactment of the practices. While the individual office worker's convenience has a key role in influencing how work is done, the prefigured setup has the potential to enable or constrain the convenience sought. The adaptability of a prefigured setup to spatial-temporal rearrangements at a micro level allows for modifications of the setup as scheduled and spontaneous work requirements intersect and negotiate for time and space.

The spatial-temporal arrangements of space accord with the preferences and dislikes of the office workers. While physical space created and apportioned in the prefigured setup is lent meaning by the organisational norms, it is also lent meaning by the anticipated practices. The meaning lent to objects and spaces permits and restricts the reassignment of roles and rearrangement of objects. The formally planned meeting episode and the informal unplanned meeting episodes suggested that though the individual's workspace might be rearranged for a meeting practice to meet individual preference, the organisational norms in respect to the role of the workspace were not diminished by the meeting practice being held in the office. Instead, authority markers such as the size and finish of the furniture continued to give identity to the space and rank of the office holder. The meaning lent to the office is negotiated between the supervisory meaning lent by organisational norms, such as rank and authority, and the meaning lent by the significance of the meeting. Meaning is observed as being spatial-temporal with the short-term meaning lent by the significance of the meeting applying to the objects and space recruited in the meeting practice. Though the meaning of spaces may be derived from the significance of the work, the static-in-use markers of organisational norms bear long-term meanings lent to them by the organisational norms, while the short-term meanings are interwoven with the long-term meaning.

It has been observed that office workers rearrange practices and apportion space to enable them to conform to new norms. The new norms adjust the significance attached to the practices and lend new meaning to the objects and spaces influencing the roles they are assigned and the space apportioned to them. As new norms are implemented, the apportionment of space is negotiated according to the significance of the practices and the priorities of the office workers. These were observed to be dynamic, leading to continuous

negotiation between individual priorities and collective priorities. Though the individual priorities were observed to have different importance from the collective priorities of a group of office workers, the findings suggest that the significance of what is to be accomplished takes preference in space apportionment (see whiteboard episode Chapter 9[9.4]). As preferences prioritise practices and the new norms stabilise a new order of priorities, the significance of the practices and configuration of spaces constrain the practices that can be enacted concurrently. Since the significance of practices is temporal, space apportionment also becomes temporal, as spatial arrangements are negotiated to accommodate the practices and the associated objects.

The influence of significance on the arrangement of practices and apportionment of space is observed in the whiteboard episode, where printing practices compete for space with the whiteboard updating practices (see Chapter 9[9.4.1 and 9.4.2]). An examination of the use of a cubicle where the printer and whiteboard were located shows that the episode demonstrated how the role of the space was identified and assigned based on the presence of both objects. The printer and whiteboard had dominance when in use and they were in concurrent use as the space apportioned for each use was negotiated.

The study shows that, for the collective norms to be retained and influence reconfiguration, the practices are associated with them are required to carry similar meanings. In the whiteboard episode, it is observed that the takeover of the cubicle by the whiteboard updating session was enabled by the collective meaning of the whiteboard updating session that gave the cubicle space the identity of a meeting area when the whiteboard updating session was taking place. In comparison to the collective meaning lent to the cubicle by the whiteboard updating session, it was observed in Chapter 9(9.5) that printing did not lend collective meaning to cubicle space during the whiteboard updating session. This shows that collective norms may be used by a group of workers to assign roles to space, negotiate its use, apportion it, and place temporal restrictions on its use at a micro level. The retention of collective norms has the potential to influence the configuration of space at a macro level.

11.5.3 Additional and isolated objects

Collective norms are enabled by spatial-temporal rearrangements of practices and incorporation of objects at the micro level. The acceptance of modifications to practices that result from adjustment of norms at a micro level is observed in the change of the role assigned to objects and the meanings lent. This is demonstrated in the unplanned informal meeting episode in Chapter 8 (8.5) by the use of the mobile phone to call office workers while in the office and the additional role of the telephone extension as a mark of the presence of the office worker at the desk. While the telephone extension does not become spatially repositioned, it becomes temporarily redundant and isolated from the enactment of office work practices when other modes of communication, such as the use of the mobile phone and face-to-face interaction, are selected instead of it.

As new collective norms are formed and new practices emerge, new objects are incorporated into the setup while existing objects are temporarily ignored and isolated during the enactment of practices. Though additional objects were incorporated, the isolated objects were not removed from the setup, resulting in competition for space and necessitating spatial-temporal rearrangements of objects. The new objects incorporated into the setup were intended to provide convenience and minimise the constraints created by the prefigured setup during the enactment of new practices. This was demonstrated by the incorporation of mobile devices that enabled the spatial distribution of work within the office as an alternative to tethered objects, such as computers and telephone extensions, whose use is limited to the desk. Additionally, the whiteboard was incorporated to serve as a visual display as an alternative to reports circulated in physical or virtual documents. This shows that the presence of additional objects, such as the whiteboard in the cubicle and mobile devices on the desk, caused competition for space and expanded the role of the setup, necessitating the rearrangement of the objects in the space.

Though temporarily to perform their functional roles, the objects remain in the workspace and are isolated during the enactment of practices. The isolated objects also continued to serve as backup objects and to perform their symbolic roles, such as communicating the hierarchy of office workers, labelling the space, and marking boundaries of space. The practice of online filing observed in document preparation episode (Chapter 7[7.8]) contributes to the adjusting of the role of cabinets in the setup. This is illustrated in the planned formal meeting episode (Chapter 10[10.1]) where the role assigned to the cabinet changes from document storage to marking boundaries of office space, being a display unit and communicating the rank of the office worker. Additionally, with the mobile phone taking the communication role even within the office, the role of the telephone extension changes to marking the presence of the office worker in the office as well as demonstrating the rank of the office worker and completeness of a workstation. This shows that the redundancy of objects does not always lead to rearrangement of spaces.

11.5.4 Reconfiguration at the micro and macro levels

In the quest to implement their preferences, office workers reconfigure objects on and around their workspaces as they select practices and the objects to use. These spatial-temporal reconfigurations at the micro level follow the temporal order of practices and take into consideration the physical attributes of objects The transition from document preparation episode to the informal unplanned meeting episode (Chapter 7[8.1]) shows that office workers rearrange objects around them as they respond to their preferences and incorporate the preferences of others. The temporal setup for an informal meeting is completed by the arrangement of chairs around the desk and the display of the drawing to be discussed. The setup lasts only for the period of the meeting. While the spatial-temporal rearrangement of movable objects at the micro level is influenced by the preference of office workers, it is enabled by the prefigured setup of the static-in-use objects at a macro level. This is demonstrated by the spatial position of the desk relative to the passageway allowing

the added chairs to spill over to the passageway, incorporating the passageway into the spatial arrangement of the informal meeting.

Though the prefigured setup at the macro level remains in the background, supporting the reconfigurations at the micro level, it plays a vital role in providing physical attributes that support the micro-level reconfigurations. The formal and informal meeting episodes demonstrate that while the physical attributes in the prefigured setup are assigned prefigured roles, such as enforcement of organisational norms and giving shape and form to spaces, the prefigured setup also takes up additional roles assigned by temporal reconfiguration at the micro level. The rearrangement of chairs around the desk for the informal meeting is supported by a cubicle setup that provides a passageway that is annexed to the office worker's space and expands the meeting space. Similarly, the full-height partitions in a closed office provide acoustic and visual privacy for the formal planned meeting. In both the formal and the informal meeting episodes, the physical attributes in the prefigured setup transform individual workspaces into meeting areas.

The expansion of roles in the prefigured setup was observed to be one of the contributors to reconfiguration at the macro level. Though the prefigured setup communicates the conventional way in which office work is expected to be carried out, with spaces assigned specific roles and the physical attributes of objects that make up those spaces being assigned prefigured roles, as work unfolds, the spaces and objects in the prefigured setup are assigned new roles that arise out of new norms. While these new roles arise out of convenience, they have the potential to be retained as norms and repeated.

The prefigured setup comprising fixed and static-in-use objects did not change during the enactment of practices; instead, office workers made changes to the positions of the movable objects and sought opportunities to make changes to the prefigured setup. The opportunities for rearrangement of the prefigured setup at the macro level arise out of changes in the organisational norms and the adoption of collective norms as part of new organisational norms. The study found that while the rearrangements were carried out to support enactment of practices, office workers considered rearrangements as an opportunity to infuse personal preferences into the setup and resolve conflicts between personal preferences and organisational norms.

11.6 Conclusion

The office setup is prefigured according to the organisational norms and in readiness to be assigned anticipatory roles, but as work unfolds individual office workers apply their preferences based on their convenience, developing new individual and collective norms. While the setup of the office enforces and communicates organisational norms, it also influences the enactment of practices by enabling and constraining them, shaping the selection of practices and the spatial-temporal rearrangements that support them.

In the enactment of practices, the preferences of office workers are implemented at the micro level and are enabled and constrained by the physical attributes of objects in the prefigured setup. Office workers infuse their preferences into the organisational norms as they seek convenient ways to accomplish work. The study found that office workers made spatial-temporal rearrangements to practices and objects at the micro level to accomplish their personal preferences. However, in the implementation of preferences, the roles assigned to objects and spaces may conflict, requiring resolution through spatial-temporal rearrangements. The study thus found that the implementation of preferences was driven by convenience and supported by spatial-temporal rearrangements.

While the physical attributes of the objects may seem suitable and sufficient for the enactment of the practice they are supporting, they may be found inadequate as the practice unfolds. The lack of readiness may not always be visible when the practice is ordered. It is observed that the significance, such as urgency and importance, of work exposes the suitability of the objects to support immediate enactment of the practices selected for s the accomplishment of the work. Objects whose suitability is dependent on preparation and spatial arrangement are considered not ready and therefore inadequate for urgent work. The shortcomings in suitability are demonstrated by the inability of the object to absorb the sense of urgency that the proposed practice is intended to lend it. Resolution of this temporal unsuitability is observed to be achieved by the spatial-temporal reassignment of priority to the use of objects that were capable of meeting the demand for urgency. The study found that the readiness of physical attributes of objects enables enactment of practices selected in fulfilment of preferences, resulting in the repeated implementation of preferences and development of norms. However, a lack of readiness frustrates the implementation of the preferences and curtails new norms.

In the enactment of practices, individual workers lend different meanings to practices they enact. With meaning being individual and temporal, the space configuration at a micro level reflects the meaning lent to the objects and space by the individual worker. Since the meaning of the work and the priority practices influence spatial arrangements, spaces are likely to be reconfigured more frequently at a micro level to accommodate the dynamic nature of office work practices. The study found that new individual and collective norms influence adjustments and modifications in the setup as objects are assigned new roles and lent new meanings.

As new norms assign new roles to objects and spaces, the new roles contribute to the temporal redundancy of objects and reconfiguration of the setup at the micro level. The readiness of objects and spatial-temporal arrangements of the objects to take up new roles is influenced by the purpose of the work and the significance of the role assigned. Reconfigurations at the macro level are gradual and are observed in the spatial rearrangements made as office workers modify their prefigured setting to enable the performance of new norms. The study found that while the organisation norms are communicated and enforced by the prefigured setup at the macro level, the individual and collective norms are enabled by spatial-temporal configurations at the micro level.

Though the office workers negotiate space apportionment and rearrangements by applying collective purposes and norms, the office design at the macro level was prefigured with fixed and static-in-use objects remaining static in the background as office workers made spatial-temporal rearrangements of movable objects at the micro level. The study also found that office workers sought implementation of their preferences at the macro level through redesign of the space, to resolve conflicts between their preferences and organisational norms.

The next chapter discusses the findings and examines them in the context of the existing literature.

12 Chapter 12   Discussion

12.1 Introduction

In answering the overall question of how office work practices shape the office setup, the study considers office work as a social practice and as part of the everyday life of office workers. It uses the everyday experiences of office workers to understand what they are doing and how their work shapes or is shaped by the office setup. The study has found that while the setup is prefigured to fulfil certain roles, in the enactment of office work practices, the anticipated roles may expand to fulfil the developing purposes of the work and preferences of office workers. Additionally, the purpose of the work lends meaning to objects recruited into the practices as well as the spatial arrangements that accommodate them. The study further found that, in the enactment of practices, the spatial-temporal arrangement of objects that are recruited and made redundant in the enactment of practices is shaped by meanings lent to spaces and objects. This discussion uses the existing literature on office work and the office environment to consider the implications of the findings. Further it uses the social practice theory perspective as a lens to interpret the findings and draws on various aspects of spatial theories to deepen understanding of the influence of changing work practices on the configuration and reconfiguration of the office setup.

Using the concepts of social practice theory, the examination of the relationship between spatial-temporal rearrangements of practices and objects at a micro level are used to reflect on the potential reconfiguration of space at a macro level. The micro-level examination consists of observation of the performance of practices by the individual worker within periods of a typical day, the routines and preferences of the individual worker, and the spatial-temporal arrangement of objects at the individual's workstation. The examination at the macro level is drawn from collective routines of office workers and organisational norms to elucidate the prefigured setup and potential spatial-temporal rearrangement of the office setup and of work practices across various locations of work, including both designated and alternative spaces (see summary of findings Chapter 11[11.1.2 and 11.5.4]).

While there are studies that include perception surveys to examine the attributes of the office setup that office workers consider most important and those that contribute to their satisfaction and well-being at the workplace (discussed in literature review Chapter 2[2.2.1]), this study departs from these approaches to conceptualisation of office work as a social practice investigate what goes on in the office and the everyday experiences of office workers. The results in Chapter 11 (1.3) show that, while the designated office had a prefigured setup for anticipated office work practices, in the unfolding of office work, office workers arrange practices both spatially and temporally, and reconfigure their environment to attain the convenience they seek. However, since office work practices are dynamic, the spatial-temporal rearrangement of practices and the office environment is supported by the readiness of objects and spaces recruited into the practices (Chapter 11[11.4]). As office work takes on new ways of working by incorporating virtual interactions, the combination of new and traditional ways of working is part of the everyday experience of office workers in the

workplace. As they seek convenient ways of accomplishing office work by reducing time when enacting practices and reducing the transition time between practices, office workers exercise individual preferences while complying with the organisation's norms.

Using a qualitative approach, data collected from the situated case was analysed through the development of themes and findings grouped into five broad categories, namely: the prefigured setup, the dynamic nature of office work practices, office workers' convenience, the readiness of spaces and objects for use, and the reconfiguration of office space. While the physical location of office work and the time at which it is accomplished have been changing with technological advances and the adoption of new ways of working, the study has found that office work practices are highly dynamic, and the spatial-temporal arrangement of practices and objects is continually changing. The study has further found that, in the unfolding of office work, office workers seeking convenience apply their preferences in selecting practices to enact and the objects used as well as customising the setup for their use.

This chapter discusses the research findings, comparing them with past research and drawing out the empirical and theoretical implications while acknowledging the study's limitations. The discussion considers the core question addressed in this enquiry: how does what office workers do in the office shape, or become shaped by the office environment?

12.2 The prefigured setup

The study examines the office setup by observing what office workers are doing in the office, and in turn how they interact with the physical environment in which office work practices are enacted. The results in Chapter 11(11.1) show that the office setup comprises objects with different physical attributes, including fixed, static-in-use, tethered and movable objects that define the configuration of space, and communicate its use and the anticipated practices to be enacted in it. It is observed that the fixed, static-in-use and tethered objects remained static during the enactment of practices and could be considered as the prefigured material arrangements for the practices being enacted (see Chapter 11[11.1.1]). Applying Lefebvre's (1991) theory on *The Production of Space* where social space comprises of spatial triad i.e. conceived, perceived and lived space and noting Sivunen and Putman's (2019) use of the Lefebvre's spatial triad, the observed setup may be considered as a demonstration of the homogeneity of spatial triad with 'conceived space' being the prefigured setup imposed by organisational rules and regulations, the 'perceived space' representing the symbolic meaning of space as understood by office workers and the 'lived space' being space as experienced by office workers. Consequently, the assembly and arrangement of objects that make up the prefigured setup is guided by organisational norms and informs the anticipated practices, the hierarchy of office workers and the work rules and regulations to be observed.

Though the setup is made up of the assembly and arrangement of objects, it is not neutral but is a representation of norms and preferences as shown in Chapter 11 (11.1.2). The conceived space communicates identities and power relations within communities of practice

as determined by the rules of organisation, however, the power relations it communicates are spatial and temporal (Fahy *et al* 2014). Considering Fahy *et al's* (2014) observation that identities of practitioners are not fixed but negotiated in the lived experience drawing tension between identity conceived by designers and perception of practitioners, the adjustments to the prefigured space observed in change of roles of objects in the transition scheduled and spontaneous practices in Chapter 8 (8.4) can be interpreted as the lived use of space transforming over time (Kingma 2019, Zhang *et al* 2008). This suggests that while the prefigures setup may be fixed, the symbolism and perceptions held by practitioners is not static. Noting that the symbolism attached to the objects and setup differed from one office worker to another, it may be argued that the perceived use and symbolic meaning of space are both spatial temporal and contextual.

While office work and norms of work are organised and enacted in the physical space (Beyes and Hold 2020, Jarzabkowski et al. 2015, Skogland and Hansen 2017), the norms of work can be understood in the macro context of the corporate organisation as well as in the micro context of the individual worker. Similarly, the office as the site of office work may be examined in the spatial and practice context at the macro and micro levels. The macro level is considered as the institutional scale in the practice context and the geographical location of the office building in the spatial context, while the micro level is that of the individual office worker's workspace (Bueger 2013, Halford 2004). Drawing from Lefebvre's (1991) concept of lived space, it may be suggested that dominant use of space becomes the legitimate use of space as uses change over time (Kingma 2016). However, the findings show that the intentions of office workers and the context of work is dynamic therefore the identity and legitimate use of space is constantly put to the test (see Chapter 9 [9.4]). By examining the office setup at a micro level in a single situated case, the study enables an understanding of what is going on, the context of office work and the spatial-temporal arrangements designed to support it. The study does not seek to compare the various spatial levels but instead seeks to elucidate the enactment of office work practices at a micro level and how the office setup supports them.

Though office space designers take cognizance of other factors, such as corporate identity, organisational standards of workstation setup, supervision and hierarchy amongst office workers, in addition to the enactment of office work practices as illustrated in Chapter 7(7.2), the resulting designs may impose organisational norms in the configuration of space. Noting Zhang *et al's* (2008) findings on 'tension' between the designed use of the conceived space, the symbolic meaning associated with the perceived space and the practiced use of the lived space as distinguished by Lefebvre, the study notes that social practice concepts of materials and meaning are useful in further developing understanding of the evolving relationship between the setup and practices enacted in it. Discussing the relationship between material arrangements and practices, Schatzki (2010) argues that practices are partly shaped by the prefiguration of material arrangements that support them. Therefore, the prefigured material arrangements together with the incorporated movable objects support norms of office work and enactment of the anticipated practices. If the prefigured office setup is viewed as space constructed and arranged according to the conceptions of the designers and facilities managers, it appears that the prefigured setup is configured using prior knowledge of

anticipated intended use, and the application of the organisation's norms is translated into spatial arrangements.

12.2.1 Prefigured setup aiding communication and compliance with organisational norms

While the office setup is aimed at enabling the enactment of office work practices, it also gives cues on the norms of office work that are to be adopted. These norms include the type of work carried out at various spaces and times, how work is supervised, the flow of work in the hierarchy of office workers, the interaction expected in various spaces, the work rules, regulations and structure as well as the restrictions on access and interaction. The study shows that organisational norms related to supervisory control, surveillance and authority are enforced through the prefigured spatial arrangement of workstations within the office space. While some office workers seek to locate themselves at a distance from their supervisors and shield themselves from their direct view, supervisors seek to assert authority and control by visual surveillance. The prefigured setup enabling visual supervision and supporting the managers conflicts with the subordinates' preference for keeping out of the supervisor's sight. Discussing the manager's requirement for visibility, Laclercq-Vandelannoitte (2021) argues that, since remote work provides no opportunity for visibility, managers supervising remote workers must find ways of communicating and enforcing authority and visibility in virtual spaces.

While the adoption of new ways of working has raised awareness of the office's role in enforcing organisational norms and enabling shared corporate objectives, culture and values (Harris 2016, Skogland and Hansen 2017), the findings show that the office setup was used to communicate organisational norms through the spatial arrangement and objects used. The role of the office as a site of norms is illustrated by the experiences of office workers working in the designated office. Office workers interviewed explained that work regulations were more closely adhered to and supervised when work took place in the office (see Chapter 8 [8.2]). While Leclercq-Vanderlannoitte (2021) observes that in managing remote workers, managers developed ways of reinforcing the power dynamics even when physically apart from their staff, it is noted that the lack of material contact poses challenges in communicating and enforcing norms. This suggests that online and virtual tools used in remote work do not sufficiently support those organisational norms and the role of the designated office in communicating and enforcing norms remains important.

While the physical attributes of the designated office were observed to contain materiality that supported the communication and enforcement of certain norms, the understanding of norms being communicated and enforced is supported by common meanings lent to objects' physical attributes. Skogland and Hansen (2017) found that designs and objects evoked certain responses, according to how they were interpreted by office workers. Though this suggests that physical attributes may have multiple interpretations, the study found that, in the situated case, the interpretation of physical attributes of objects in the office setup that communicated norms was guided by the collective meaning lent to these attributes. For

example, the norms of access restrictions, privacy and supervision by surveillance are communicated and enforced by the type and height of partition, while the hierarchy and rank of the office holder is communicated by the size of the office, the desk's size and finish, and the type of chair. In elaborating the role of the office setup in organisational culture change, Skogland and Hansen (2017) argued that change in the physical setup of the office contributed to the success of the organisational change, as the office setup communicated and reinforced the change message. This demonstrates that while physical attributes of objects that communicate and enforce norms may have diverse interpretations, they also have a functional role in supporting office work that enables similar interpretations of the norm to be communicated or enforced.

In addition to organisation norms, the prefigured setup communicates formal power relationships that are enforced using the physical attributes of objects in the office setup (see Chapter 7[7.2]). The study shows the power relations communicated by the setup are not static as roles assigned to the setup continuously changing as work unfolds (see Chapter 11[11.5.1]). As illustrated in document preparation (Chapter 7) and the informal unplanned meeting episodes (Chapter 8), the supervisor's authority is not exercised in all practices enacted during the episodes despite being symbolised by the spatial arrangement and physical attributes of the supervisor's desk. Instead, the use of power relationship between supervisor and subordinates arises from the roles assigned to objects in the setup as practices unfold (Chapter 8[8.5]). This concurs with the observation by Fahy *et al* 2014 that though identities of communities of practice are shaped by material and social context, power relations within communities of practice are spatial and temporal with identities being negotiated in the lived experience. Therefore, though the symbolic role of communicating and enforcing organisational norms of hierarchy and authority is demonstrated in the perceived space as discussed in Lefebvre's concept of perceived space, the contextual sensitivities and meaning lent to space is best understood by focusing on the practices (Feldman & Orlikowski 2011, Fahyl *et al* 2014). Noting that organisational space is seen as a resource used for managerial control, Halford (2014) argues that office workers may be resisted such control through the practices they enact in various spaces suggesting the use of practices to temporarily amend power relationships. The study found that though power relationship prescribed in norms can be imposed through the prefigured setup they are amended and shaped by practices.

Though the study of office design management by Gustafsson (2002) notes that change in the physical space symbolised aspect such as organisational change and values, the study shows that the physical space fulfilled symbolic roles, and it may be argued that symbolism needs to be understood in the context of organisational norms. This was demonstrated in the informal unplanned meeting episode (Chapter 8[8.2]), where the use of the supervisor's desk for the meeting invoked temporal work norms associated with meetings while the organisational norms associated with the supervisor's authority remained in place. While Gustafsson (2002) recommends that space should be managed as a symbolic asset, the symbolism attributed to the space needs to be understood. Halford (2004) argues that examining spatial arrangements and the practices enacted in them enables the symbolic meanings and the identities given to space and objects to be understood in the context of real-life experiences.

Noting the authority attached to the supervisor's desk and workspace, it may be argued that the symbolism attached to the prefigured setup arises from the meanings lent by organisational norms as well as the practices enacted. This study shows that while the symbolism in the prefigured setup may be retained across multiple practices, the meaning lent to objects in the setup can be understood through the context of office work practices being enacted and the norms being observed.

The study has also found that the meanings lent to objects that differentiate the rank and authority of the co-workers are shaped not only by the organisational norms of rank and hierarchy, but also by temporal work norms. As elaborated in Chapter 11(11.5), an examination of the enactment of practices and the setup in which they are enacted shows that the setup is prefigured to support organisational and temporal work norms and be ready for the anticipated practices. The study also shows that the spaces and objects in the prefigured setup are assigned symbolic and functional roles and acquire meaning from norms and the practices enacted. Though the possible relationships between meaning, symbolism, and norms in spatial configuration can be debated, further examination is required of the ways in which the relationships are developed and sustained.

12.2.2 Prefigured setup supporting anticipated office work practices.

The study has found that, while the prefigured office setup is designed to communicate and enforce organisational norms, it also provides infrastructure to support anticipated office work practices (elaborated in Chapter 11[11.4]). Though these practices can be enacted in the designated office and alternative workplaces, the office as the designated workplace is prefigured for office work while alternative workplaces are prefigured for other uses and support only temporary setups for office work (Venezia and Allee 2007, Endrissat and Leclercq-Vandelannoitte 2021). Though the distribution of office work to alternative workspaces such as homes, co-working spaces and third spaces has been lauded as the creation of sites for new ways of working (NWW) (Leclercq-Vandelannoitte 2021, Kingma 2019), office workers interviewed expressed the view that the alternative spaces did not support various office work practices, such as those associated with physical documents and interaction. This suggests that the adequacy of infrastructure for office work practices differentiates designated from alternative workplaces: this is demonstrated by the rescheduling of unsupported practices so that they could be performed when the office workers were back in the office.

Further to the prefigured setup anticipating office work practices, the study shows that the adequacy of the office setup is continually reviewed as practices are enacted. In addition to use of questionnaires to examine the perceived effectiveness of the physical office environment, Appel-Meulenbroek *et al*. (2018) suggest that other methods, such as physiological recordings, may be used to examine how office workers respond to the physical conditions of their environment. Though the surveys are based on the reported perceptions of office workers, they provide information on the physical aspects of the office environment

that contribute to office worker satisfaction and dissatisfaction (Haynes *et al.* 2019, Purdey 2013). Examples of surveys carried out conclude that office workers are more satisfied with an environment that they can control or that is flexible (Haynes *et al.* 2019, Appel-Meulenbroek *et al.* 2018). The findings of the surveys suggest that though office setups are prefigured for office work, the prefigured setup may not be suitable for all practices enacted, calling for flexibility of the setup to enable ongoing adjustments.

The quest for flexible office setups may seem to be contradictory to the prefiguration of the office setup to enforce and communicate organisational norms; however, it also suggests that office workers expect the prefigured setup to anticipate the practices to be enacted, including anticipating the dynamic nature of office work. This study shows that while the organisation's endeavours to communicate and enforce organisational norms are aided by the standardised prefigured office setup, such standardisation hinders adjustments to the setup as practices evolve. Therefore, the static nature of the setup that is shaped by imposed by norms creates conflict with the dynamic nature of office work practices at the spatial temporal point where practices intersect (See Chapter10[10.3]). In a study focusing on collaborative activities, Haynes *et al.* (2019) argue that the office setup suited for collaborative work is less suited for concentration, as the interaction it encourages may be a distraction. This suggests that the suitability of a standardised prefigured setup is influenced by the predominant practices enacted by office workers. Noting the tension that arises at the intersection of conflicting uses and interactions Sivunen and Putman (2019) argue that the tensions are not resolved, instead they are managed by allowing ambiguity through multiple uses of space. The study found that while ambiguity of roles may help manage conflicting roles, the dominant practices shape office worker perception on the suitability of setups.

Though the objects in prefigured setups are expected to represent the practices with which they are associated, the study shows that the practices anticipated by the prefigured setup are not always understood through the individual objects in the setup that support their enactment but more by the spatial arrangement of complementary objects in the setup (see Chapter 11[11.4.1]). As observed in Chapter 7(7.5), in addition to the material qualities of a desk, such as its shape, type and size, its spatial position and the arrangement of complementary objects around and upon it influence and communicate the anticipated practices as well as the role of the desk. The anticipated practices are shaped by the spatial arrangement of the objects in the setup and the roles assigned to them. Discussing the relationship between practices and material arrangements, Schatzki (2010) argues that practices are prefigured by the material arrangements associated with them. Since the prefiguration of practices includes their spatial-temporal arrangement and they are influenced by the materiality of the objects and the material arrangements in the space, it can be argued that practices are associated not only with particular objects but with the spatial arrangement of the prefigured setup.

In the examination of the prefigured setup, the findings show that objects complement each other and are arranged to play complementary roles. As elaborated in Chapter 11 (11.4.1), while the shape and form of the prefigured setup is defined by the fixed, static-in-use, and tethered objects, more movable objects complement them and complete the setup for the

enactment of office work practices. In addition to objects playing multiple complementary roles, individual objects in the setup complement each other by supporting chains of complementary practices. This is observed in the conversion of verbal information to written information: the chains of action include the practice of speaking on the telephone, while the complementary practice of working on the computer is enabled by the spatial arrangement that facilitates the bodily movements required to enact both practices (see Chapter 7 [7.4]). Noting Schatzki's (2016) argument that chains of action are mediated by material objects and setups, this study also finds that, in the enactment of practices, chains of action are sustained by the spatial arrangement of complementary objects.

The use of the prefigured setup to communicate and enforce norms such as power relationships and to enable anticipated practices not only guides office workers in differentiating the practices and social relationships in various spaces, but also communicates the spatial-temporal order of the anticipated practices (see Chapter 11[11.1.2]). The study shows that, in addition to the practices predominantly enacted by office worker in various spaces being predetermined by the materiality of objects and arrangements, the material arrangements also predetermined the meaning of the practices. Therefore, while space comprises of physical, mental and social aspects (Lefebvre 1991), the meaning of practices performed provide insights the identity of the space as well as the social interactions and material arrangements that take place (Hardy and Thomas 2015).   Using the example of showering as a practice, Hand *et al.* (2005) argue that the meaning of showering precedes the infrastructure associated with showering, suggesting the meaning precedes and informs material arrangements.   Halford (2004), however, argues that the meaning of space is attributed to its use, and meaning may be constructed from the makeup of the spatial arrangement. The study suggests that, while spaces and objects acquire meaning from the practices enacted, the material arrangement can also communicate the anticipated practices through the meanings lent to the objects in the setup and the spatial arrangement.

12.3 Dynamic nature of office work practices

In the accomplishment of office work, the practices enacted are constantly changing with respect to the purpose of the work, as well as the selection of objects for its accomplishment and their spatial-temporal arrangement. The findings show that office work practices are highly dynamic, with frequent changes occurring during the working day, as new and additional meanings are attributed to ongoing practices, alternative objects are incorporated into existing setups, and scheduled and spontaneous practices intertwine. Noting that the 'ingredients' and connectors of social practices are meaning, materials and know-how (Shove and Walker 2010), the study found that changes in the purpose of work, the substitution of objects, and adjustments to the place and time of work contributed to the continual change in attributes of the ingredients of individual practices. The dynamic nature of practices enables office workers to incorporate their individual preferences and attain convenience.

While the study limits its examination to two important elements of work practices, namely meaning and materials, it may also be noted that know-how plays a key role in the use of objects that form materials that constitute the practices. Noting that the meaning lent to practices by office workers is shaped by their know-how concerning the accomplishment of work (Schatzki 2007, Gherardi 2016), this study notes that know-how is a constituent of practices. In the examination of how office work practices change, the study assumes that office workers already have the know-how and skills required for the accomplishment of day-to-day tasks. Consequently, the interrogation of change of office work practices in the unfolding of office work focuses on the social practice ingredients of meaning and materials.

12.3.1 Office work as social practices

Taking a social practice perspective, the study notes that practices are interconnected in daily interactions and routines and are produced and reproduced using knowledge and objects towards an intended objective (Reckwitz 2002, Schatzki 2010). As discussed in Chapter 3(3.4.1), this study considers that office work does not exist on its own and is part of the everyday life of an office worker, and what office workers do in the office comprises both work and non-work practices. The study shows that the typical day of the office worker comprises intertwined work and non-work practices throughout the day, from before the office workers leave home for the office, to when they are in the office and continuing at the end of the working day when they return home demonstrating the interconnection between office work and other everyday practices of office workers. As observed in Chapter 8.1 and 8.2, non-work activities in the office, such as having a cup of tea, take place amidst office work practices. Though they may not directly contribute to the accomplishment of day-to-day tasks, they are routines that relate to the welfare of office workers and are part of their everyday practices. While the intertwining of work and non-work practices at home and in other alternative workplaces can be attributed to the use of objects associated with information technology and the portability of office work (Umishio *et al*. 2021 Kietzmann *et al*. 2013), the intertwining of work and non-work practices in the office is enabled by the setup of the space and the routines of office workers (Hou *et al*. 2021, Harris 2016).

The study shows that the routines of office workers were shaped by the meanings lent to practices and the practice arrangements, as well as material arrangements that supported the enactment of practices by the individual worker at a micro level. This is illustrated by the setup's provision of tea points that support routines, such as serving a cup of tea, and temporal rhythms, such as the tea break (see Chapter 8[8.2]). While the temporal rhythm of everyday life establishes times of the day when certain practices are enacted (Pantzar and Shove 2010, Hand *et al*. 2005), the organisation of office work is not only guided by these temporal rhythms but also by the corporate institution which is the 'organisation' within which work is organised and carried out. By viewing organisations as social phenomena and as 'social formations' with objectives and norms that govern them, Schatzki (2005) argues that it is in the context of the organisation that the common understanding of norms and actions that comprise practices can be obtained. While the organisational context of office work may help to elucidate the nature of office work as a series of social practices, the study

found that office work practices not only take on an organisational context but also reflect the preferences of individual office workers.

Using a telemedicine case study, Nicolini (2009) argues that, while the macrophenomena arise from a 'complex texture of doings and sayings' that can be observed in depth at a micro level, the macrophenomena provides an understanding of the scale at which practices are being enacted. Engaging the macro level view makes visible the routines and norms of the 'organisation' and of how work is organised, so that the context in which individual practices interconnect may be understood. The findings here show that office workers, in balancing organisational norms and individual preferences, select practices that enable them to comply with organisational norms and provide personal convenience (further discussed in 12.4 below). While individual office workers applied their individual preferences and selected practices that afforded convenience, as illustrated in Chapter 8(8.2), the organisational norms of office work provided spatial-temporal boundaries and guidance on when various practices might or might not be enacted. However, despite the organisational norms providing spatial-temporal boundaries and enabling common understanding and action in the enactment of practices, the ordering and spatial-temporal arrangement of practices vary as office work unfolds. This shows that organisational norms do not homogenise practice arrangements: instead, they provide understanding of the organisational context in which the practices are examined and enacted.

Taking the view that social life has do with human existence and that social practices are interconnected and enable continuity of social life (Schatzki, 2016), this study's results show that office work practices are always evolving as the intentions or preferences of the office worker change. Applying the finding that the practices initiated by office workers arise from the purpose of the work, organisational norms and their own preferences, it can be argued that, when selecting practices and practice arrangements, office workers make knowledgeable choices that are convenient to them and conform to the norms and preferences that they consider important. Though Hopp *et al*. (2009) do not examine white-collar work from the perspective of social practices, their description of white-collar work as creative, knowledge intensive and aligned with organisational goals corresponds with Nicolini's (2012) observation that practices can accommodate individual initiative, creativity, and adaptation to situations. This suggests that the office workers made decisions to accomplish office work in convenient ways while fulfilling its purpose, as further discussed in 12.4 and 12.5 below. These convenient ways may include incorporating their personal intentions and preferences that lead to adjustments such as substitution of objects, incorporation of new objects and changes in spatial-temporal arrangement of the practices.

While organisational norms seek to standardise the accomplishment of office work, the portability of office work enables flexibility of the spatial-temporal arrangement of office work practices even where objects in the prefigured setup are spatiotemporally inflexible because they are fixed, static-in-use or tethered. With technological advancement allowing for spatial-temporal flexibility and with office work being knowledge-intensive and allowing for individual initiative and creativity, office work practices are always evolving as they incorporate personal preferences and changes in routines. Consequently, the spatial-

temporal arrangement of office work practices is neither standard nor fixed, but is dynamic in meaning, as well as in the use of objects and their spatial-temporal arrangements.

12.3.2 Dynamic in meaning

Office workers described their work in terms of the process and purpose of their actions, such as taking handwritten notes in a meeting, writing reports on the computer, making customer calls on the telephone, and giving or receiving an instruction via email. The findings show that while the 'packets' of 'doings' and 'sayings' were aimed towards the conversion and exchange of information, using objects and office workers' bodily movements, the intention behind the conversion and exchange of information, context of work, time and place of work and norms contribute to the dynamic nature of meaning attributed to the practice being enacted (see chapter 11 [11.2.2]).

While the practices enacted by office workers are considered to derive meaning from the purpose of their work, this study found that the context in which the work is accomplished (see 12.2 above), also contributes to the meaning lent. Using practices as both ontological and epistemological objects to obtain knowledge and interpret the meaning of what is going on the organisational and individual levels (Nicolini 2009, Gherardi 2016), it may be argued that practices can be used to obtain the context and roles of the spatial configuration where practices are enacted. However, meaning from practices is subjective and negotiated over space and time (Rosengren 2012, Schatzki 2010). In his essay, 'Crises and Adjustments in Ongoing Life', Schatzki (2016) argues that the practices applied need to be interpreted in the context of what is going on. While the interpretation of the context of practices and their arrangement provides an explanation of what is going on, it also provides insights into the meanings developed by office workers and attributed to practices being enacted. Though Schatzki's (2005) site ontology states that the site of practice is the context of the practices, this study considers that the site of office work practice is not only the organisational context arising from the organisation's norms involved but is also spatial. The study found that the spatial site of practice also provided context and in turn lent meaning to practices. The examination of office work practices in a situated case aids in contextualising the practices being enacted through, amongst others, the organisational norms regarding roles assigned to spaces and spatial arrangements.

In addition to spatial contexts, the temporal arrangements of a day provide a time-based context of office work intertwine with spatial arrangements in providing the context of work as discussed in Chapter 2(2.3). The temporal contexts may arise out of routines set in the, the place of work and temporal rhythms of a day (Rosengren 2015) were found to be part of to the spatial-temporal context within which work practices are organised and enacted. By using the time of day and place of work to describe the practice being enacted, office workers provide context that contributes the meaning lent to the practices being enacted. This is illustrated by the further temporal description of work such as '*reviewing reports first thing in the morning*' and '*check emails before I leave the house*' where the addition of time and place to their description differentiates them from similar practices by bringing out the spatial-temporal context and in turn the meaning lent to each practice. In their study on

subjectivities at the workplace, Halford and Leonardo (2005) have found that what people are saying is interpreted subject to time and space, suggesting that what people are 'doing' and 'saying' is contextualised in time and space. Halford and Leonard (2005) argue that the context aids understanding the purpose of the work and the roles assigned to spatial and temporal resources in the workplace during the enactment of practices. By mentioning the time and place where office work is carried out, office workers give context to their actions in relation to set routines and individual preferences and provide understanding of the meaning lent to the practices enacted.

The study found that the intention of office workers contributes to the meaning lent to practices enacted. However, the intention of the office worker is best understood in the context of the organisational norms such as work regulations. This is illustrated by the document preparation episode where the document being prepared is an appraisal document, and the practices enacted take on the meaning of the office worker providing proof of their performance and compliance with instructions from a higher-ranking co-worker, as well as their ability to meet of a submission deadline (see Chapter 7[7.1]). In a study on telework, Boell *et al*. (2016) note that office work practices cannot be generalised and that the activities of office work are diverse, suggesting need for contextualising the office work practices. By applying organisational context to understand the purpose of the work and in turn the meaning lent to office work practices being enacted, the organisational norms of the work and additional office worker intentions, such as the application of individual preferences are clarified. Additionally, by applying the social practice theory concept of meaning to differentiate office work practices, the 'doings' and 'sayings' that seem similar can be distinguished as unique and ever-changing as the context and intention of the office worker changes.

The study found that the in addition to the meaning lent to practices arising out of the context and intentions of office workers, the knowledgeability of individual office workers influences the meanings lent to practices by them.   The application of knowledge is illustrated in the meanings lent as information is exchanged between office workers (see Chapter 11 [11.2.2]). Stating that practices are intelligible actions, Schatzki (2005) argues that a practitioner's intelligence and understanding of rules, ends and tasks are part of the individual's knowledge of the intention of the action and how it is accomplished. In this regard, the meaning lent to the selected office work practices may be considered to be influenced by the officer workers' knowledge of the enactment of the practice as well as the organisational norms that surround this enactment. Since knowledge levels of office workers may differ, the meaning lent to office work practices is always changing, according to the understanding of the office worker.

Meanings lent to practices constitute and connect practices (Shove *et al*. 2012), giving meaning a dual role during the enactment of practices. The findings show that while meanings constitute and connect office work practices, they also influence the selection of objects and spaces. This is demonstrated in the preparation of the formal planned meeting episode (Chapter 10[10.4]), where the need for privacy and confidentiality in decision making on the case file is fulfilled by the use of the closed office as the venue. Comparing the concept of meaning in office worker practices with other social practices whose evolution has been

studied shows that meaning not only connects practices but also constitutes individual practices. Through a study of showering as a practice, Hand *et al*. (2005) notes that the association of showering with speed, convenience and the immediate achievement of personal hygiene makes it preferable to bathing. Hand *et al*. (2005) also notes that the association with convenience not only influences the selection of showering as a practice but also the development of the infrastructure that enables it. This shows that while practices comprise meaning, know-how and materials, meaning influences the selection of material objects and the material arrangements for enactment of the practice.

While the findings show that the meanings lent to office work practices change between one enactment and the next, the study also found that meaning lent to office work practices could also change during enactment of practices. This is illustrated in Chapter 9(9.2) by the practices whose meanings were continually changing while they practices were enacted, such as the multiple meanings lent to the whiteboard updating session as the associated practices were being enacted. According to the proponents of sensemaking, meaning and action, though related in some ways, are separate entities and therefore, in the analysis of an event, meaning can be separated from action (Glynn and Watkiss 2020). As discussed in Chapter 3(3.3.2), however, action is intelligible and carries meaning: action, therefore, is understood in the context of the meaning that is lent to it. Since context plays a key role in defining the meaning lent to practices, further empirical study of office work practices can provide more information on the dynamic change of meanings and the impact of continuous change on the enactment of office work practices.

12.3.3 Change of objects and material arrangement

As discussed in the theoretical framework, Chapter 3(3.4.3), the prefigured setup comprises objects that form material entities and arrangements that enable the enactment of office work practices. It may be examined as the conceived space is the physical representation of space and designed for determined use (Lefebvre 1991), and as material arrangements that determine and precede the anticipated practices (Schatzki 2010, Orlikowski 2007). However, as shown in Chapter 11(11.3.2), during the enactment of work, office workers customise the setup by substituting objects, incorporating of alternative objects into the workplace, and carrying out material rearrangements that support their intentions. The findings show that substitutions enable the implementation of officer workers' choices by supporting alternative practices that serve the same intention, demonstrating the ease with which office work practices are adjusted. These substitutions may be viewed as adjustments of the lived space by the users based on their reflexivity of their work arrangements (Lefebvre 1991, Kingma 2016) as well as material rearrangements that have been shaped the practices (Schatzki 2010) This study has found that alternative objects are not only those with physical attributes similar to the designated objects but also those that have the ability to take on meanings lent to the designated objects. The physical attributes of objects and their ability to take on meanings lent to them are further developed in the discussion on the 'readiness' of objects and spaces in 12.4.3 and 12.6 below.

New ways of working have expanded the use of mobile telecommunication devices and virtual objects in office work and provided flexibility in where and when office work is done (Strengers 2015, Göçer *et al*. 2018). By enabling portability of work, objects such as mobile phones and laptops have contributed to the distribution of work at a macro level to alternative workspaces outside the designated office (Harris 2015, Sanchez *et al*. 2018). While the static-in-use and tethered technological objects such as desktop computers and telephone extensions are still part of the office setup, the mobile devices have become substitute objects aiding the distribution of office work practices not only away from the office but also within it, as illustrated in Chapter 7 (7.4). The incorporation of mobile devices expands the selection of objects and their spatial-temporal arrangements, altering the place and time of information exchange by combining material and virtual objects (Kietzmann *et al*. 2013, Kingma 2009), making the office work practices flexible and unpredictable. Consequently, the office work to be accomplished can be carried out in different ways and the technological objects recruited can fulfil different intentions for the same practice (Boell *et al*. 2016).

In addition to functional roles, the physical attributes of objects in the setup have symbolic roles such as communicating organisations norms, as shown in Chapter 11 (11.1.2). Due to the symbolic roles, the materiality and material arrangements in the office setup are retained even as the substitute objects are introduced to the setup. While office work is diverse and complex and the practices enacted depend on individual work requirements (Boell *et al*. 2016), the study found that, despite substituting objects and adjusting existing practices to create emerging practices that could fulfil the intention of the work, office workers still retained the initial objects in the prefigured setup.

12.3.4 Dynamic in spatial-temporal arrangement of practices.

Though practices are considered to be routinized in sequence of time, repetition and social order (Reckwitz 2002), they are also irregular and unexpected (Schatzki 2010). In the unfolding of office work, the spatial-temporal arrangement of office work practices continually changes as practices converge and transition while they are being enacted. However, to a casual observer, office work may seem to comprise predetermined and scheduled practices. The findings show that office work practices are ever-changing, as spontaneous practices emerge and converge with scheduled practices and the context of space and time of enactment changes (see Chapter 11[11.2]). The spontaneous change of spatial-temporal arrangement of practices is demonstrated by the continual changing of the priorities of the work as time and space are negotiated to include unplanned practices amidst the enactment of planned practices. The study has found that office work practices are dynamic in their spatial-temporal arrangements as multiple practices are combined and sequenced in the competition for time and space.

Examination of the place and time of work suggests office workers use their selection of objects, and the time and place for work enactment, to communicate their priorities and the

purpose of the work being enacted. While the spatial-temporal arrangements are aided by technological advancement, the study shows that decisions on the incorporation of alternative objects that aid the spatial-temporal distribution of office work are influenced by, amongst others, the practitioners' acceptance of new work routines, and their wish to demonstrate the importance they attribute to their work and their conformity with the new collective norms of their co-workers. Though the selection of objects incorporated in the enactment of practices alters the practices and has potential to adjust their spatial-temporal arrangement (Nicolini 2009, Schatzki 2010, Southerton 2013), it may not change the arrangement of the setup. Nevertheless, the study shows that in the enactment of practices, the use of alternative objects not only gives flexibility to the spatial-temporal arrangement of practices but also provides opportunities for new work routines to emerge and become established.

While mobile technological objects are observed to be associated with urgency, the findings show that, in the enactment of office work practices, alternative objects are selected so long as they can fulfil the meaning attributed to them. This is elaborated in Chapter 11(11.4.1). While conducting a study on temporal rhythms of work, Rosengren (2015) found that the use of mobile technological objects outside official work hours symbolised the importance attached to the work and the high rank of the worker. While Rosengren's findings suggest that the place and time of work lend additional meanings, this study considers that the additional meaning is derived from the context of the practice and new routines to which the office worker is seeking to conform.

The findings show that, while the spatial-temporal arrangement of office work practices that are shaped by routines that include of organisational norms and individual preferences, office work is dynamic. Planned work is interrupted by spontaneous work and the sequence of enactment of the practices continuously being adjusted to accomplish both the planned and spontaneous work and to accommodate the meaning attributed to them. This is illustrated in Chapter 8(8.4.2), where the informal meeting lends new meaning to the physical interaction, changing the priorities of the office worker and consequently the temporal sequence of work practices. In an examination of habits and routines, Southerton (2013) argues that practices compete for time resources, leading to the development of temporal rhythms. While practices compete for time, they also generate inter-practice interdependency that contributes to the temporal rhythms of everyday life (Pantzar and Shove 2010).

Considering temporal rhythms in the arrangement of office work practices can support the argument that spontaneous work competes for time with planned work. Since practices are enacted within spatial arrangements, it may be considered that the temporal rhythms also shape the spatial arrangement of the practices. Consequently, routines and the interruption of routines are both spatial and temporal. Though the prefigured setup may seek to communicate and enforce office work norms through the physical attributes of objects that comprise it, the application of those norms is also demonstrated through what people do and say in the office setup (Sage and Dainty 2011, Leclercq-Vandelannoitte 2011, Hardy and Thomas 2015). Therefore, although the office setup communicates organisational norms related to the place and time when various office work practices were enacted, office workers

verbally negotiated the location of practices and changed the use of spaces in the prefigured setup.

12.4 Office worker convenience

The study found that office workers, driven by the quest for convenience, develop new norms of work to reduce the transition between practices and minimise their bodily movements (see Chapter 10[10.3]). The study further found that in the quest for convenience, roles assigned to objects included enabling the exercising of preferences and norms, such as decisions about the choice of time and place of work, the order of enacting practices and the selection of objects. Consequently, work and non-work practices are spatiotemporally arranged to provide convenience within the temporal structure of a typical day. Though the study does not focus on non-work practices, it was observed that in the quest for convenience, non-work practices enacted in the designated workplace intertwined with office work practices. Non-work activities such as coffee breaks, lunch and informal conversation are part of what goes on in the office and are social and physiological activities that are necessary for the welfare of the office worker (Appel-Meulenbroek et al 2011), the facilities that enable them are part of the setup of the workplace (Harris 2016, Skogland and Hansen 2017). Since these non-work activities form part of the office worker's actions and contribute to their well-being, the findings show that their intertwining with work activities contributes to the spatial-temporal arrangements of practices, as office workers seek to attain convenience while complying with organisational norms and exercising individual preferences (See Chapter 11 [11.3.1]).

12.4.1 Dynamic nature of practices enabling office worker convenience

In the enactment of office work practices, the quest for convenience is illustrated in various ways including the spatial-temporal arrangement of practices as the office workers seeks ease of execution and reduction of transition time. The findings show that while the spatial-temporal arrangements of work practices follow the norms of non-work practices, office workers make adjustments to both time and place to enable them to achieve the desired convenience. As illustrated in Chapter 11(11.3.2), they do this at the intersection of practices by rescheduling practices to be enacted concurrently or in series with other practices to enable concurrent practices and resolve conflicting roles assigned to objects. Studies on the office environment have found that worker convenience is an important consideration in the design of workspaces (Zhang *et al*. 2008, Harris 2019), with convenience being associated with ease of use of spaces and the temporal sequencing of practices (Perry *et al*. 2001, Hand *et al*. 2007, Shove 2003). The dynamic nature of office work practices supports the substitution of objects, time and space used for office work, adjusting office work practices to the convenience of the office worker.

The study found that the dynamic nature of office work practices gives opportunities for office workers to find ways of reducing transition time between practices and time spent in enacting a practice. This is enabled by the ability of office work practices to be rearranged, to take on alternative objects and concurrently assign multiple meanings to objects. While the convenience, customisation and comfort discussed by both Chadburn *et al.* (2017) and Hills and Levy (2014) relate to spatial proximity and reducing the spatial distance and transition time between objects used to produce work and enhance comfort and do not expressly discuss time between practices, it implies the office worker's intention to reduce transition time between practices. Though Chadburn *et al*. (2017) do not discuss the arrangement of office work practices, it can be argued that the convenience sought through proximity to various objects of work is aimed at supporting office worker preferences as regards the spatial-temporal arrangement of practices, signifying that the meaning lent to practices influences their spatial-temporal arrangements.

The findings show that, in the enactment of office work practices, objects and spaces are selected for their capability to fulfil the practices being enacted as well as their ability to enhance the convenience sought. While the roles assigned to the selected objects and spaces are aimed at enabling the fulfilment of office worker preferences and the organisation's norms, the suitability of the objects and spaces includes their ability to fulfil the meaning of the practices being enacted (see Chapter 11[11.4.1]). Though the incorporation of telecommunication devices into work practices provides convenience, their use is limited to the acceptance of new work norms that remove the spatial-temporal boundaries of work (Harris 2019, Cohen 2010, Bittman *et al*. 2009). With the prefigured setup representing and enforcing organisational norms, the selection of mobile objects while in the office has the potential to alter the spatial-temporal boundaries of various office work practices enacted in the office setup. While Hill and Levy (2014) argue that office workers seek to customise generic space as they have unique needs for privacy, control and workstyle, this study finds that the customisation includes the isolation of less preferred objects as convenience is taken into consideration. The isolated objects are further discussed in 12.5 below.

While convenience in general may be defined as the ease and flexibility with which a situation can be adapted to personal preferences, the convenience achieved by tapping into the dynamic nature of practices does not apply to all practices. The findings show that the context of work and the physical environment where the work is being accomplished contribute to the meaning lent to practices and the choices made by office workers in their application of individual preferences. The choices include the selection of practices and reprioritisation or displacement of other practices. This is illustrated in the enactment of practices adopted to prepare for the informal meeting that disrupt the ongoing document preparation practices (see Chapter 7[7.7]). Though the flexibility of the setup enables the spatial rearrangement of practices, the ongoing practices are rearranged in the context of the priorities of the office worker. Taking the view by Reckwitz (2002) that practices comprise of bodily and mental routines, it can be considered that rearrangement of practices are also mental and physical bringing to fore the meaning and materials in the arrangement of practices. Noting that Reckwitz considers that the mind is not site of practice but that the body carries out what the mind determines, it can be argued that priorities and preferences in the practice

arrangements are influenced by the interpretation of the office worker therefore symbolism and perceptions of space are associated with the mental examination of space (Zhang et al 2008) therefore. The study found that while the materials provide resources for various practices, the meaning lent to practices provides the significance for the reprioritisation of practices and the context within which resources become temporarily inconvenient leading to rearrangement of practices and materials that support them

While convenience may be considered an added benefit sought by office workers as they arrange practices and select objects to be used, it can also be viewed as a meaning lent to practices and objects as well as to their spatial-temporal arrangement. The findings show that convenience as meaning lent to spatial-temporal arrangements of concurrent practices connects practices. Since the dynamic nature of office work practices enables adjustment of materiality and material arrangements that support the practice as well as the meaning lent to the practice, the study found that convenience can be considered as the ease with which office workers fulfil their intention to enact selected practices. By considering convenience as an intention and noting that practices can take on multiple meanings, this study argues that convenience can be an additional meaning lent to practices as they are being enacted. Since meaning connects practices (Shove *et al*. 2012), by considering convenience as meaning, this study suggests convenience is a meaning that connects practices. It can be argued that the quest for convenience motivates office workers to engage in the connection of multiple practices, as well as the substitution of objects used to enact practices and the spatial-temporal rearrangements of practices. Therefore, convenience can also be viewed as meaning that connects practices and that constitutes a practice.

12.4.2 Convenience drives new routines and spatial-temporal arrangements.

Though the prefigured setup provides spatial arrangements that communicate and enforce organisational and collective norms (Beyes and Holt 2020, Skoglund and Holt 2020, Skogland and Hansen 2017), the findings show that in the unfolding of work, office workers adjust the spatial arrangements to incorporate their individual preferences. With practices being part of the routines of everyday life (Schatzki 2010, Reckwitz 2002) the incorporation of individual preferences of office workers adjusts existing spatial-temporal arrangements of office work practices, creating new routines. By seeking personal convenience, office workers may set aside the conventions defined by the prefigured setup and adjust spaces to suit their individual preferences. This is demonstrated by the spatial-temporal rearrangements of workspaces that office workers carry out to accommodate collaborative work practices at their desks (see Chapter 8[8.5] and Chapter 10[10.4.1]). While office workers value convenience and rank highly the ability to make changes to their prefigured setups to suit their preferences (Chadburn *et al*. 2017, De Been and Beijer 2014), individual preferences vary from one to the next, with each worker seeking to make changes to suit their personal preferences (Hills and Levy 2014). This is illustrated by the wide range of requests made by office workers during the arrangement of the office setup (see Chapter 7[7.2]).

To attain the convenience they wish for, office workers reassign additional roles to objects in the prefigured setup. Additionally, in seeking to resolve the inconvenience arising out of the inability of the prefigured setup to support the desired spatial-temporal arrangement of practices, office workers rearrange the space by moving or incorporating additional objects. This is observed from the additional roles assigned to the office desk as a meeting venue for office workers in Chapter 6(6.9). While the office worker attains convenience, the roles of the desk associated with the organisation's norms, such as providing a place for the enactment of concentration work, or communicating the rank of the office worker, are suspended, giving way to a new spatial-temporal arrangement that accommodates a meeting. New spatial-temporal arrangements temporarily set aside the organisational norms and the roles they have assigned to spaces and objects in the prefigured setup.

While the prefigured setup promotes work regulations, ethos, interactions and other organisational norms (Khanna *et al*. 2013) as well as influencing the spatial-temporal arrangement of practices (Schatzki 2010, Fahy *et al*. 2014), the findings show that, as new individual and collective preferences alter the existing roles of the prefigured setup, it is adjusted to accommodate these changes (see Chapter 11[11.5.3]). This is illustrated by the collective use of virtual documents instead of physical documents, assigning alternative roles to personal filing cabinets and repositioning them to other spaces in the office setup as visual barriers and space markers (see Chapter 7[7.9]). Because new individual and collective routines for office workers are applied, the organisational norms communicated by the prefigured setup are set aside and the materiality and material arrangements that they represent are assigned new roles. Taking Schatzki's (2010) view that material arrangements prefigure practices, the prefigured setup is arranged to enable practices anticipated according to organisational norms. However, since office work practices are dynamic, and they can provide the convenience sought by office workers forming new individual and collective routines, the findings show that organisational norms and new individual and collective routines seem to compete for spatial and temporal resources, resulting in the negotiation of spatial-temporal arrangements of practices.

Since the prefigured setup predetermines the spatial-temporal allocation of resources based on organisational norms, the study has found that as office workers seek convenience by applying their preferences, new routines emerge, and the resources are reallocated and reassigned. This space reconfiguration is observed to involve negotiation of uses of space and objects that lead to reallocation of space, relocation of objects within the space and assignment of new roles to objects and spaces. The permission for access and negotiation of space illustrated in the whiteboard updating session (see Chapter 9[9.4.2]) shows that the enactment of practices associated with new routines and collective preferences not only gives temporal identity to the space but also assigns ownership of it to the office workers updating the whiteboard. In a study on transitory spaces, Shortt (2015) found that users of space negotiated the practices they carried out in various spaces and in turn the identity and ownership of spaces. The appearance of new routines and the negotiation for space that leads to taking over and marking ownership of space suggests that new routines lend new roles and meaning to spaces and objects.

Since the negotiation of spatial-temporal rearrangements of objects and practices is carried out in the context of the work itself as well as organisational and collective norms (Beyes and Holt 2020, Shortt 2015), office workers evaluate the most efficient way to enact practices and are continually adjusting the movable objects around them. Whereas the examination of both material and discursive practices provides insight into the information used in clarifying and negotiating the use of spaces, it also informs the meaning lent to materiality and material arrangements (Jarzabkowski *et al*. 2015, Beyers and Holt 2020). Though office workers value convenience, convenience may not be ingrained in the prefigured setup in visible and identifiable material arrangements and practices. Instead, as further discussed below, it may be provided in the form of flexibility and 'readiness' of the setup for customisation and for taking up additional meanings lent when new norms are formed.

12.4.3 Readiness of objects and spaces to support office worker convenience.

In the enactment of office work practices, office workers identify, recruit and isolate objects according to their individual preferences to meet their convenience (see Chapter 11 [11.5.3]). As the repeated application of preferences develops new routines, the maintenance of the new routines is enabled by the ability of the objects to take up assigned roles and the meanings lent to them. However, as elaborated in Chapter 11(11.4), the findings show that the application of new routines by office workers depends on the readiness of the spatial-temporal arrangement of objects in the setup. Though spaces are materially constructed for the anticipated roles, the anticipated roles may change as office workers seek convenience and new routines are developed and applied. Noting that in the absence of the enactment of human action space is abstract and that space is defined by the practices carried out in it (Kingma 2016), it may be argued that preferences of office workers shape routines and subsequently spaces. New routines also bring with them opportunities for expansion of the roles assigned to objects and space as work unfolds, testing the setup's ability to take on new roles either as it is, or as altered by customisation and reconfiguration. The study has found that, as new roles are assigned to spaces and objects, the spaces and objects need to be ready to take up these new roles and the opportunities that arise from them.

The findings show that the choices and preferences of office workers are based on their desire to ease the enactment of practices and reduce the transition time between practices and that the ease of transitioning between practices is enabled by the ability of spatial-temporal arrangements of objects to support the additional practices (See Chapter 11[11.4.2]). Office workers were observed to arrange their workstations to support the concurrent enactment of practices, enable scheduling of practices and minimise transition time between enactment of practices. This was demonstrated by the arrangement of frequently used objects on and around the desk to be within arm's reach when required during the enactment of a practice, as described in Chapter 7(7.3). This shows that, whereas materials are conveniently arranged to support the enactment of practices and are interconnected to fulfil various roles according to the intention of the practice (Schatzki 2010, Shove *et al*. 2012), the arrangement extends beyond roles anticipated by the prefigured setup to those required by the office worker.

Office setups are considered ready for office work when they attain levels of physical conditions such as ambience, ICT infrastructure, layout, and indoor environment (Rolfo 2018, Brunia *et al*. 2016, Fiege *et al*. 2013) that are satisfactory for the intended work. The examination of office worker satisfaction with the office environments shows that the productivity of office workers arose from factors related to their satisfaction and comfort with the office design and internal environment (Chadburn *et al*. 2017, Mallawaarachchi *et al*. 2016). Additionally, Göçer *et al*. (2018) found that office workers in a flexible office chose the same desk every day, thus developing a form of 'ownership' of the desk, after learning about the advantages and disadvantages of other desks and settling on the one they liked best. Though spaces may meet the satisfaction levels required to ensure office workers' comfort, assessment of their readiness extends to continuous interventions and evaluations to ensure that they fulfil the purpose for which they are designed (Rolfo 2018, Duffy *et al*. 2010,) and support the intention of the practices that are enacted in them (Appel-Meulenbroek et al 2011).

In the pursuit of convenience, office workers select setups that not only support the enactment of practices but also help to reduce the time taken and fulfil multiple work objectives concurrently, as elaborated in Chapter 11(11.3.2). Office workers' selection of setups that were ready for the concurrent enactment of practices showed that they took cognizance of both the functional and symbolic roles that the setups were ready to perform. This is illustrated in the unplanned informal meeting episode and the planned formal meeting episode where meetings were held at office workers' desks so that they could reduce the time between having a meeting and enacting other practices (see Chapter 8[8.3] and Chapter 10[10.4]). Additionally, the co-workers complied with requests to converge at the senior officer's desk, owing to the rank and authority of the senior officer. Office workers considered that the desk setup was ready to accommodate multiple practices while performing the symbolic role of asserting the authority of the office holder.

While the materiality of objects in the setup is vital for the enactment of practices, the readiness of objects includes their ability to take up the functional and symbolic meanings lent to them (Hardy and Thomas 2015) and is conveyed through physical attributes such as finishes, size and spatial arrangement (Sage and Dainty 2011, Schatzki 2010, Hopwood 2014). The study shows that the readiness of materials and material arrangements is impaired if they are not ready to take up both functional and symbolic meanings that enable the ordered practices to be enacted and the intended meanings to be lent to objects and practices (see Chapter 8[8.2]). While the functional role of materials and material arrangements may be viewed as enabling the enactment of practices, practices give meaning and identity to materials and material arrangements (Nicolini 2012, Orlikowski and Scott 2015). This shows that the functional and symbolic roles of objects have interdependency and both functional and symbolic meanings are lent to objects and spaces.

Noting the interdependency between functional and symbolic roles assigned to objects, it may be argued that the readiness of objects and spaces includes their ability not only to fulfil functional and symbolic roles during the enactment of practices but also to take on the functional and symbolic meanings attributed to them. The inability of objects and spaces to

fulfil symbolic and functional roles and take on functional and symbolic meanings results in the spatial-temporal rearrangement of practices as available alternative objects and spaces are identified. This is demonstrated in the document preparation episode (Chapter 7[7.4]) by the temporal transfer of the retrieval of virtual documents to a co-worker's desk. While the example illustrates the point that physical attributes' inability to fulfil functional roles frustrates the enactment of practices, necessitating the spatial-temporal rearrangement of practices, it also shows that the symbolic roles of the participant's desk as a place of supervision and authority are not transferred to the co-worker's desk. Noting that symbolic meaning in spatial-temporal arrangements of practices is drawn from norms of the community of practice (McGregory 2004, Fahy *et al*. 2014), it may be implied that since the spatial-temporal rearrangement of practices does not include the transfer of symbolic roles, the meanings borne by objects are not transferred with the rearrangement of practices. This suggests that the lack of readiness of physical attributes to perform both functional and symbolic roles can result in frustration with the enactment of practices.

In the evaluation of the suitability of spaces for intended work, scholars have used perception surveys to assess the office workers' levels of satisfaction with the privacy, ambience, layout, indoor environment and other aspects of the physical space (Haynes *et al*. 2019, Perry *et al*. 2001, Boell *et al*. 2016, Sivunen and Putman 2019, Mazmanian *et al*. 2013). While the perception surveys provide feedback on various physical aspects of the office environment, on their own they do not provide sufficient insight into the readiness of the setup to support enactment of practices and fulfil the purposes of work. Noting that the purpose of the work lent meaning to office work practices and the objects and spaces incorporated in the enactment of the practices, the findings show that the setups that support dynamic change in practices are those with the readiness to take on new and additional meanings lent by practices during enactment. These additional meanings include symbolic meanings, such as authority and rank, that are conferred by the physical attributes of objects in the setup, including the size, texture, colour and spatial position of furniture.

With the increased uptake of remote and flexible working following COVID-19 mitigation measures, virtual spaces and objects have enabled the enactment of office work practice by performing their assigned functional roles. Leclercq-Vandelannoitte (2021) argues that though new ways of working, such as remote and flexible work, blur the hierarchical relationship between managers and workers as they use virtual workspaces, it is necessary for managers to be visible in these spaces. The study has found that as virtual objects and spaces are incorporated into office work, the material arrangements change, but the intention of the work and the meaning of the practices might remain unchanged. For example, the use of virtual documents instead of physical documents does not change the meaning of the document being prepared or the meaning of the practices enacted in the preparation of the document (Chapter 7[7.9]). Instead, office workers seek ways to maintain objects' symbolic meaning by transferring physical objects' various meanings to virtual objects.

12.5 Reconfiguration of space is shaped by new roles assigned to objects and spaces.

The prefigured office setup may appear to be static as the spatial positions of partitions, desks, computers and other fixed, static-in-use and tethered objects remain unchanged during the enactment of practices. However, the findings show that the spatial arrangement is continuously being reconfigured as office workers seek convenient ways to accomplish office work (see Chapter 11[11.5]). In the unfolding of office work, workers adjust the movable objects within their workspace to reduce the transition time spent in the enactment of practice and between practices while fixed, static-in-use and tethered objects retain their spatial positions. Though the fixed, tethered, and static-in-use objects remain in the same position, the roles assigned to them and the arrangement of movable objects around them are continually changing. The changes in the arrangement and roles assigned to objects in the setup are part of the reconfiguration of the workspace.

While the prefigured setup is configured according to the organisation's norms, this study also found that the reconfiguration of spaces was a response to new practices and the implementation of new norms arising from the new practices and practice arrangements that emerged in the quest for convenience.

12.5.1 New practices incorporate and isolate objects in the setup.

The recruitment of some objects and isolation of others is continually taking place, rendering isolated objects temporarily redundant as elaborated in Chapter 11(11.5.3). The findings show that while objects in the setup are prefigured to fulfil certain symbolic and functional roles, isolated objects lost their prefigured functional roles but retained their prefigured symbolic roles. This is illustrated in Chapter 10(10.1) by the presence of filing cabinets in the workspace though their role as a repository for documents diminished as office workers increasingly used virtual documents and online files instead of physical documents. While studies on the changing nature of the office environment have considered flexibility within the office, enabled by data and voice connectivity, as contributing to the suitability of the office setup (Harris, 2015; Fuchs-Kittowski *et al*., 2010; Hassanain, 2006), this study shows the flexibility desired by office workers included the ability to modify the spatial arrangements to support emerging practices. The temporal redundancy of objects does not always result in the removal of objects from the setup or rearrangement of the space. Instead, some of the isolated objects retained fulfil other roles as office workers form new individual and collective routines by consistently selecting the enactment of new practices that assign new roles to isolated objects. It may be argued that the office workers may not be ready to abandon practices that are considered more reliable than new emerging practices, therefore, they retain 'redundant' objects in the setup that are used to in enactment of 'backup' practices.

In addition to objects being deselected due to their diminishing functional role in the enactment of practices, the data showed that they were also deselected due to their inconvenient position in the place where the practice was being enacted. This is illustrated in

Chapter 10(10.4.3) where, in the interests of reducing transition time, an adjustment enabled the meeting preparation and meeting practice to take place at the same desk. Though this study is not about the productivity of office workers, it notes that the convenience sought by office workers at their workplaces is at least partly intended to enhance of their productivity. Experiments carried out by Knight and Haslam (2017) in their quantitative study on office worker wellbeing and productivity found that office workers who could adjust their workplace had an increase in their level of productivity. Because Knight and Haslam's experiments, unlike the present study, were carried out in an artificial environment, the quantitative measure of the impact of adjustments did not take cognizance of organisational norms, nor did they draw from the real-life experiences of office workers. By drawing from the experiences of office workers, this study shows that while the prefigured setup is derived from organisational norms, office workers adjust their routines and selection of objects and spaces to enhance their convenience, and in turn adjust the spatial-temporal arrangement of spaces.

Observing that the prefigured setup is arranged to fulfil both functional and symbolic roles, findings show that when the isolation of objects arises from transfers of their functional roles to alternative objects, the symbolic roles are not always transferred (see Chapter 11[11.5.3]). In a study of the power of spatial and temporal ordering in organisational learning, Fahy *et al*. (2014) note that space, while in use, contains symbolic objects that contribute to the everyday experience of office workers. Since physical attributes of objects have both functional and symbolic roles (Sage and Dainty 2011, Halford 2004, Schatzki 2010, Hopwood 2014), it may be argued that objects in the workspace have symbolism that relates to their functional roles. The findings, however, show that while functional roles may become redundant, their symbolic roles can continue to remain relevant.

Whereas, in his study on the spatial distribution of work, Nicolini (2007) observed that the spatial relationship of materials might be critical to sustaining a practice, this study shows that practices are also adjusted by being transferred to more convenient locations and enacted using alternative objects. Through relocating the meeting practice from the meeting room to the desk, the findings show the deselection of the meeting room, as the meeting practice is relocated with some of the necessary functions carried out by the meeting room being transferred to the desk. This demonstrates that convenience contributes to the transfer of practices from the prefigured spatial position to alternative locations and the assignment of new roles to objects in the destination location, thus incorporating them into the practices they are supporting.

12.5.2 Change in the spatial arrangements.

It is expected that some new practices will replace old practices and lead to the redundancy of isolated objects and subsequent changes in spatial arrangements; this study, however, found that some isolated objects were retained in the setup, providing opportunities for redundant practices to be enacted as backups to new practices. Isolated objects were used

by office workers to enact practices where new practices were frustrated or not selected for enactment, leading to isolated objects temporarily reclaiming their functional roles, as illustrated in Chapter 6(7.4). Though the changes in the office setup are considered to be a response to automation and the reduction of paper-based transactions (Haigh, 2006; van Meel, 2017), as well as virtual interactions enabled by mobile technology (Venezia and Allen, 2007, Hurme 2005), the study shows that the new practices arising from technological advancement gradually take the place of changing practice. Although in the enactment of new practices office workers incorporate and isolate objects to fulfil the purpose of work and new routines, the findings show that the modification of the spatial configuration is gradual, as isolated objects are retained alongside the incorporated alternative objects, even though the enactment of new practices renders isolated objects temporarily redundant (Chapter 11 [11.5.4]).

The isolated objects are ignored and not included in the enactment of new practices; nevertheless, they retain their spatial position in the prefigured setup, as illustrated by the preservation of static-in-use objects, such as cabinets, and tethered objects, such as telephone extensions, even though office workers did not use them for their functional roles. The overlap between the new and old practices is illustrated by the presence of temporarily redundant objects in the workspace. While the retention of isolated objects amidst the incorporation of new objects may be viewed as an overlap between new and old practices, the study suggests that the symbolic roles fulfilled by the isolated objects have the potential to outlast their functional roles. Considering the symbolism of objects, Fahy *et al*. (2014) argue that identity conferred by the symbolic meaning of objects is part of the enactment of practices. The symbolic roles of objects include communicating the role of the space and the authority and supervisory role of the office worker (Sage and Dainty 2011, Hopwood 2014, Fahy *et al*. 2014). Noting the preservation of objects for their symbolic roles even when they are functionally redundant, the study concurs that in the enactment of practices, the interaction amongst office workers is accompanied by the symbolism of authority and rank.

Through the study on the visibility of managers' roles and identities in a teleworking environment, Leclercq-Vanderlannoitte (2021) found managers sought to materialise their roles and authority to enhance their visibility. Though this case study examined remote working environments, it suggested that even in the virtual interactions and relations between office workers, the virtual artefacts used assumed symbolic roles of authority. The present research, however, considers the designated offices of the situated case, where interaction between office workers is both physical and virtual. The data shows that the physical objects in the office setup fulfil symbolic roles, such as sending cues of authority and rank, that are understood by office workers: this concurs with Leclercq-Vanderlannoitte's conclusion that both physical and virtual objects assume symbolic roles.

Since isolated objects are not moved but simply ignored in the enactment of particular practices, it has been observed that, thanks to their retention of their customary locations, their physical attributes are complemented by their spatial position, enabling them to fulfil existing and new symbolic roles. Objects' physical attributes, such as size, colour, texture and spatial position, support both the functional and symbolic roles assigned to them (Sage and

Dainty 2011, Schatzki 2010, Hopwood 2014), but the temporary redundancy of functional roles may result in the erroneous identification of use of space. The expectation that the materiality and material arrangement of objects identify the use of space and provide physical attributes that support practices enacted in a given space (Sage and Dainty 2011, Halford 2004) implies that the presence of isolated objects may generate misinformation about the uses of a setup and the practices it supports.   This demonstrates that though the material arrangement of the prefigured setup is preserved to include isolated objects, the functional roles assigned to their physical attributes diminish while the symbolic roles are retained.

The retention of isolated objects to fulfil symbolic roles assigned to them by organisational norms is illustrated by the observation that office work practices have social structures with which they comply.   This is demonstrated by the symbolism of rank and authority in interactions at the desks of office workers and the labelling of spaces such as '*the boss's cubicle*' (see excerpt in Chapter 7[7.2]).   Since the physical attributes of the isolated objects include features indicating their role as markers of authority and supervision, these objects remain relevant to their situation and are understood by office workers as providing and communicating social order in the office setup. The study shows that one of the functions of isolated objects' retention of their spatial position is to fulfil symbolic roles.

While the materials and material arrangements determine the practices to be supported (Miettinen and Virkkunen 2005, Schatzki 2010), the data showed that, as practices evolved, the material arrangement was adjusted by the incorporation of both new and isolated objects that enabled 'backup' practices and fulfilled symbolic roles. In a literature review on spatial change management, Skogland and Hansen (2017) suggest the office environment is both social and physical, and the understanding of social cues communicated by physical markers in the physical environment should be taken into consideration when making spatial changes. As well as considering spatial changes that are organisation-driven, this study observes that spatial change is also driven by office workers as they seek convenience in the enactment of office work practices. Though spatial change may be initiated by the organisation to communicate organisational norms, in everyday life, office workers also initiate spatial change for their own purposes as they reassign roles and objects in accordance with their preferences and routines.

Applying Lefebvre's theory on *The Production of Space,* 'conceived space', 'perceived space' and 'lived space' concepts to examine third spaces, Kingma (2016) argues that while third spaces are not conceived and recognised as a work facility, in the lived experience users relate them to their personal work preferences as they seek to achieve their temporal presence using their virtual work environment. This results in temporal conversion of third spaces to alternative spaces to effectively work online. Since the lived space is experienced by the users (Lefebvre 1991), they own equipment and creativity to make the space work for them (Kingma 2016). This concurs with the study findings that change of setup is driven by, amongst others, implementation of preferences and the exercise of convenience (see Chapter 11 [12.3.1]).

Office rearrangement may be considered an organisationally driven initiative; however, office workers are continuously making changes to their workspace to enable the practices they

select.   It is worth noting that worker-initiated spatial change is intended to facilitate convenience in the enactment of practices and application of individual norms and that office workers making spatial changes do not always remove organisational norms when incorporating their own norms. Instead, they retain objects that symbolise organisational norms even if they are not actually in use. Where the office-worker-initiated change is implemented in the context of the existing prefigured setup, the emerging practices and routines included allow office designers to incorporate new physical markers and remove isolated objects from the setup.

12.5.3 The influence of roles and meaning in negotiating arrangements

The data showed that in the accomplishment of office work, office workers arranged practices according to their priorities and antipathies and as supported by the 'readiness' of the setup to fulfil assigned roles and meanings lent by the practices (elaborated in Chapter 11[11.4.2]). It was observed that on a working day, objects and spaces may fulfil different roles for different practices and acquire multiple meanings as they connect practices and terminate them. While meaning is dynamic and negotiated over space and time (Hardy and Thomas 2015, Hopwood 2014), this study shows that as practices are arranged to suit the priorities and antipathies of office workers, objects in the setup are assigned roles to enable the enactment of selected practices. Additionally, the purpose of the practices being enacted lends meaning to the practices as well as to the objects and their spatial-temporal arrangements. While the roles assigned to connecting and boundary objects at prefiguration may be identified by using the physical attributes of the objects as they demarcate and interconnect spaces (Blomley 2016, Hopwood 2014), the findings show that the roles assigned in demarcating and interconnecting practices and communities of practices are identified by using the meanings lent to objects during the enactment of practices. Though the prefigured setup is intended to fulfil various functional and symbolic roles, the roles assigned to objects and spaces are understood through the meanings lent to practices. It should also be noted that the findings show that, in the unfolding of office work, the meanings lent to practices may include the intention to achieve convenience, adjusting the roles assigned to objects and spaces and influencing the negotiations for spatial-temporal rearrangements.

Noting that office worker convenience relates to the reduction of transition time between practices and during enactment of a practice, the study shows that, at the point of intersection, the objects supporting concurrent enactment of practices take on the roles of boundary and connecting objects that enable transition between practices. While boundary objects enable different groups to enact practices without affecting each other (Star 2010), the objects that mark the boundary between spaces, such as partitions, play roles in separating and transitioning practices. This is illustrated in Chapter 7(7.2) where the half-height partition plays the role of boundary object separating practices being enacted by individual office workers at their workstations; being 1200mm high, it also plays a role in connecting physical interactions over it. Noting that boundary objects have different uses and capabilities in enabling office work practices depending on the practice arrangements and the

shared norms of work (Carlile 2004, Kellogg *et al*. 2006), it may be argued that objects that are considered as separating may also enable the convergence of practices. Concurring that boundary objects enable knowledge sharing, Kellogg *et al*. (2006) note boundary objects are used to carry shared meaning. This suggests that boundary objects also pass on the meaning between practices that they separate and become connecting objects. It may be argued that where the role of boundary objects as connecting objects reduces the transition time between practices, it enables convenience.

Although, at the intersection of practices, office workers seem to enact multiple practices concurrently, the findings elaborated in Chapter 11(11.5.2) show that the practices are enacted in temporal sequence when they occupy the same spatial position, and the objects are rearranged spatially to enable the temporal sequence of enactment of practices according to the roles they play. This is illustrated in Chapter 10(10.3) by the preparation for the formal planned meeting where the office worker concurrently enacts complementary practices, namely, speaking on the telephone while working on the computer and taking notes. While each object is assigned a distinct role in the temporal sequence of work as complementary practices are concurrently enacted in the exchange of information, the spatial arrangement of the objects on the desk is constantly rearranged as the sequence of information exchange changes. Although, during the enactment of practices, practices may seem to stand alone as they compete for time, they are not enacted in isolation but have inter-practice interdependency with co-participating practices alongside which they are enacted (Pantzar and Shove 2010, Southerton 2006). The interdependent practices are considered complementary to each other: these complementary practices are concurrently enacted and compete for time, and the spatial arrangement of the objects that support them is shaped by the temporal sequence of their enactment. Since the spatial arrangement of objects is shaped by, amongst others, the temporal arrangement of practices (Halford 2008; Hopwood 2014, Merriman *et al.* 2012, Blomley 2016), it can be argued that, as the practices compete for time, the spatial arrangement of objects is shaped by the sequence in which they are required to fulfil their assigned roles. In addition to the competing concurrent practices being rearranged by the temporal sequence of their enactment, the study found that competing concurrent practices are also rearranged to resolve conflicting meanings assigned to spaces and objects. The spatial configuration of the office, however, seems to support the concurrent enactment of multiple practices: during this enactment, the meanings lent to spaces and objects in the configuration may conflict, resulting in rescheduling the enactment of practices (see Chapter 11 [11.4.2 and 11.5.1]). This is illustrated in Chapter 9(9.5), where the temporal co-existence of the printing and whiteboard updating session necessitates negotiation of access to and use of the cubicle as well as the dominant meaning lent to the cubicle. Though practices lend meaning and identity to objects (Gherardi 2016, Hardy and Thomas 2015) and the material arrangement is influenced by the shared meanings they are lent (Shove *et al*. 2012, Langenberg and Wesseling 2016), where there are multiple competing meanings, the dominant meanings determine the priority of certain practices while rescheduling the other competing practices.

Though rhythms of a day are an outcome of a temporal pattern formed by practices, and links between practices are demonstrated by interconnection of practices (Pantzar and Shove

2010), the findings show that the dominant meanings shaped the order of practices and the related material arrangements (see Chapter 11 [11.3.2]. Since meaning is used to negotiate roles of objects at the intersection of practice, it may be argued that links between practices are influenced by the dominant meanings. Therefore, as practices are being enacted, the temporal meanings lent to objects are negotiated according to the roles they are assigned in fulfilling office workers' priorities. Though the priorities are expected to influence the temporal order by which objects are incorporated and retained in the practice, the data shows that the meaning lent to the practices influences the sequence of practices to be supported by the spatial arrangement. While Nicolini (2007) notes that the spatial relationship of materials is important in sustaining practices, this study suggests the spatial relationship of materials is best understood by identifying and distinguishing the temporal roles assigned and meaning lent to objects incorporated in the practices. Despite both roles and meaning being associated with materiality and spatial-temporal arrangement of the objects, the study has found that roles assigned to physical attributes do not change with each enactment. The meaning, however, depends on the purpose of the work and purpose may change with every enactment. This is illustrated in Chapter 9(9.2), where the role of the whiteboard as an object used to keep a record of work does not change, while the meaning of the whiteboard constantly changes according to the information being recorded and the significance of the information to the individual office workers.

12.6 Readiness and reconfiguration for the dynamic nature of office work practices

The selection of objects to be incorporated into practices may be viewed from the perspective of how norms have developed out of the consistent enactment of certain practices in preference to others. While in an examination of temporalities of consumption, Southerton (2013) considers that habits and routines concerning the use of objects demonstrate consistency in the selection of practices, this study shows that the application of norms, including habits and routines, are enabled by the readiness of objects in the setup.

Though it has been suggested that office workers prefer office setups that give them flexibility in temperature control, layout and choice of desk (Göçer *et al*. 2018, Haynes *et al*. 2019, Appel-Meulenbroek *et al*. 2018), this study found that the quest for flexibility related to the office workers' convenience. However, due to individual preferences and the dynamic nature of office work, convenience is not standardised across office workers. The study found that the pursuit of convenience adjusts office work routines as practices are selected and prioritised. The capability of the prefigured setup to accommodate office worker convenience extends beyond the ability of the physical attributes of objects in the prefigured setup to carry out roles assigned by practices intended to enhance convenience: it also includes their ability to take on the meanings lent to them by those practices. The arrangement of prioritised practices and the objects that support them is constantly negotiated within time and space and the readiness of objects and spaces to enact the practices assessed. The flexibility of the office setup may be viewed as the ease with which

the office setup accommodates the addition, retention or isolation of objects as practices are rearranged, and ultimately the ease with which the workspace is reorganised.

With office work observed to be dynamic and with the temporal order being based on office workers' priorities and antipathies, the findings show that these priorities and antipathies guide the negotiation about the spatial-temporal rearrangement of objects. As office workers choose the order of work that is convenient, they select spatial-temporal arrangements that meet their priorities and ease the interconnection between work and non-work practices in their everyday lives. This is observed in the choices made concerning the temporal order of practices on a typical day. As practices such as virtual meetings, emailing and electronic messaging are supported by technological objects, they increase flexibility of the place and time of work (Kieztmann *et al*. 2013, Nicolini 2007) and have the potential to continually adjust the spatial-temporal arrangement of complementary practices and the material arrangements that connect them (Schatzki 2010, Shove *et al*. 2012, Southerton 2013). This study suggests that in the spatial-temporal arrangement of practice, office workers seek to do more at the same place within a short time by reducing their movements and carrying out concurrent activities.

When designing the office, office designers set up the space to enable office work practices in certain spaces while discouraging and constraining other practices in other spaces. However, in the use of space, office workers seeking convenience redefine the use of spaces by the spatial-temporal arrangement of practices and objects. While the designated office consists of an assemblage of objects prefigured to enforce and communicate norms of office work, in the unfolding of work, office workers incorporate, isolate and rearrange objects to suit the purpose of the work. In a quantitative study on workplace alignment focused on office workers' control of acoustic and visual privacy, including the available degree of flexibility, Haynes *et al*. (2019) found that the office environment did not facilitate office workers' simultaneous execution of different work activities, and proposed that office environments should be sufficiently flexible to support the execution of both collaborative and concentration tasks. Though Haynes *et al*. (2019) noted that office workers who carried out concentration work seemed to be more tolerant of interruption, the findings show that the ability of office practices to be dynamic in the meaning and terms of their spatial-temporal arrangement may contribute to the flexibility. While it may be suggested that office workers confined to their desks during both collaboration and concentration are tolerant of interruption, this study argues that the office workers confined to their desk seek to reduce transition time between practices by enacting practices at the same location.

In seeking to reduce the time between practices and the time spent enacting practices, convenience can be argued in the context of both location and time. Understanding what conveniences, the office worker seeks enables the setup of office spaces and provides resources suited for the practices. Additionally, understanding of conveniences sought in the enactment of office worker practices will enable office managers to optimise resources spent on office space and provide a better experience to occupants. Since the intention of work differs from one office worker to another, the reason for seeking convenience and the convenience sought differs from one office worker to another. However, since the actions

associated with office work, such as working on the computer, speaking on the telephone, printing and handling documents, are common to all office work, the objects used in the office are also common for all office workers. With meaning and roles assigned to objects being temporal as based on the intention of the work and the preferences of office workers, and influenced by norms, and evolving routines, the suitability of the configuration of office space for intended work is always changing.

12.7 Reflections on the implications of COVID-19 on office work practices

Though the study does not focus on the impact of the COVID-19 pandemic on office design, the research was carried out during the pandemic, with participants making adjustments to their methods of accomplishing office work. While the office workers in the situated case used the office as the designated workplace, at the onset of the pandemic they s worked from home for a short period and thereafter returned to the designated office while the pandemic was still in progress. The office's resumption of the status of an unrestricted designated workplace came with the enforcement of disease transmission mitigation measures such as maintaining physical distances between persons, wearing facemasks, using sanitisers and setting up barriers and hand washing points. The office's transition from a designated workplace to a restricted area and back took place during the research period. The study drew on workers' experiences of the enactment of office work at home and in the office in reflecting the influence of the COVID-19 pandemic restrictions on normal office work practices.

The study found that while office workers were already using virtual spaces and artefacts in the accomplishment of office work and in enacting office work practices, the virtual interaction using virtual meetings and documents was considered as aiding flexibility in the exchange of information when within and away from the designated workplace. Though the virtual interactions associated with working from home, remote working and teleworking, such as virtual meetings, were in use pre-COVID-19, office workers complying with organisational norms concerning designated times and places of work used virtual interaction for their convenience. Consequently, pre-COVID-19, the virtual interaction enabled by the existing office infrastructure was used as an individual preference, adjusting the routines of office workers who used it to incorporate remote working and working from home to fit in with their routines. While the working-from-home requirement during the Covid-19 pandemic was enabled by existing infrastructure and objects used by office workers, the practices enacted, routines and place of work changed to conform to new norms concerning working from home. Though office work might be carried out in alternative spaces, the office workers observed that the setup at home was not prefigured for office work and that the home did not fulfil all the roles of the office (see Chapter 7 [7.2]). In a study on work productivity at home and in the office during the Covid-19 pandemic, Umisho *et al*. 2021 found that the type of work and the work environment were factors to be considered in the selection of suitable workspaces. While the home was preferred for concentration work and the office for communication work, Umisho observed a rise in the range of alternative spaces

prefigured for office work, such as satellite offices and co-working spaces. This suggests that the prefigured office has not lost its place as a suitable location for the accomplishment of office work.

The study found that the office was not only a place of work for individuals, but also a place for collaborative work and social interaction. This is demonstrated in the spontaneous physical interaction during the collaborative work carried out in the document preparation episode and the informal unplanned meeting episode, despite the COVID-19 mitigation measures for physical distancing being in place (see Chapters 8 and 10). While office workers had the infrastructure to collaborate using virtual spaces and objects, office workers adorned with facemasks engaged in physical interaction for collaborative work. In a study on -working during the pandemic, Tagliaro and Migliore (2022) found that office workers working from home missed the physical collaboration and knowledge sharing that came with social interactions with co-workers. Although technological advances in the development of virtual spaces have been considered to provide support for collaborative work that could be an alternative to physical interaction in the office (Hou *et al*. 2021), the office still plays a role as a place for social interaction and collaborative activities.

A survey carried out by Knight Frank shows that there has been a 5% reduction in office occupancy between the end of 2021 and June 2022, arising from increased uptake of hybrid work as organisations sought to reduce occupancy costs; however, it also projects an increase in office occupancy as office workers return to the office[15]. Despite the use of alternative workplaces and the use of telecommunication to accomplish office work before the COVID-19 pandemic, the uptake of hybrid working in Kenya is associated with working from home as a Covid-19 transmission mitigation measure[16] and the need for organisations to reduce rental costs[17]. While the office as a social place was noted before Covid-19 pandemic, with researchers such as Skogland and Hansen (2017) and Harris (2016) advocating the provision of social spaces within the office, the findings of this study and recent calls for office designs that are more conducive to social interaction and belonging (Hou *et al*. 2022, Endrissat and Leclercq-Vandelannoitte 2021) confirm that the roles of the office have not changed since the pandemic. Despite the adoption of new ways of working, aided by the increasing portability of office work, facilitated by advances in telecommunication technology, this study shows that traditional ways of working with a designated office and set working hours still make a valuable contribution to present-day life.

---

[15] Knight Frank 2022, Kenya Market Update 1st Half 2022 https://www.knightfrank.com/research/report-library/kenya-market-update-2nd-half-2022-9899.aspx.

[16] https://www.standardmedia.co.ke/business/real-estate/article/2001448574/things-look-up-again-for-office-market-after-pandemic-hit

[17] https://www.knightfrank.com/research/article/2022-12-08-the-2023-commercial-real-estate-outlook-in-africa

13 Chapter 13   Conclusion

This chapter presents the conclusions of the study and identifies its potential contributions to knowledge across related fields, including corporate real estate, facilities management, post-occupancy studies, and research methodology. The chapter discusses the implications of the study and also recognises the study's limitations and presents recommendations for future research and applications.

13.1 Overview of the study

With the increase of in new ways of working that are aided by technological advancement such as remote and hybrid work the future of the office as a place for accomplishment of office work is put to into question. The question of the relevance of the office raises interest on what the office is used for in these changing times and how the use of the office influences space configuration. Central to the question of relevance of the office is the relationship of the office setup with the application of organisational norms and how office work is done, including the choices of office workers in determining the place and time of work.

From a distance, the everyday activities of office workers may seem repetitive and unchanging with the office setup retaining its arrangement as work is performed. However, an in-depth observation of office work as it is enacted shows that office work is constantly changing as the purpose of the work changes, alternative objects are recruited, and the workers' preferences are applied to the sequence of actions to be taken in the accomplishment of work. Central to the study findings is that, in the unfolding of office work, organisational norms intertwine with office worker preferences: spatial rearrangements are made to support changing practices as additional objects are incorporated, while objects whose functions have become temporarily redundant are isolated during the enactment of practices but retained in the setup, continuing to fulfil symbolic roles.

By conceptualising office work as a social practice, the study examined office work practices, the objects recruited for their enactment, and the reconfiguration of spaces as office work practices are enabled and constrained. Ultimately, the study addressed three research questions:

 i. In the unfolding of office work, what determines where and when office work practices are enacted?

 ii. How do office work practices interconnect and terminate and what informs the selection and arrangement of objects used to interconnect and terminate practices?

 iii. In the enactment of practices, how do meanings lent to objects and spaces influence the spatial-temporal arrangement of the office setup?

13.2 Conclusions of the study

13.2.1 Question 1: In the unfolding of office work, what determines where and when office work practices are enacted?

In the examination of office work and the office setup, office work practices are found to be dynamic, as they can take on more than one meaning and use alternate objects while they are being enacted. This adaptability enables office workers to select objects that can fulfil multiple purposes and provide spatial and temporal flexibility for the accomplishment of office work. In the unfolding of work, the practices enacted are distributed in time and space and invisibly directed by various aspects including the norms of work, the purposes of work, the readiness of objects to take up assigned functional and symbolic roles, and the office workers' preferences.

A closer look at the spatial-temporal arrangement of practices, as work unfolds, shows that the quest for convenience incorporates office workers' preferences and is supported by the suitability of the selected objects to fulfil the purpose of work. The forms of convenience sought included the ease with which they could enact concurrent practices, the reduction of transition time between practices and the ability to meet multiple objectives without changing the location of work. Incorporating convenience as one of the intentions that guide their selection of the spatial-temporal arrangement of practices and objects, office workers make decisions on their priorities and the adjustments necessary to meet those priorities. The negotiation of officer workers' priorities, as they apply their preferences and adapt their new routines in the interests of convenience, is seen in the roles assigned to objects and spaces and the spatial-temporal rearrangements of practices and objects to accommodate the scheduling of competing practices. Therefore, the spatial-temporal arrangement of practices is based on the priorities and preferences of office workers and made possible by the ability of office work practices to be adapted to new purposes and carried out using alternative objects and in alternative spaces.

The study concludes that, in the quest for convenience, the space and time of work are negotiated as priorities and preferences intertwine, and the time and place are influenced by the 'readiness' of the setup, including the objects within it, to take on new roles. The readiness of the setup includes its capability to fulfil functional and symbolic roles and take on meanings lent by practices at the spatial-temporal point where the practices are ordered for enactment. The study shows that spatial-temporal rearrangement of practices also takes place as office workers seek relief from a lack of readiness for the prefigured setup and the resultant inconvenience.   Readiness is not limited to the suitability of the setup towards enabling the fulfilment of the organisation's norms but includes the ease with which the setup enables the preferences of office workers to be satisfied. Where and when office work practices are enacted is therefore determined by the intentions of the office worker and the readiness of the setup to fulfil those intentions.

13.2.2 Question 2: How do office work practices interconnect and terminate and what informs the selection and arrangement of objects used to interconnect and terminate practices?

In the unfolding of work, office work practices do not stand alone; instead, they are intertwined and intersect as information is processed and exchanged through transfer, convergence or conversion, using various modes. The study has found that office work practices interconnect or terminate at the spatial-temporal point of intersection as information is passed on from one office worker to another or transferred from one object to another. The office workers' intentions determined the complementary practices selected to support ongoing practices and identified practices that conflicted with ongoing practices. At the point of intersection of practices, complementary practices were enacted, and conflicting practices were terminated.

The social practice theory perspectives conceptualise the intention of work and the readiness of the physical attributes of objects to fulfil their functional and symbolic roles assigned in the unfolding of work, as practices intersect, using the concepts of meaning and materiality. At the intersection of practices, the meaning lent to the practices, including the meaning of convenience, is passed on from one practice to the next and lent to the objects recruited to the practice. The readiness of material arrangements in the office setup to take up both functional and symbolic roles assigned at the intersection of office work practices enables or constrains the interconnection between them. An outcome of constrained practices may result from objects' lack of readiness and the incompatibility of meanings lent to the practices being enacted. Where the concurrent enactment of practices is not successful, constrained practices terminate or are rescheduled.

The empirical work has shown that, in the convergence and conversion of information exchanged amongst co-workers, office work practices are interconnected through common meaning as well as through material objects and bodily movements. The inclusion of bodily movements among material arrangements has enabled the study to provide a link between the office workers' movements and the spatial-temporal arrangement of objects in the office setup. The observation of office work practices as they unfold shows that the interaction between bodily movements and material arrangements in the setup influences the interconnection and termination of practices.

13.2.3 Question 3: In the enactment of practices, how do meanings lent to objects and spaces influence the spatial-temporal arrangement of the office setup?

As office work practices are enacted, objects may be replaced by alternatives, resulting in their isolation in the setup. The incorporation of alternatives renders these isolated objects temporarily redundant, as far as their assigned functional roles are concerned. The temporary loss of functional roles does not, however, diminish other roles that their physical attributes, such as colour, shape and size, enable them to perform in enabling the communication and

enforcement of symbolic meanings, such as those associated with supervision and authority. The functional roles of the isolated objects are assigned to the incorporated alternative objects, whose spatial-temporal arrangements are negotiated as meanings are transferred to them. The study found that the objects in the prefigured setup that are isolated during the enactment of practice are retained in the setup to communicate symbolic meaning associated with hierarchical norms such as supervision and authority, even though they do not retain meanings associated with their functional roles. Despite the change in objects used and the rearrangement of office work practices at the micro level, the office setup is observed to be unchanging as isolated objects are retained in it.

At the prefiguration of the office setup, objects and spaces are lent meaning by organisational norms and anticipated practices. However, in the unfolding of work, office workers apply their preferences by conferring new meaning on practices and the objects used to support them. In addition to the intention and context of work, the meanings lent to practices and objects that support them are shaped by office workers' preferences.   This study argues that, since the meanings arising from the context, intention and preferences are not known at the prefiguration, the intentions and preferences arising from the office workers' enactment of practices lend meaning to the objects selected to support the ordered practices. By prioritizing practices according to the meanings lent to them, workers negotiate both space and time to enact them.

The examination of the spatial-temporal arrangement of practices and selection of objects and spaces related to work revealed that, in addition to the suitability of the physical attributes of objects, the readiness of the office setup to enable the enactment of dynamic office work practices includes the ability of objects to take on additional meanings associated with the convenience sought. The empirical work shows that the readiness of objects to take on different roles is not limited to the ability of the physical attributes to take up functional roles but also arises from their suitability for the symbolic roles that convey the meaning of the practices being enacted. Conceptualising the intentions of office work as meanings that are lent to practices and objects, the findings show that, as office work unfolds, office workers adjust their workspace to meet their intentions, such as accomplishing the work's purpose and complying with organisational norms.   The results show that the office setup may enable or constrain the application of office worker preferences. Consequently, office workers spatially rearrange objects, isolate temporarily redundant objects and incorporate additional objects in support of the convenience they seek, and the meanings associated with convenience have the potential to change the practice arrangements and the rearrangement of objects to accommodate the convenience sought.

As new meanings are lent to objects, their assigned functional and symbolic roles are adjusted to correspond to these new meanings. Noting that the meaning lent to objects in the office setup emanates from the context of work, the purpose of the work, and the preferences of office workers, the results show that the ability of the material arrangements to support the enactment of practices when ordered is influenced by the capability of material arrangements to fulfil the functional and symbolic roles associated with the meanings being lent. Since meanings are dynamic as practices unfold and the meanings lent to objects in the prefigured

setup are also dynamic, in the enactment of office work practices, the spatial-temporal arrangement of practices is dynamic, and the sequence of their enactment is ever-changing.

The study concludes that the prefigured setup is arranged in readiness for the enactment of anticipated practices while enforcing and communicating organisation norms such as hierarchy, work rules and regulations. Though the office setup may appear to be static, office work practices are dynamic, and the office setup is continually changing as office work unfolds. In the office workers' quest for convenience, the negotiation for space and time results in practices temporarily displacing others, with objects that cannot carry the meanings lent by the practices being isolated and those that can carry the meanings being lent incorporated in the enactment of prioritised practices. However, during the enactment of office work practices, objects are also lent additional meanings by the context of the work, the purpose of the practices and the preferences of office workers, all of which influence the spatial-temporal arrangement of practices and objects that support them.

13.3 Contribution and implications of the study

13.3.1 Contributions of the study

The study contributes to a wide range of studies relevant to office work and the office (covered in the literature reviewed in chapter 2 and 3). Such studies include real estate, facilities management, post occupancy assessment, workplace design and organisational studies). Applying ethnographic methodology, the study shows how this approach can help understand how office workers interact with their environment and adapt to the dynamic nature of office work as it unfolds. The contributions are now categorized into five areas: corporate real estate and facilities management, post-occupancy studies, workplace design, research methodology, and social practice theory with a particular focus on and the study of materiality and meaning.

13.3.1.1 Contribution to Corporate Real Estate and Facilities Management

Building on the corporate real estate and facilities management studies that seek to establish ways of improving office environments with the aim of enhancing office worker productivity (Mulville et al 2016, Mallawaarachchi et al 2016), this study goes beyond a focus on the suitability of the office environment and perceived office worker productivity to highlight the importance of understanding the preferences and intentions of office workers as they adjust their working environments to support their day to day work. By providing evidence of a strong relationship between how office workers exercise their intentions and the (re)arrangement of the office setup as office work unfolds, the study contributes to existing knowledge on office environments by highlighting, in particular, the significance of convenience of office workers in the choices they make as they adjust the office setup to meet their objectives.

The study goes beyond the observation by Göçer *et al*. (2018) that office workers preferences include time and place of work, to examining how those preferences are shaped by office workers' intentions. Applying the social practice theory concepts of meaning and material arrangements, the study contributes to the understanding of spatial arrangements and rearrangement by demonstrating that office worker intentions have the potential to drive significant changes in configuration as work roles shift. In this way, the study builds on findings of Chadburn *et al*. (2017) and Haynes et al (2017) to suggest that office worker preferences for privacy and interaction are influenced by amongst others their intentions relating to what work is to be done and how it can be carried out. Subsequently, the rearrangement of office setup is influenced by the extent to which the existing setup supports these intentions.

Building on studies by Leclercq-Vandelannoitte (2021) and Tagliaro and Migliore (2022) that the office is a place for interaction and collaborative work as well as for enforcing supervision and managerial authority, this study considers that the social interaction and power relationships amongst office workers are supported by the multiple roles that the office performs. This study highlights the evolving and dynamic (rather than static and fixed) uses of office spaces and objects are in part to support different tasks and roles fulfilled by the office. Noting the role of the prefigured office setup in enforcing and communicating organisational and work norms such as aspects of hierarchy and managerial control (see Chapter 12 [12.1.2]) the study provides corporate real estate managers and facilities managers with a better understanding of the interplay between organisational norms and office worker preferences in a specific workspace. Further, by demonstrating the evolving functional and symbolic roles of office spaces and objects and their relationship with the reconfiguration of office setups as workers respond to organizational norms, the study contributes to the understanding of the autonomy sought by office workers as they modify their spaces to create a balance between their exercising their preferences and complying with organisational norms during their day to day work. . In view of the constantly changing configuration and reconfiguration of the office setup, the study emphasizes the need for flexible setups that can adapt to the changing needs of workers and provides considerations for corporate real estate and facilities management professionals to apply and rethink how to manage office spaces in a way that allows office workers' freedom to exercise their preferences and accommodate their convenience.

13.3.1.2 Contribution to post-occupancy studies

The study demonstrates the dynamic and evolving nature of office work and shows that office workers continuously adjust their environment to support of the day to day demands of their work. While post occupancy studies have been used to establish what office workers value in the office environment (Göçer et al 2018, Palvalin 2017), the study provides valuable insight into how preferences and intentions of office workers are exercised and combined with organisation norms to influence the choices made. Highlighting the dynamic nature of office work is useful in understanding the continuous choices and adjustments office workers make as they seek to enhance their convenience and the suitability of their office environments.

In this way the study brings new perspective to post-occupancy studies by focusing on how office work practices unfold as part of daily office life. In exploring how objects and spaces are used to enable work and how office workers mobilise these resources to accomplish their tasks, the study considers both the context of work and the experiences of office workers. While experiments, occupancy tracking, surveys, physical measurements and physiological recording (Knight and Haslam 2010, Göçer et al 2018, Appel-Meulenbroek *et al* 2018) give insights to what office workers value and the comfort they seek, this study makes the case for investigation in real time of how work is accomplished and how office workers interact with the office setup. Building on Mulville et al (2016) suggestion that occupant behaviour is a key factor in influencing satisfaction, the study goes beyond post occupancy metrics associated with comfort and satisfaction to provide a more qualitative understanding of the ways in which office setups can constrain or support work as it unfolds day to day. By exploring office worker intentions and preferences through investigating their experiences of work, the study highlights that the experiences of office workers have potential to provide explanations for many of the metrics typically used in post-occupancy studies such as occupant satisfaction and space utilisation indices.

13.3.1.3 Contribution to organisation studies and workplace design

Having taken note of studies by Halford (2004) and Skogland and Hansen (2017) on use of office setups to communicate organisational norms such as hierarchy and rank, the study contributes insights on the modifications made by office workers in response to the norms enforced by the prefigured setup. Building on Laclercq-Vandelannoitte (2021), the study demonstrates how office workers accept or resist visual supervision and managerial control using office arrangements and rearrangements and assigning symbolic roles to spaces and objects. Using the social practice theory concepts of meaning and materiality to examine the prefigured setup, the study provides explanations on how symbolic meaning lent to physical attributes of objects and spaces influences rearrangement of spaces as office workers resist or embrace organisation norms imposed by the prefigured setup. This contribution to organisation studies highlights the considerations that workplace designers may need to give in developing in developing designs that provide ways of communicating and enforcing organisational norms while recognising the office workers quest for autonomy as they exercise power relations and social interactions in the office.

By observing office workers as they enact office work practices and negotiate their priorities, the study contributes to how office workers use their autonomy in the selection of practices and objects they use. Building on observations by Hopp *et al*. (2009) on the discretion and creativity that goes into office work, new data is now provided on how office workers use the material world to demonstrate and communicate autonomy as they exercise convenience and mobilise the objects in the setup towards their intention (intention includes convenience). A key contribution of this research is the understanding of how the autonomy of office workers over what they do and what they prefer to use at any one particular time influences the arrangement of the office setup.

The study contributes new insights on how office worker intentions, including how the intention to exercise convenience shapes their choices on where and when to accomplish work. Building on Nicolini's (2012) observation that practices have the ability to accommodate individual initiative and adapt to situations, the study contributes insights on how office work practices accommodate spontaneity amidst scheduled work. These choices impact how workers organise their work, arrange their spaces and interact with their environment. The contribution on the dynamic nature of spatial-temporal organisation of office work brings a new insight on need to support both scheduled and spontaneous work and calls for workplace designers to acknowledge the need for occasional office worker convenience in the design of offices.

13.3.1.4 Contribution to research methodology in the study of office environments

Through the effective use of ethnographic methodology to capture the lived experiences of office workers, the study makes a methodological contribution to the examination of office configurations and how they enable or constrain the desired flexibility during day-to-day accomplishment of office work and in turn enhancing or stifling the productivity of office workers. This is in contrast to Raskams and Haynes (2019), for example, who use experience sampling to demonstrate how the workplace environment changes momentarily. Arguing. that a one-time survey is insufficient to capture the contextual factors relating to the dynamics of office work and its changing environment, this study used the ethnographic methodology to enhance understanding of the role of context in exploring how evolving office worker intentions drives the changes in their preferences. This contributes to the examination of the suitability of office environments by interrogating how workspaces function in everyday life, how office workers organise their work across space and time and why they (de)select certain objects and spaces as work unfolds. This also makes an important empirical contribution to office work studies by providing extensive new qualitative data that includes in-depth observations of office work as it unfolds as well as the actions and choices of office workers in the accomplishment of office work (see field notes in Chapters 7 to 10).

By organising the data into episodes that comprise a sequence of events that have a specific purpose and that have observable transitions signalling how practices change from one to another, the study contributes to understanding practices and arrangements as interconnected. It is through episodes that the spontaneity of various practices and the intertwining of spontaneous and scheduled practices may be observed and interpreted as office work unfolds. This contributes to a deeper understanding of office work practices as both interconnected and evolving. Building on Shove and Walker's (2010) study of transitions that promote sustainability of practices, the study also contributes to the demonstration of how concurrent and sequential practices arrangements across space and time are shaped by complementary and conflicting meaning lent to material arrangements as practices unfold. It provides a new way of examining the spatial and temporal (re)arrangement of the workday work; the significance of the use of episodes is further discussed in 13.3.2.1 below.

13.3.1.5 Contribution to the study of social practices

The study advances the use of social practice theory by introducing the concepts of "readiness" and "convenience" to understand how office workers' intentions influence meaning of practices and the recruitment of materials and material arrangements in the workplace (see Chapter 12 [12.6]). By conceptualising the intentions of office workers, including convenience, as meaning (see chapter 12 [12.3.2] and [12.4.1]), the study shows that meaning is dynamic and changes as the intentions change. Further, the readiness of material arrangements to support the enactment of practices includes their capability to take on meanings lent by anticipated practices.

By developing the foregoing concepts of 'readiness' of materials and material arrangements and the office worker's intention of 'convenience', the study provides fresh insight on the ways in which the meaning lent to materiality in practices impacts the spatial-temporal arrangement of practices and the adjustments made to the material arrangements that support them. Building on the existing literature that considers meaning of material entities to be negotiated in space and time (Hardy and Thomas 2015), meaning to be spatial and temporal (Rosengren 2019) and materials arrangements constitute and shape practices (Schatzki 2010), the study uses the concept of meaning to demonstrate how office environments support - or fail to support - work practices when they are ordered and the material and practice rearrangements that follow. Particular insights on the spatial-temporal arrangement of practices are provided by showing that practice rearrangements are driven by, amongst others, material arrangements' lack of readiness to take on new meanings lent by the practices being enacted as meanings change. Furthermore, material rearrangements are carried out to enhance the capability of the setup to support spatial-temporal rearrangement of practices and take on the additional meanings lent by practices as they evolve. Therefore, 'readiness' of material entities and arrangements is not limited to the ability of its physical attributes to support practices, but includes their ability to take up various meanings lent by the practices being enacted.

13.3.1.6 Contribution to the study of office work in the global south

This study contributes to the understanding of office work practices in what may broadly be termed the Global South, specifically in Nairobi, Kenya, and the cultural and organizational symbolism embedded in office setups in that location. While the study of office work and office environments has largely been based on research carried out in the global north, this study shares experiences and context of office workers in the global south and the nuances associated with the particular symbolism, norms and routines that are communicated and enforced through the office setup in that location. Though the study is not a representative of workplaces in the global south, it contributes detailed descriptions of office settings and work enactment as well as the social and cultural context of office worker interactions as part of office work (see excerpts of interviews and fieldnotes in Chapters 7 to 10),   giving a

different context to the predominant location of office work studies mainly in the global north.

13.3.2 Implications of the findings

13.3.2.1 Methodological implications

Noting that the predominant approaches to post occupancy evaluations have been quantitative assessing factors associated with worker comfort, satisfaction and productivity, the ethnographic methodology is a fresh way of observing office work in-depth in the natural setting in which it is accomplished and uses the experiences of office workers to help understand how what they do influences the environment in which they work. In the investigation of what office workers actually do in the office, the study not only observed office work practices as they were being enacted but also examined the decisions workers made on the order of their actions and the objects, they incorporated in their work (see chapter 5 [5.7]). The experience of office workers distinguished between decisions made in the application of organisational norms and their preferences and further distinguished routines that emerge out of these preferences. Using a qualitative, practice-based approach, the study demonstrates that the spatial-temporal arrangement of office work practices and the selection of objects used are a result of the negotiated priorities that incorporated decisions about norms and preferences to be applied (see chapter 12 [12.3.4]). This shows how an understanding of the influences of spatial-temporal arrangement of practices and the material arrangements that support them can help- in the creation of more responsive office environments.

The use of episodes provides an additional perspective to the analysis of ethnographic data. By organising the data into distinct episodes relating to work practices that have a beginning, comprise a sequence of practices enacted to achieve a certain objective and terminate when the objective is attained (Hendry and Seidl 2003), the episodes provide distinct 'cases' for analysis (see Chapter 6 [6.2]). Since the intention of office workers was not known before the observation, practices, as they unfolded, were captured without separating scheduled and spontaneous practices. The undifferentiated observation of all practices enacted by the office worker and subsequent development through episodes of practices that are enacted to a certain objective enables the inclusion of practices that may not be obviously considered to be part of the attainment of the objective. The use of episodes helped to incorporate spontaneous practices giving insight into office work as being dynamic enabling the examination of interconnection and termination of practices enacted towards achieving office workers' intentions. Distinguishing the purpose of work practices and identifying clusters of practices associated with purpose helps see that the arrangement of office work practices is not predetermined and that the selection and arrangement of practices change as work unfolds. It is within episodes that the dynamic nature of office work and how it is intertwined with other practices of everyday life can be observed. Episodes also provide

context within which the negotiation of changing priorities of office workers and the resultant spatial rearrangements to support competing priorities can be understood.

13.3.2.2 Theoretical implications

Noting the limitations of Lefebvre's theory and other spatial theories in the examination of the office as the site of practices (see Chapter 3[3.2]), the study applies the concepts of social practice theory to gain an understanding of how office work practices unfold by brings to focus materiality of the office setup and meaning lent to practices as integral to the spatial-temporal arrangement of practices and objects used. Upon drawing from Lefebvre's spatial triad to prefigures setup as the conceived space and the perceived space as that representing symbolic meaning, the study proceeds to apply social practice theory concepts to examine meaning lent to practices as well as meaning lent to the objects and spaces used. The demonstration that meaning lent to practices can change as the practice unfolds shows that meaning is not static throughout the enactment of practices. The change of meanings of practices was found to influence the interconnecting and termination of practices as complementary practices interconnect and conflicting practices are terminated. Change of meaning was found in how the materiality of objects is mobilised resulting in the incorporation of alternative objects as well as redundancy and isolation of existing objects.

The analysis demonstrates that meanings constitute practices and connect practices. The ability of meanings associated with convenience to connect as well as constitute office work practices demonstrates the dual role of meaning both as a component of practices as well as a link between practices. While exercising convenience, convenience becomes an additional constituent of meaning of the individual practices enacted. Additionally, in the quest for convenience office workers seek the least transition time between practices lending the meaning of convenience as a connector in the spatial-temporal arrangement of practices. Noting the inseparability of meaning and materiality (Shove et al 2012) these new insights contribute to the consideration of meaning as a connector of practices and in turn the role of meaning in the spatial-temporal arrangement of practices.

13.3.2.3 Practice implications

The findings suggest that corporate real estate professionals, facilities managers and workplace designers should take into account not just the physical setup of spaces but also what workers do as they enact office work, as well as their intentions and preferences. The study highlights the importance of real estate professionals incorporating qualitative research methods such as observation and interviews into post-occupancy evaluations since surveys alone do not capture the full complexity of how spaces are used (see 13.3.1 above). By adding qualitative approaches, organizations can gain a deeper understanding of how workers engage with the physical environment and how these engagements lead to adjustments to

the office setup. Understanding how these adjustments may impact productivity, well-being, and overall satisfaction could lead in turn to better design solutions that support the way people actually work.

The research emphasizes the need for flexible office environments that can evolve to meet the diverse and changing intentions of employees and their quest for convenience. Organizations must recognize that static office configurations may no longer be effective in supporting the dynamic nature of work and should prioritize adaptable, user-centred spaces that support office workers in exercising their preferences. Similarly, facilities managers and corporate real estate professionals should focus on creating environments that can support a wide range of activities, from collaborative work to concentration work and that can be adapted by office workers as part of their day to day work.

By growing body of literature on office work in the global south, particularly in Kenya. This has practical implications for global organizations seeking to design or manage office spaces in non-Western contexts. The study notes the need for culturally responsive workplace strategies that recognize and adapt to the unique social, organizational, and symbolic dynamics of offices in different regions.

13.4 Limitations of the research

Chapter 5 presented the research design detailing the research rigour to ensure an in-depth examination of office work and the office setup of a single case. While findings from a single case may not be generalised, a single case provides in-depth information on the relationship between space and the activities of those who use it (Kokkonen and Vaagaasar 2018). Though 'microscopic' observations have been challenged for their reliability of representation and viability against the wider social world due to the spatial limitations of the scope being observed (Brewer 2000), the in-depth observation provides credibility to the findings. The time-frame sampling, selection of participants and diverse episodes provided a range of data on the performance of office work.

Due to the COVID-19 pandemic mitigation measures, the first phase of data collection had limited participant observation of office work practices and interviews were carried out virtually via telephone and video calls (see the impact of COVID-19 on the study detailed in Appendix III). However, in the second phase of data collection participant observation and face-to-face interviews were carried out amidst the observation of other mitigation measures such as social distancing and wearing of face masks. The organisation of data in episodes enabled the examination of different settings and contexts of work and provided a broader view for robust data analysis.

The role of the researcher as a participant is detailed in Chapter 5 (5.6.3), recognising the potential to cause the observed to be self-conscious or act differently, therefore, hindering observation of a real-life setting (Hammersley and Atkinson 2007). To address this, the researcher mobilised ethnographic methodology that used multiple data collection tools.

Additionally, the researcher employed techniques that provided a natural and neutral setting of a typical workday by having everyday ordinary work discussions with the participants. Further, the researcher observed the office workers over periods and simultaneously used other data collection techniques that included informal discussions, semi-structured interviews, and examination of documents.

Noting the limitations arising from potential researcher bias (see Chapter 5 [5.9]) the researcher took steps to minimise biases or distortions by paying attention to the context during observations and capturing the interview data verbatim. Anchored on interpretivism, the data collected was analysed and interpreted using concepts of social practice theory. By using an interpretive stance, the research incorporated the office workers' intentions and preferences as well as their decisions on what they were doing and the physical setup in which office work was being carried out.

13.5 Researcher reflexivity

As a researcher embedded in the situated case both as an office worker and a facilities manager, the insider perspective allowed for rich, in-depth observations of office work practices, However, the inherent subjectivity of ethnographic methods required the researcher to be self-aware of her position within the study and the potential challenges that may arise in terms of bias. To mitigate this, the researcher maintained a reflective stance throughout the research process, paying attention to how her professional background and personal experiences might shape data collection and interpretation (see Chapter 4 [4.2]).

The researcher took steps to ensure the validity of the findings by triangulating different data sources, such as combining observations with semi-structured interviews, informal discussions and organizational documents (see Chapter 5[5.6.5] and [5.9]). In situations where the researcher may have had prior, inside knowledge of the research site, a balance was be struck between her knowledge of the field and the need for objectivity and a questioning approach to what is being observed and recorded. The researcher also used the concepts of social practice theory to develop descriptions, analyse data and interpret the findings enhancing objectivity in the empirical work.

13.6 Recommendations

13.6.1 Areas of future research.

13.6.1.1 Cross-cultural comparisons

While this study focused on Nairobi, Kenya, future research could compare office work practices across diverse cultural and organizational contexts, particularly between the global

north and global south. This could provide more generalized insights into how different environments shape office work. Additionally, noting the limited research carried out in the global south, future research in other such countries is recommended to build the body of knowledge of emerging work practices and their corresponding office environments.

This study observed office work practices and the office setup in the headquarters of the organisation hosting the situated case. Further empirical work is recommended on different environments of office work with different organisational norms and the exercise of individual preferences among different sets of workers. Additionally, the study of other types of office work could be expected to provide further insights into the negotiation between norms and preferences in these different settings, including the selection of practices and in turn the recruitment of objects and adjustments to the workspace. Future work could also focus on wider issues about new norms of work, in particular how they arise, are introduced and stabilise, and their implications on the selection of practices. Study of collective preferences and routines has the potential to provide an understanding of the formation of norms and how they gain acceptance in different communities of practices.

13.6.1.2 Office work practices and office space use

Though this study is limited to examining spatial-temporal arrangements within the office environment, as remote work and digital collaboration tools continue to evolve, it would be valuable to examine how technology influences workers' interactions with physical office spaces and alternative workspaces. This together with further examination of the influence of organizational policies (such as flexible working arrangements or hot-desking) on the spatial-temporal arrangement of work would help to understand the broader structural factors that shape office work practices. A longitudinal approach to studying office work practices would provide deeper insights into how flexible working arrangement preferences evolve over time. This could help identify trends and inform future workplace design strategies.

As the study concludes, it also opens questions on how a change in the office setup will evolve. Could the preferences of office workers contribute to new organisational norms, and will those new norms include new ways of demonstrating hierarchy, carrying out supervision and enforcing authority? Could the quest for convenience change the roles of offices in the future? The use of the social practice theory element of meaning to conceptualise convenience provides an opportunity for examination of new meanings lent to spaces and objects in the office setup as office workers apply their preferences towards convenience. The examination of changing meaning lent to objects and spaces as preferences are implemented provides a means to understand redundancies in the office setup and the changing use of spaces. More particularly, examination of changing meaning arising from convenience would illuminate whether, beyond the rearrangement of practices, the meaning of convenience in the elements of practice makes practices redundant. The concepts of

convenience and readiness and their implication on meaning and materiality call for future research on convenience as a meaning that connects practices and constitutes a practice.

13.6.2 Applications of the study

While the role of the designated office may seem to be in question, interest in the suitability of office spaces remains high on the agenda for debate amongst facilities managers and investors in office spaces seek ways to provide suitable office spaces and ensure return for their investment. Real estate and facilities professionals can apply the study's findings to rethink how office spaces are managed. This includes adopting more fluid management strategies that allow for real-time adjustments to layouts based on user feedback and observed patterns of space use. By integrating observational studies in post-occupancy assessments, facilities managers could enhance space utilisation efforts through incorporating feedback on office workers' intentions with a view to creating flexible office setups that support the desired objectives. Additionally, by applying the findings on the spatial-temporal rearrangement of office work and intertwining of scheduled and spontaneous office work practices, designers can use the study's insights to create flexible office environments that can be reconfigured easily as needs change and that support the dynamic needs of office workers.

In addition to the mitigation measures introduced by governments in the year 2020 against the spread of Covid-19 including travel restrictions and social distancing that saw office workers required to work from home at various time during the pandemic (see Chapter 4 [4.1.4]), office workers exercise their preference by working away from the designated workplace and outside of official working hours. Facilities managers could adopt mixed-method approaches, combining quantitative metrics such as satisfaction indexes with qualitative insights from worker interviews and observations, to develop a more holistic understanding of preferences of time and place of work and the office environment effectiveness to support the preferences of office workers.

Noting that the office fulfils multiple roles to the corporate organisation and the individual worker the study provides designers with ideas for configuration of spaces to ensure their continued suitability as these roles conflict and complement each other. Office designers need to recognise the office worker's pursuit of convenience to reduce the transition time between practices, as well as the ways that office workers apply their preferences when selecting the practice to enact, objects to use and the time and place to enact the practices. Additionally, office designers need to recognise the corporate organisation's intentions to communicate and enforce norms related to managerial control as well as corporate values and brand using the office setup. In this regard, the office designs should be capable of supporting modifications when the norms of work change and roles assigned to the office evolve.

As the role of the office as a designated place of work is put to the test by recent shifts, often enabled by technological advancement, facilities and real estate managers are left to navigate

ways of meeting corporate objectives at a macro level while enabling the flexibility demanded by office workers at a micro level. This study suggests considerations that facilities managers can apply when developing workplace strategies that support the everyday negotiation between organisational norms and preferences as office workers seek convenience. In addition to the study confirming the importance of considering office worker preferences when the spatial and material elements of offices are being designed, it demonstrates the adjustments office workers make to achieve control and flexibility of personal spaces. This calls for facilities managers to recognise that the readiness of setups goes beyond enforcement and communication of the organisation's norms to include the capability of the setup to accommodate the preferences and choices of office workers as they rearrange the time and place of work according to their priorities.

This study's examination how office work is accomplished from the worker's perspective provides insights that can guide development of government policy on office design that fosters office worker productivity and wellbeing while recognising social norms and culture. In applying government policies, such as the 2010 Government of Kenya directive for change from enclosed to open plan design of government and public offices in Kenya[18], facilities managers have responsibility to ensure the resultant office environment supports the different types of office work i.e. concentration, communication and collaboration work (see Chapter 2 [2.3.3]). The study provides useful data on how office workers rearrange practices and spaces suggesting the flexibility that policy makers should seek to address.

By paying attention to the readiness of workspaces that go beyond the conversations about office workers' perceived satisfaction with the suitability of the office environment, this study will help office designers and facilities managers seeking to take cognisance of emerging issues associated with office workers' convenience. Recognising the office workers' endeavour to reduce both transition time between practices and the time spent enacting practices as well as the ability and willingness of office workers to exercise their preference in pursuit of convenience, the study recommends agility of the office setups to allow office workers to incorporate their preferences and make changes that enable them to achieve the purposes of the work.

The challenge is now for policy makers, real estate managers, office designers and facilities managers to recognise the dynamic nature of work in providing spaces that support convenience and office worker preferences against the background of organisation norms.

---

[18] https://www.standardmedia.co.ke/busia/article/2000005189/its-open-space-for-all-public-offices

References

Apgar, M. (1998). The alternative workplace: changing where and how people work. In *Harvard business review* (Vol. 76, Issue 3, pp. 121–136). https://doi.org/10.1225/98301

Apgar, M. (2002). Deconcentration: A Strategic Imperative in Corporate Real Estate. *Journal of Corporate Real Estate Portfolio Management*, 50-60.

Appel-Meulenbroek, R., Clippard, M., & Pfnür, A. (2018). The effectiveness of physical office environments for employee outcomes: An interdisciplinary perspective of research efforts. *Journal of Corporate Real Estate*, *20*(1), 56–80. https://doi.org/10.1108/JCRE-04-2017-0012

Appel-Meulenbroek, R., Janssen, I., & Groenen, P. (2011). An end user's perspective on activity-based office concepts. *Journal of Corporate Real Estate*, *13*(2), 122–135. https://doi.org/10.1108/14630011111136830

Aroles, J., Mitev, N., & de Vaujany, F. X. (2019). Mapping themes in the study of new work practices. *New Technology, Work and Employment*, *34*(3), 285–299. https://doi.org/10.1111/ntwe.12146

Assudani, R. H. (2009). Dispersed knowledge work - implications for knowledge intensive firms. *Journal of Knowledge Management*, *13*(6), 521–532. https://doi.org/10.1108/13673270910997169

Babapour, M., Karlsson, M. A., & Osvalder, A. L. (2018). Appropriation of an activity-based flexible office in daily work. *Nordic Journal of Working Life Studies*, *8*(Specialissue3), 71–94. https://doi.org/10.18291/njwls.v8iS3.105277

Battle, T. (2003). *The Commercial Offices Handbook*. London: RIBA Enterprises.

Becker, F. (2004). *Offices at Work: Uncommon Workspace Strategies That Add Value and Improve Performance.* San Francisco: Wiley.

Begole, J., Tang, J. C., Smith, R. B., & Yankelovich, N. (2002). Work rhythms: Analyzing visualizations of awareness histories of distributed groups. *Proceedings of the ACM Conference on Computer Supported Cooperative Work*, *230*, 334–343.

Beyes, T., & Holt, R. (2020). The Topographical Imagination: Space and organization theory. *Organization Theory*, *1*(2), 263178772091388. https://doi.org/10.1177/2631787720913880

Biernacki, P., & Waldorf, D. (1981). Snowball Sampling: Problems and Techniques of Chain Referral Sampling. *Sociological Methods & Research*, *10*(2), 141–163. https://doi.org/10.1177/004912418101000205

Bittman, M., Brown, J. E., & Wajcman, J. (2009). The mobile phone, perpetual contact and time pressure. *Work, Employment and Society*, *23*(4), 673–691. https://doi.org/10.1177/0950017009344910

Blackburn, V., Brennan, S., & Ruggiero, J. (2014). Productivity Measurement. *Management Decision*, 125–139. https://doi.org/10.1007/978-1-4899-7469-3_6

Blomley, N. (2016a). The Boundaries of Property : Complexity , Relationality , and Spatiality Author(s): Nicholas Blomley Source: Law & Society Review, MARCH 2016, Vol. 50, No. 1 (MARCH 2016), pp. 224-255 Published by: Wiley on behalf of the Law and Society Assoc. *Journal of the Law and Society Association*, *50*(1), 224–255.

Blomley, N. (2016b). The Boundaries of Property: Complexity, Relationality, and Spatiality. *Law and Society Review*, *50*(1). https://doi.org/10.1111/lasr.12182

Bloom, N., Liang, J., Roberts, J., Ying, Z. J., Qi, M., Terry, S., Butler, D., Fletcher, J., Heath, R., Pabilonia, S., Wang, S., & Economics, S. (2012). Does Working From Home Work? *City*. https://doi.org/10.1093/qje/qju032

Boell, S. K., Cecez-Kecmanovic, D., & Campbell, J. (2016). Telework paradoxes and practices: the importance of the nature of work. *New Technology, Work and Employment*, *31*(2), 114–131. https://doi.org/10.1111/ntwe.12063

Booth, R. G., Andrusyszyn, M. A., Iwasiw, C., Donelle, L., & Compeau, D. (2016). Actor-Network Theory as a sociotechnical lens to explore the relationship of nurses and technology in practice: Methodological considerations for nursing research. *Nursing Inquiry*, *23*(2), 109–120. https://doi.org/10.1111/nin.12118

Boyd, P., & Schweber, L. (2018). Unintended consequences: institutional artefacts, closure mechanisms and the performance gap. *Building Research and Information*, *46*(1), 10–22. https://doi.org/10.1080/09613218.2017.1331096

Brewer, J. (2000). *Ethnography*. Buckingham: Open University Press.

Bröchner, J. (2017). Measuring the productivity of facilities management. *Journal of Facilities Management*, *15*(3), 285–301. https://doi.org/10.1108/JFM-04-2016-0013

Brunia, S., Been, I. De, & Voordt, T. J. M. Van Der. (2016). Accommodating new ways of working: lessons from best practices and worst cases. *Journal of Corporate Real Estate*, 30–47. https://doi.org/10.1108/JCRE-10-2015-0028

Bryman, A. (2016). *Social Research Methods*. Oxford: Oxford University Press.

Bueger, C. (2014). Pathways to practice: Praxiography and international politics. *European Political Science Review*, *6*(3), 383–406. https://doi.org/10.1017/S1755773913000167

Carlile, P. R. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, *15*(5), 555–568. https://doi.org/10.1287/orsc.1040.0094

Chadburn, A., Smith, J., & Milan, J. (2017). Productivity drivers of knowledge workers in the central London office environment. *Journal of Corporate Real Estate*, *19*(2), 66–79. https://doi.org/10.1108/JCRE-12-2015-0047

Chan, P. W., & Kaka, A. (2007). Productivity improvements: Understand the workforce perceptions of productivity first. *Personnel Review*, *36*(4), 564–584. https://doi.org/10.1108/00483480710752803

Christersson, M., Heywood, C., & Rothe, P. (2017). Social impacts of a short-distance relocation process and new ways of working. *Journal of Corporate Real Estate*, *19*(4), 265–284. https://doi.org/10.1108/JCRE-02-2016-0008

Cirera, Xavier, Diego Comin, and Marcio Cruz. 2022. *Bridging the Technological Divide: Technology Adoption by Firms in Developing Countries*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1826-4. License: Creative Commons Attribution CC BY 3.0 IGO

Coffey, A. (2011). *The Ethnographic Self*. SAGE Publications Ltd https://doi.org/10.4135/9780857020048

Coffey, A. (2020). *Doing Ethnography*. SAGE Publications Ltd https://doi.org/10.4135/9781526441874 Cohen, R. L. (2010). Rethinking "mobile work": Boundaries of space, time and social relation in the working lives of mobile hairstylists. *Work, Employment and Society*, *24*(1), 65–84. https://doi.org/10.1177/0950017009353658

Cole, R. J., Oliver, A., & Blaviesciunaite, A. (2014). The changing nature of workplace culture. *Facilities*, *32*, 786–800. https://doi.org/10.1108/F-02-2013-0018

Comi, A., & Whyte, J. (2018). Future Making and Visual Artefacts: An Ethnographic Study of a Design Project. *Organization Studies*, *39*(8), 1055–1083. https://doi.org/10.1177/0170840617717094

Connaughton, J. N., & Collinge, W. H. (2021). Trialling a new approach to interdisciplinary collaboration in UK construction: A projects-as-practice analysis. *Construction Management and Economics*, *39*(7), 595–616. https://doi.org/10.1080/01446193.2021.1933558

Cooke, H., Fiorentino, S., Harris, R., Livingstone, N., & McAllister, P. (2022). Corporate occupiers' attitude to flex space in the post-Covid environment. *Journal of Property Investment and Finance*, *40*(5), 493–507. https://doi.org/10.1108/JPIF-02-2022-0011

Cooke, F. L., & Wood, G. (Eds.). (2021). *Work and Employment Relations in the Global South: Comparative Perspectives*. Routledge.

Crabtree, A. (2004). Design in the absence of practice: Breaching experiments. *DIS2004 - Designing Interactive Systems: Across the Spectrum*, 59–68.

Crowe, et al. (2011). The Case Study Approach. *Business Communication Quarterly*. https://doi.org/10.1177/108056999305600409

De Been, I., & Beijer, M. (2014). The influence of office type on satisfaction and perceived productivity support. *Journal of Facilities Management*, *12*(2), 142–157. https://doi.org/10.1108/JFM-02-2013-0011

De Paoli, D., & Ropo, A. (2017). Creative workspaces – a fad or making real impact? *Journal of Corporate Real Estate*, *19*(3), 157–167. https://doi.org/10.1108/JCRE-09-2016-0029

Dearden, A. M., & Wright, P. C. (1997). Experiences using situated and non-situated techniques for studying work in context. *Human-Computer Interaction INTERACT '97*, 429–436. https://doi.org/10.1007/978-0-387-35175-9_67

Duffy, F. (1992). *The Changing Workplace.* London: Phaidon Press Limited.

Duffy, F., Craig, D., & Gillen, N. (2011). Purpose, process, place: Design as a research tool. *Facilities*, *29*(3), 97–113. https://doi.org/10.1108/02632771111109243

Endrissat, N., & Leclercq-Vandelannoitte, A. (2021). From sites to vibes: Technology and the spatial production of coworking spaces. *Information and Organization*, *31*(4), 1–17. https://doi.org/10.1016/j.infoandorg.2021.100353

Fahy, K. M., Easterby-Smith, M., & Lervik, J. E. (2014). The power of spatial and temporal orderings in organizational learning. *Management Learning*, *45*(2), 123–144. https://doi.org/10.1177/1350507612471925

Feige, A., Wallbaum, H., Janser, M., & Windlinger, L. (2013). Impact of sustainable office buildings on occupant's comfort and productivity. *Journal of Corporate Real Estate*, *15*(1), 7–34. https://doi.org/10.1108/JCRE-01-2013-0004

Feldman, M. S., & Orlikowski, W. J. (2011). Theorizing Practice and Practicing Theory Organization Science Theorizing Practice and Practicing Theory. *Organization Science*, *22*(5), 1240–1253. https://doi.org/10.1287/orsc.1100.0612

Fleming, P., & Spicer, A. (2004). "You can checkout anytime, but you can never leave": Spatial boundaries in a high commitment organization. *Human Relations*, *57*(1), 75–94. https://doi.org/10.1177/0018726704042715

Fuchs-Kittowski; Siegeris. (n.d.). Fuchs-Kittowski et al 2010 An integrated collaboration environment for types collaborative knowledge work.PDF. *International Journal of E-Collaboration*.

Gerstel, N., & Clawson, D. (2018). Control over Time: Employers, Workers, and Families Shaping Work Schedules. *Annual Review of Sociology*.

Gherardi, S. (2010). Telemedicine: A practice-based approach to technology. *Human Relations*, *63*(4), 501–524. https://doi.org/10.1177/0018726709339096

Gherardi, S. (2016). To start practice theorizing anew: The contribution of the concepts of agencement and formativeness. *Organization*, *23*(5), 680–698. https://doi.org/10.1177/1350508415605174

Gibson, V. (2003). Flexible working needs flexible space?: Towards an alternative workplace strategy. *Journal of Property Investment & Finance*. https://doi.org/10.1108/14635780310468275

Göçer, Ö., Göçer, K., Ergöz Karahan, E., & İlhan Oygür, I. (2018). Exploring mobility & workplace choice in a flexible office through post-occupancy evaluation. *Ergonomics*, *61*(2), 226–242. https://doi.org/10.1080/00140139.2017.1349937

Gordon Brown, M. (2008). Proximity and collaboration: Measuring workplace configuration. *Journal of Corporate Real Estate*, *10*(1), 5–26. https://doi.org/10.1108/14630010810881630

Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013). An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. *Employee Relations*, *35*(5), 527–546. https://doi.org/10.1108/ER-08-2012-0059

Greene, C., & Myerson, J. (2011). Space for thought: Designing for knowledge workers. *Facilities*, *29*(1), 19–30. https://doi.org/10.1108/02632771111101304

Greenhalgh, T., & Swinglehurst, D. (2011). Studying technology use as social practice: the untapped potential of ethnography. *BMC Medicine*, 1–7.

Gregory, S. W., & Gregory, S. W. (1982). *Accounts as Assembled from Breaching Experiments Published by : Wiley on behalf of the Society for the Study of Symbolic Interaction Stable URL : https://www.jstor.org/stable/10.1525/si.1982.5.1.49 ACCOUNTS AS ASSEMBLED FROM BREACHING EXPERIMENTS *. 5*(1), 49–63.

Gustafsson, C. (2002). From concept to norm – an explorative study of office design management from an organizational perspective. *Facilities*, *20*, 423–431. https://doi.org/10.1108/02632770210454359

Hacking, I. (2004). Between Michel Foucault and Erving Goffman: Between discourse in the abstract and face-to-face interaction. *Economy and Society*, *33*(3), 277–302. https://doi.org/10.1080/0308514042000225671

Haigh, T. (2006). Remembering the Office of the Future: The Origins of Word Processing and Office Automation. *IEEE Annals Of The History Of Computing*, 6–31.

Halford, S. (2004). Towards a Sociology of organizational space. *Sociological Research Online*, *9*(1). https://doi.org/10.5153/sro.885

Halford, S. (2005). Hybrid workspace: Re-spatialisations of work, organisation and management. *New Technology, Work and Employment*, *20*(1), 19–33. https://doi.org/10.1111/j.1468-005X.2005.00141.x

Halford, S. (2008). Sociologies of Space, Work and Organisation: From Fragments to Spatial Theory. *Sociology Compass*, *2*(3), 925–943. https://doi.org/10.1111/j.1751-9020.2008.00104.x

Halford, S., & Leonard, P. (2006). Place, space and time: Contextualizing workplace subjectivities: Susan Halford and Pauline Leonard. *Organization Studies*, *27*(5), 657–676. https://doi.org/10.1177/0170840605059453

Hammersley and Atkinson. (2007). *Ethnography: Principles in Practice.* London: Tavistock.

Hammersley, M., & Hammersley, M. (2018). What is ethnography? Can it survive? Should it? *Ethnography and Education*, *13*(1), 1–17. https://doi.org/10.1080/17457823.2017.1298458

Hand, M., Shove, E., & Southerton, D. (2005). Explaining showering: A discussion of the material, conventional, and temporal dimensions of practice. *Sociological Research Online*, *10*(2). https://doi.org/10.5153/sro.1100

Hand, M., Shove, E., & Southerton, D. (2007). Home extensions in the United Kingdom: Space, time, and practice. *Environment and Planning D: Society and Space*, *25*(4), 668–681. https://doi.org/10.1068/d413t

Handcock, M. S., Gile, K. J., & Gilè, K. J. (2017). *Comment: On the concept of snowball sampling Published by : American Sociological Association Stable URL : http://www.jstor.org/stable/41336928 Linked references are available on JSTOR for this article : Comment: On the concept of snowball sampling Mark*. *41*(2011), 367–371.

Hardy, C., & Thomas, R. (2015). Discourse in a Material World. *Journal of Management Studies*, *52*(5), 680–696. https://doi.org/10.1111/joms.12113

Harris, R. (2015). The changing nature of the workplace and the future of office space. *Journal of Property Investment and Finance*, *33*(5), 424–435. https://doi.org/10.1108/JPIF-05-2015-0029

Harris, R. (2016). New organisations and new workplaces: Implications for workplace design and management. *Journal of Corporate Real Estate*, *18*(1), 4–16. https://doi.org/10.1108/JCRE-10-2015-0026

Harris, R. (2019). Defining and measuring the productive office. *Journal of Corporate Real Estate*, *21*(1), 55–71. https://doi.org/10.1108/JCRE-05-2018-0016

Hassanain, M. A. (2006). Factors affecting the development of flexible workplace facilities. *Journal of Corporate Real Estate*, *8*(4), 213–220. https://doi.org/10.1108/14630010610714880

Haynes, B. P. (2007a). An evaluation of office productivity measurement. *Journal of Corporate Real Estate*, *9*(3), 144–155. https://doi.org/10.1108/14630010710845730

Haynes, B. P. (2007b). Office productivity: A shift from cost reduction to human contribution. *Facilities*, *25*(11–12), 452–462. https://doi.org/10.1108/02632770710822562

Haynes, B. P. (2007c). Office Productivity: A Theoretical Framework. Journal of Corporate Real Estate. *Journal of Corporate Real Estate*.

Haynes, B. P. (2007d). The impact of the behavioural environment on office productivity. *Journal of Facilities Management*, *5*(3), 158–171. https://doi.org/10.1108/14725960710775045

Haynes, B. P. (2008a). An evaluation of the impact of office environments on productivity. *Facilities*, *26*, 176–195.

Haynes, B. P. (2008b). Impact of workplace connectivity on office productivity. *Journal of Corporate Real Estate*, *10*(4), 286–302. https://doi.org/10.1108/14630010810925145

Haynes, B. P. (2009). Research design for the measurement of perceived office productivity. *Intelligent Buildings International*, *1*(3), 169–183. https://doi.org/10.3763/inbi.2009.0014

Haynes, B. P., Suckley, L., & Nunnington, N. (2019). Workplace alignment: An evaluation of office worker flexibility and workplace provision. *Facilities*, *37*(13–14), 1082–1103. https://doi.org/10.1108/F-07-2018-0082

Haynes, B., Suckley, L., Nunnington, N., & Haynes, B. (2017). *differences based on age and gender Workplace productivity and office type An evaluation of office occupier differences based on age and gender*. https://doi.org/10.1108/JCRE-11-2016-0037

Hendry, J., & Seidl, D. (2003). The structure and significance of strategic episodes: Social systems theory and the routine practices of strategic change. *Journal of Management Studies*, *40*(1), 175–196. https://doi.org/10.1111/1467-6486.00008

Hills, R., & Levy, D. (2014). Workspace design and fit-out: What knowledge workers value. *Property Management*, *32*(5), 415–432. https://doi.org/10.1108/PM-02-2014-0011

Hirst, A., & Humphreys, M. (2013). Putting Power in its Place: The Centrality of Edgelands. *Organization Studies*, *34*(10), 1505–1527. https://doi.org/10.1177/0170840613495330

Hirst, A., & Schwabenland, C. (2018). Doing gender in the 'new office.' *Gender, Work and Organization*, *25*(2), 159–176. https://doi.org/10.1111/gwao.12200

Hopp, W. J. (2009). Managing White-Collar Work: An Operations-Oriented Survey. *Production and Operations Management*, *18*(1), 1–32.

Hopwood, N. (2014). Four essential dimensions of workplace learning. *Journal of Workplace Learning*, *26*(6), 349–363. https://doi.org/10.1108/JWL-09-2013-0069

Hou, H. (Cynthia), Remøy, H., Jylhä, T., & Vande Putte, H. (2021). A study on office workplace modification during the COVID-19 pandemic in The Netherlands. *Journal of Corporate Real Estate*, *23*(3), 186–202. https://doi.org/10.1108/JCRE-10-2020-0051

Hurme, P. (2005). Mobile communication and work practices in knowledge-based organizations. *International Journal Of Mobile Communications*, *1*(April), 101–108. https://doi.org/10.17011/ht/urn.2005128

International Labour Office (2022) International Labour Office/ Federation of Kenyan Employers, The Next Normal: The changing workplace in Kenya, Jarzabkowski, P., & Seidl, D. (2008). The role of meetings in the social practice of strategy. *Organization Studies*, *29*(11), 1391–1426. https://doi.org/10.1177/0170840608096388

Jarzabkowski, P., Burke, G., & Spee, P. (2015). Constructing Spaces for Strategic Work: A Multimodal Perspective. *British Journal of Management*, *26*(S1), S26–S47. https://doi.org/10.1111/1467-8551.12082

Kaczmarczyk, S., Murtough, J., & Murtaugh, J. (2002). Measuring the performance of innovative workplaces Measuring the performance of innovative workplaces. *Journal of Facilities Management*, 163–176.

Kallio, T. J., Kallio, K. M., & Blomberg, A. J. (2015). Physical space, culture and organisational creativity – A longitudinal study. *Facilities*, *33*(5–6), 389–411. https://doi.org/10.1108/F-09-2013-0074

Kellogg, K. C., Orlikowski, W. J., & Yates, J. A. (2006). Life in the trading zone: Structuring coordination across boundaries in post bureaucratic organizations. *Organization Science*, *17*(1), 22–44. https://doi.org/10.1287/orsc.1050.0157

Khamkanya, T., Heaney, G., & McGreal, S. (2012). Scenario-based approach to office occupancy analysis. *Property Management*, *30*(4), 333–350. https://doi.org/10.1108/02637471211249489

Khanna, C., J. M. van der Voordt, T., & W. Koppels, P. (2013). Corporate real estate mirrors brand: a conceptual framework and practical applications. *Journal of Corporate Real Estate*, *15*(3/4), 213–230. https://doi.org/10.1108/JCRE-01-2013-0003

Kietzmann, J., Plunger, K., Eaton, B., Heilgenberg, K., Pitt, L., & Berthon, P. (2013). Mobility at work: A typology of mobile communities of practice and contextual ambidexterity. *Journal of Strategic Information Systems*, *22*(4), 282–297. https://doi.org/10.1016/j.jsis.2013.03.003

Kingma, S. (2019). New ways of working (NWW): workspace and cultural change in virtualizing organizations. *Culture and Organization*, *25*(5), 383–406. https://doi.org/10.1080/14759551.2018.1427747

Kingma, S. F. (2016). The constitution of 'third workspaces' in between the home and the corporate office. *New Technology, Work and Employment*. https://doi.org/10.1111/ntwe.12068

Knight, C., & Haslam, S. A. (2010). The Relative Merits of Lean, Enriched, and Empowered Offices: An Experimental Examination of the Impact of Workspace Management Strategies on Well-Being and Productivity. *Journal of Experimental Psychology: Applied*, *16*(2), 158–172. https://doi.org/10.1037/a0019292

Kokkonen, A., & Vaagaasar, A. L. (2018). Managing collaborative space in multi-partner projects. *Construction Management and Economics*, *36*(2), 83–95. https://doi.org/10.1080/01446193.2017.1347268

Kurkland, N. B., & Bailey, D. E. (1999). The advantages and challenges of working here, there anywhere, and anytime. *Organizational Dynamics*, *28*(2), 53–68. https://doi.org/10.1016/S0090-2616(00)80016-9

Kurokawa, M., Schweber, L., & Hughes, W. (2017). Client engagement and building design: the view from actor–network theory. *Building Research and Information*, *45*(8), 910–925. https://doi.org/10.1080/09613218.2016.1230692

Lahlou, S., Des, D., Schein, M., Branton, P., & Grayson, G. (2011). Observing cognitive work in offices Book section. *Control*, *10*(1999), 1–10. https://doi.org/10.1080/00140136708930838

Lamprou, E. (2017). Spatiality as Care: A Heideggerian Perspective on Sociomaterial Practices. *Organization Studies*, *38*(12), 1733–1752. https://doi.org/10.1177/0170840617693267

Langenberg, S., & Wesseling, H. (2016). Making Sense of Weick's Organising. A Philosophical Exploration. *Philosophy of Management*, *15*(3), 221–240. https://doi.org/10.1007/s40926-016-0040-z

Langford, L., & Haynes, B. (2015). An investigation into how corporate real estate in the financial services industry can add value through alignment and methods of performance measurement. *Journal of Corporate Real Estate*, *17*(1), 46–62. https://doi.org/10.1108/JCRE-06-2014-0015

Latour, B. (2011). Networks, societies, spheres: Reflections of an actor-network theorist. *International Journal of Communication*, *5*(1), 796–810.

Laurier, E. (2004). Doing Office Work on the Motorway. *Theory, Culture & Society*, *21*(5), 261–277. https://doi.org/10.1177/0263276404046070

Leblebici, D. (Okan U. (2012). Impact of workplace quality on employee's productivity: case study of a Bank in Turkey. *Journal of Business, Economics & Finance*, *1*(1), 38–49. https://doi.org/ISSN: 2146-7943

Leclercq-Vandelannoitte, A. (2011). Organizations as discursive constructions: A foucauldian approach. *Organization Studies*, *32*(9), 1247–1271. https://doi.org/10.1177/0170840611411395

Leclercq-Vandelannoitte, A. (2021). "Seeing to be seen": The manager's political economy of visibility in new ways of working. *European Management Journal*, *39*(5), 605–616. https://doi.org/10.1016/j.emj.2020.11.005

Lefebvre H (1991) *The Production of Space*. Oxford: Blackwell Publishing.

Leigh, S. (1999). The ethnography of infrastructure. *The American Behavorial Scientist*.

Leonardi, P. M., & Bailey, D. E. (2008). Transformational technologies and the creation of new work practices: Making implicit knowledge explicit in task-based offshoring. *Mis Quarterly*, *32*(2), 411–436. https://doi.org/Article

Lewis, S. J., & Russell, A. J. (2011). Being embedded: A way forward for ethnographic research. *Ethnography*. https://doi.org/10.1177/1466138110393786

Liu, H., Albert, R., & Solomon, J. (2012). *Distributed Workplace for Facebook. Inc: a new office typology for the 21st century workstyle Distributed Workplace for Facebook. Inc a new office typology for the 21st century workstyle*. http://surface.syr.edu/architecture_tpreps%0Ahttp://surface.syr.edu/architecture_tpreps/196

Livingstone, N., & Ferm, J. (2017). Occupier responses to sustainable real estate: what's next? *Journal of Corporate Real Estate*, *19*(1), 5–16. https://doi.org/10.1108/JCRE-03-2016-0016

Llewellyn, N. (2008). Organization in actual episodes of work: Harvey sacks and organization studies. *Organization Studies*, *29*(5), 763–791. https://doi.org/10.1177/0170840608088766

Lu, Y., & Roto, V. (2016). Design for Pride in the Workplace. *Psychology of Well-Being*, *6*(1), 6. https://doi.org/10.1186/s13612-016-0041-7

Maier, J. R. A., Fadel, G. M., & Battisto, D. G. (2009). An affordance-based approach to architectural theory, design, and practice. *Design Studies*, *30*(4), 393–414. https://doi.org/10.1016/j.destud.2009.01.002

Mallawaarachchi, H., De Silva, L., & Rameezdeen, R. (2017). Modelling the relationship between green built environment and occupants' productivity. *Facilities*, *35*(3–4), 170–187. https://doi.org/10.1108/F-07-2015-0052

Marrewijk, A. H. Van. (2008). Corporate headquarters as physical embodiments of organisational change. *Journal of Organizational Change Management*. https://doi.org/10.1108/09534810910951078

Maruta, R. (2012). Transforming knowledge workers into innovation workers to improve corporate productivity. *Knowledge-Based Systems*, *30*, 35–47. https://doi.org/10.1016/j.knosys.2011.06.017

Mazmanian, M., Orlikowski, W. J., & Yates, J. (2013). The Autonomy Paradox. The Implications of Mobile Email Devices for Knowledge Professionals. *Organization Science*, *24*(5), 1337–1357. http://dx.doi.org/10.1287/orsc.1120.0806

McGregor, J. (2004). Spatiality and the place of the material in schools. *Pedagogy, Culture and Society*, *12*(3), 347–372. https://doi.org/10.1080/14681360400200207

Mehta, V., & Bosson, J. K. (2010). Third places and the social life of streets. *Environment and Behavior*, *42*(6), 779–805. https://doi.org/10.1177/0013916509344677

Merriman, P., Jones, M., Olsson, G., Sheppard, E., Thrift, N., & Tuan, Y. F. (2012). Space and spatiality in theory. *Dialogues in Human Geography*, *2*(1), 3–22. https://doi.org/10.1177/2043820611434864

Miettinen, R., & Virkkunen, J. (2005). Epistemic objects, artefacts and organizational change. *Organization*, *12*(3), 437–456. https://doi.org/10.1177/1350508405051279

Miettinen, R., Samra-Fredericks, D., & Yanow, D. (2009). Re-turn to practice: An introductory essay. *Organization Studies*, *30*(12), 1309–1327. https://doi.org/10.1177/0170840609349860

Miller, R., Casey, M., & Kochar, M. (2014). *Change Your Space, Change Your Culture*. New Jersey: Wiley.

Moran, C. (2015). Time as a social practice. *Time & Society*, *24*(3), 283–303. https://doi.org/10.1177/0961463X13478051

Moura, E. O. de, & Bispo, M. de S. (2020). Sociomateriality: Theories, methodology, and practice. *Canadian Journal of Administrative Sciences*, *37*(3), 350–365. https://doi.org/10.1002/cjas.1548

Moussa, M., Bright, M., & Varua, M. E. (2017). Investigating knowledge workers' productivity using work design theory. *International Journal of Productivity and Performance Management*, *66*(6), 822–834. https://doi.org/10.1108/IJPPM-08-2016-0161

Mulville, M., Callaghan, N., & Isaac, D. (2016). The impact of the ambient environment and building configuration on occupant productivity in open-plan commercial offices. *Journal of Corporate Real Estate*, *18*(3), 180–193. https://doi.org/10.1108/JCRE-11-2015-0038

Nicolini, D. (2007). Stretching out and expanding work practices in time and space: The case of telemedicine. In *Human Relations* (Vol. 60, Issue 6). https://doi.org/10.1177/0018726707080080

Nicolini, D. (2009). Zooming in and out: Studying practices by switching theoretical lenses and trailing connections. *Organization Studies*, *30*(12), 1391–1418. https://doi.org/10.1177/0170840609349875

Nicolini, D. (2012). *Practice Theory, Work and Organisation: An Introduction.* Oxford: Oxford Univeristy Press.

Nyaoro, B. O., & Anyango, C. B. (2023). Effect of work space flexibility on performance of administrative staff in public universities in western Kenya. *The Strategic Journal of Business & Change Management,* 10 (1), 179 – 189. Oeij, P. R. A., de Looze, M. P., Have, K. Ten, van Rhijn, J. W., & Kuijt-Evers, L. F. M. (2011). Developing the organization's productivity strategy in various sectors of industry. *International Journal of Productivity and Performance Management*, *61*(1), 93–109. https://doi.org/10.1108/17410401211187525

Olmos-Vega, F. M., Stalmeijer, R, E., Varpio, L., & Kahlke, R., (2023) A practical guide to reflexivity in qualitative research: AMEE Guide No. 149, *Medical Teacher, 45:3*, 241-251, DOI: 10.1080/0142159X.2022.2057287

Orlikowski, W. J. (1996). Improvising organizational transformation over time: A situated change perspective. *Information Systems Research*, *7*(1), 1997.

Orlikowski, W. J. (2000). Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations. *Organization Science*, *11*(4), 404–428. https://doi.org/10.1287/orsc.11.4.404.14600

Orlikowski, W. J. (2006). Material knowing: The scaffolding of human knowledgeability. *European Journal of Information Systems*, *15*(5), 460–466. https://doi.org/10.1057/palgrave.ejis.3000639

Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organization Studies*, *28*(9), 1435–1448. https://doi.org/10.1177/0170840607081138

Orlikowski, W. J. (2016). Knowing in Practice: Enacting a Collective Capability in Distributed Organizing Linked references are available on JSTOR for this article : Knowing in Practice : Enacting a Collective Capability in Distributed Organizing. *Organization Science*, *13*(3), 249–273.

Orlikowski, W. J., & Scott, S. V. (2008). 10 Sociomateriality: Challenging the Separation of Technology, Work and Organization. *The Academy of Management Annals*, *2*(1), 433–474. https://doi.org/10.1080/19416520802211644

Orlikowski, W. J., & Scott, S. V. (2015). Exploring Material-Discursive Practices. *Journal of Management Studies*. https://doi.org/10.1111/joms.12114

Orlikowski, W. J., & Yates, J. (2002). It's About Time: Temporal Structuring in Organizations. *Organization Science*, *13*(6), 684–700. https://doi.org/10.1287/orsc.13.6.684.501

Oswick, C., & Robertson, M. (2009). Boundary Objects Reconsidered: from Bridges and Anchors to Barricades and Mazes. *Journal of Change Management*, *9*(2), 179–193. https://doi.org/10.1080/14697010902879137

Palvalin, M., Lönnqvist, A. & Vuolle, M. (2013). Analysing the Impacts of Information Communication and Technology on Knowledge Work Productivity. *Journal of Knowledge Management*, *17*(4), 545–557.

Palvalin, M., van der Voordt, T., & Jylhä, T. (2017). The impact of workplaces and self-management practices on the productivity of knowledge workers. *Journal of Facilities Management*, *15*(4), 423–438. https://doi.org/10.1108/JFM-03-2017-0010

Pantzar, M., & Shove, E. (2010). Temporal rhythms as outcomes of social practices: A speculative discussion. *Ethnologia Europaea*, *40*(1), 19–29. https://doi.org/10.16995/ee.1061

Perry, M., O'hara, K., Sellen, A., Brown, B., & Harper, R. (2001). Dealing with mobility: understanding access anytime, anywhere. *ACM Transactions on Computer-Human Interaction*. https://doi.org/10.1145/504704.504707

Purdey, B. (2013). Occupant stimulus response workplace productivity and the vexed question of measurement. *Facilities*, *31*(11–12), 505–520. https://doi.org/10.1108/F-03-2012-0021

Rafaeli, A., & Vilnai-Yavetz, I. (2004). Instrumentality, aesthetics and symbolism of physical artifacts as triggers of emotion. *Theoretical Issues in Ergonomics Science*, *5*(1), 91–112. https://doi.org/10.1080/1463922031000086735

Ramo, H. (2004). Spatio-temporal Notions and Organized Environmetal Issues: An Axiology of Action. *Organization*, 849-872.

Rasheed, E. O., & Byrd, H. (2017). Can self-evaluation measure the effect of IEQ on productivity? A review of literature. *Facilities*, *35*(11–12), 601–621. https://doi.org/10.1108/F-08-2016-0087

Ray, P. K., & Sahu, S. (1989). The Measurement and Evaluation of White-collar Productivity. *International Journal of Operations & Production Management*, *9*(4), 28–47. https://doi.org/10.1108/EUM0000000001235

Reay, T., & Whetten, D. A. (2011). What constitutes a theoretical contribution in family business? *Family Business Review*, *24*(2), 105–110. https://doi.org/10.1177/0894486511406427

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

Richardson, L. (2017). Sharing as a post work style: Digital work and the co-working office. *Cambridge Journal of Regions, Economy and Society*. https://doi.org/10.1093/cjres/rsx002

Riis, S. (2008). The symmetry between Bruno Latour and Martin Heidegger: The technique of turning a police officer into a speed bump. *Social Studies of Science*. https://doi.org/10.1177/0306312707081379

Roelofsen, P. (2002). The impact of office environments on employee performance : The design ... *Journal of Facilities Management*.

Rolfö, L. V. (2018). Relocation to an activity-based flexible office – Design processes and outcomes. *Applied Ergonomics*, *73*(June), 141–150. https://doi.org/10.1016/j.apergo.2018.05.017

Rosengren, C. (2015). Performing work: The drama of everyday working life. *Time & Society*, 613-633.

Rosengren, C. (2019). Performing work : The drama of everyday working life. *Time & Society*. https://doi.org/10.1177/0961463X15620983

Roskams, M., & Haynes, B. (2019). An experience sampling approach to the workplace environment survey. *Facilities*, *38*(1–2), 72–85. https://doi.org/10.1108/F-04-2019-0050

Roy, K. M., Tubbs, C. Y., Burton, L. M., Roy, K. M., Tubbs, C. Y., & Burton, L. M. (2017). *Families Linked references are available on JSTOR for this article : Don' t Have No Time : Daily Rhythms and the Organization of Time for Low-Income Families * working mother*. *53*(2), 168–178.

Russell, S. (1986). The Social Construction of Artefacts: A Response to Pinch and Bijker. *Social Studies of Science*. https://doi.org/10.1177/0306312786016002008

Sage, D. J., & Dainty, A. (2012). Understanding power within project work: the neglected role of material and embodied registers. *Engineering Project Organization Journal*, *2*(4), 202–215. https://doi.org/10.1080/21573727.2011.648619

Sánchez, A. M., Pérez, M. P., De Luis Carnicer, P., & Jiménez, M. J. V. (2007). Teleworking and workplace flexibility: A study of impact on firm performance. *Personnel Review*, *36*(1), 42–64. https://doi.org/10.1108/00483480710716713

Sandberg, R., Löwstedt, M., & Räisänen, C. (2021). Working in a loosely coupled system: exploring practices and implications of coupling work on construction sites. *Construction Management and Economics*, *39*(3), 212–226. https://doi.org/10.1080/01446193.2020.1849751

Satish, U., Cleckner, L., & Vasselli, J. (2013). Impact of VOCs on decision making and productivity. *Intelligent Buildings International*, *5*(4), 213–220. https://doi.org/10.1080/17508975.2013.812956

Sayes, Edwin (2014). Actor-Network Theory and methodology: Just what does it mean to say that nonhumans have agency? *Social Studies of Science*, *44*(1), 134–149.

Schatzki, T. R. (2005). The sites of organizations. *Organization Studies*, *26*(3), 465–484. https://doi.org/10.1177/0170840605050876

Schatzki, T. R. (2006). On organizations as they happen. *Organization Studies*, *27*(12), 1863–1873. https://doi.org/10.1177/0170840606071942

Schatzki, T. (2010). Materiality_and_social_life.PDF. *Nature and Culture*.

Schatzki, T. R. (2013). Practices and people. *Unpublished*, *53*(9), 1689–1699. https://doi.org/10.1017/CBO9781107415324.004

Schatzki, T. (2016a). Crises and adjustments in ongoing life. *Österreichische Zeitschrift Für Soziologie*, *41*(S1), 17–33. https://doi.org/10.1007/s11614-016-0204-z

Schatzki, T. (2016b). Keeping track of large phenomena. *Geographische Zeitschrift*, *104*(1), 4–24. https://doi.org/10.25162/gz-2016-0001

Schubert, C., & Röhl, T. (2019). methodological challenges. *Qualitative Research*. https://doi.org/10.1177/1468794117744748

Schweber, L. (2015). Putting theory to work: the use of theory in construction research. *Construction Management and Economics*, *33*(10), 840–860. https://doi.org/10.1080/01446193.2015.1133918

Scott, S. V, & Orlikowski, W. J. (2009). Exploring the material grounds of institutional dynamics in social media. *Egos 2009*, *44*(0), 1–25.

Scott, S. V, Orlikowski, W. J., & Scott, S. V. (2014). *Entanglements in practice: performing anonymity through social media 1*. *38*(3), 873–894.

Sharlin, E., Watson, B., Kitamura, Y., Kishino, F., & Itoh, Y. (2004). On tangible user interfaces, humans and spatiality. *Personal and Ubiquitous Computing*, *8*(5), 338–346. https://doi.org/10.1007/s00779-004-0296-5

Shaw, J., Shaw, S., Wherton, J., Hughes, G., Greenhalgh, T., & Shaw, J. (2017). Studying Scale-Up and Spread as Social Practice : Theoretical Introduction and Empirical Case Study Corresponding Author : *Journal of Medical Internet Research*, *19*. https://doi.org/10.2196/jmir.7482

Shortt, H. (2015). Liminality, space and the importance of 'transitory dwelling places' at work. *Human Relations*, *68*(4), 633–658. https://doi.org/10.1177/0018726714536938

Shove, E. (2003). Converging Conventions of Comfort, Cleanliness and Convenience. *Journal of Consumer Policy*, *26*(4), 395–418. https://doi.org/10.1023/A:1026362829781

Shove, E., & Walker, G. (2010). Governing transitions in the sustainability of everyday life. *Research Policy*, *39*(4), 471–476. https://doi.org/10.1016/j.respol.2010.01.019

Shove, E., Panztar, M., & Watson, M.. (2012). *The Dynamics Of Social Practice: Everyday Life And How It Changes.* London: Sage Publications Inc.

Silverman, D. (2013). *Doing Qualitative Research.* London: Sage.

Sivunen, A., & Putnam, L. L. (2019). The dialectics of spatial performances: The interplay of tensions in activity-based organizing. *Human Relations*. https://doi.org/10.1177/0018726719857117

Skogland, M. A. C., & Hansen, G. K. (2017). Change your space, change your culture: exploring spatial change management strategies. In *Journal of Corporate Real Estate* (Vol. 19, Issue 2). https://doi.org/10.1108/JCRE-07-2016-0024

Southerton, D. (2003). ' Squeezing Time ' Allocating practices , coordinating networks. *Time & Society*, *12*(1), 5–25.

Southerton, D. (2006). Analysing the temporal organization of daily life: Social constraints, practices and their allocation. *Sociology*, *40*(3), 435–454. https://doi.org/10.1177/0038038506063668

Southerton, D. (2007). Time pressure, technology and gender: the conditioning of temporal experiences in the UK. *Equal Opportunities International*, *26*(2), 113–128. https://doi.org/10.1108/02610150710732195

Southerton, D. (2013). Habits, routines and temporalities of consumption: From individual behaviours to the reproduction of everyday practices. *Time & Society*, *22*(3), 335–355. https://doi.org/10.1177/0961463X12464228

Star, S. L. (n.d.). *This is Not a Boundary Object: Reflections on the Origin of a Concept*. https://doi.org/10.1177/0162243910377624

Strengers, Y. (2015). Meeting in the Global Workplace: Air Travel, Telepresence and the Body. *Mobilities*, *10*(4), 592–608. https://doi.org/10.1080/17450101.2014.902655

Syverson, C. (2011). What Determines Productivity? *Journal of Economic Literature*, *49*(2), 326–365. https://doi.org/10.1257/jel.49.2.326

Tagliaro, C., & Migliore, A. (2022). "Covid-working": what to keep and what to leave? Evidence from an Italian company. *Journal of Corporate Real Estate*, *24*(2), 76–92. https://doi.org/10.1108/JCRE-10-2020-0053

Taylor, J. L., Soro, A., Roe, P., Hong, A. L., & Brereton, M. (2018). "Debrief o'clock": Planning, recording, and making sense of a day in the field in Design research. *Conference on Human Factors in Computing Systems - Proceedings*, *2018-April*, 1–14. https://doi.org/10.1145/3173574.3173882

Tony Dobbins (2023) Why employment relations matter(s) for governance of problems for labour in the real world of work, *Labour and Industry*, 33:4, 473-489, DOI: 10.1080/10301763.2024.2317185

Tryggestad, K., Georg, S., & Hernes, T. (2010). Constructing buildings and design ambitions. *Construction Management and Economics*, *28*(6), 695–705. https://doi.org/10.1080/01446191003755441

Tucker, D. A., Hendy, J., & Barlow, J. (2014). When infrastructure transition and work practice redesign collide. *Journal of Organizational Change Management*, *27*(6), 955–972. https://doi.org/10.1108/JOCM-09-2013-0173

Umishio, W., Kagi, N., Asaoka, R., Hayashi, M., Sawachi, T., & Ueno, T. (2022). Work productivity in the office and at home during the COVID-19 pandemic: A cross-sectional analysis of office workers in Japan. *Indoor Air*, *32*(1), 1–12. https://doi.org/10.1111/ina.12913

van Meel, J. (2011). The origins of new ways of working: Office concepts in the 1970s. *Facilities*, *29*(9), 357–367. https://doi.org/10.1108/02632771111146297

Venezia, C., & Allee, V. (2007). Supporting mobile worker networks: components for effective workplaces. *Journal of Corporate Real Estate*, *9*(3), 168–182. https://doi.org/10.1108/14630010710845758

Voordt, T. J. M. Van Der. (2004). Productivity and employee satisfaction. *Journal of Corporate Real Estate*, *6*(2), 133–148. https://doi.org/10.1108/14630010410812306

Wajcman, J. (2008). Life in the fast lane? Towards a sociology of technology and time. *British Journal of Sociology*, *59*(1), 59–77. https://doi.org/10.1111/j.1468-4446.2007.00182.x

Weick, K. E., Sutcliffe, K. M., Obstfeld, D., Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2019). Organization Science inf 3M1 Organizing and the Process of Sensemaking. *Organization Science*, *16*(4), 409–421.

Welch Daniel (2020). Consumption and teleoaffective formations: Consumer culture and commercial communications. *Journal of Consumer Culture,* 20(1), 61-82.

Wells, M. M., Thelen, L., & Ruark, J. (2007). Workspace personalization and organizational culture: Does your workspace reflect you or your company? *Environment and Behavior*, *39*(5), 616–634. https://doi.org/10.1177/0013916506295602

Whittington, R. (2006). Completing the practice turn in strategy research. *Organization Studies*, *27*(5), 613–634. https://doi.org/10.1177/0170840606064101

Whyte, J. K., Ewenstein, B., Hales, M., & Tidd, J. (2007). Visual practices and the objects used in design. *Building Research and Information*, *35*(1), 18–27. https://doi.org/10.1080/09613210601036697

Whyte, J., & Nussbaum, T. (2020). Transition and Temporalities: Spanning Temporal Boundaries as Projects End and Operations Begin. *Project Management Journal*. https://doi.org/10.1177/8756972820919002

Yin, R. (2018). *Case study research and applications: design and methods*. London: Sage Publications Inc.

Yuan, Y., Archer, N., Connelly, C. E., & Zheng, W. (2010). Identifying the ideal fit between mobile work and mobile work support. *Information and Management*. https://doi.org/10.1016/j.im.2009.12.004

Yuri, W., & David, A. (2004). *Measuring knowledge worker productivity: A taxonomy*.

Zhang, Z., Spicer, A., & Hancock, P. (2008). Hyper-organizational space in the work of J. G. Ballard. *Organization*, *15*(6), 889–910. https://doi.org/10.1177/1350508408095819

Appendix I

Observation template

Primary Participant name   Role: Location

Start time   End time   Date

Description of scene

Main activity	Concurrent activities	Objects used	Services / facilities	Skill demonstrated		space /usual use of the space
Writing	Writing	Office desk	Open office	Using a computer		
Editing	Editing	Chair	Closed office	Using a telephone		
Reading	Reading	Meeting table	Cabled Data connectivity	Organising		
Formal meeting	Formal meeting	Other table	Wi-Fi	Subject matter expert		
Informal meeting	Informal meeting	Sofa set / informal seating	Air conditioning			
Telephone call	Telephone call	Fixed computer	Power connection			
Email	Email	Laptop				
Data entry	Data entry	Tablet				
Making presentation	Making presentation	Fixed telephone				
Filing	Filing	Mobile telephone				
		Paper				

Observation notes.

What is going on?

Secondary participants

Co-participants in the activities of the primary participant

Name / initials	role	Actions	Skill	Location	Objects used

Key

Role		Actions		Skill		Location		Objects Used	
Supervisor	SP	Filing	F	Using a computer	C	Office	O	Fixed computer	FC
Subordinate	SB	Data entry	D	Using a telephone	T	Home	H	Laptop	L
Peer	P	Preparing document	P	Organising	O	Restaurant / hotel	R	Tablet	T
Internal service provider	ISP	Editing	E	Subject matter expert	S	Commute	C	Fixed telephone	FT
External service provider	ESP	Approving	A	Operating equipment	E	Other - indicate		Mobile telephone	MT
Facilities manager	FM	Decision making	D					Paper	P
Space designer	D	Arranging	R						

Semi-structured discussion questions to participants and co-workers during observation:

1. What is the reason for / importance of the tasks you are doing?
2. What are your considerations in deciding the tasks to do?
3. What considerations do you make when selecting the things you are using for work?
4. What choices do you have for the place or time the same work is done?
5. And what changes have you made to your workspace?
6. Why did you make the changes?

Appendix II

Interview outline

Semi-structured interview questions to participants

1. Preliminary questions
   a. Tell me about the work activities that you did today. Narration.
   b. How did you receive and pass on work?
   c. How would you describe your workspace?
   d. What are the most important objects in your workspace and why are they important?
   e. Which objects do you use that are not within your workspace and what adjustments have to you make to access them?

2. Questions on the specific tasks observed:
   a. What were you doing and what was the purpose for it?
   b. What objects are the most important objects in accomplishing the activity in that episode?
   c. What is the story behind the key objects?
   d. What changes have there been to this activity in the recent past?

Questions to Facility managers and space designers

1. What kind of activities are carried out in the office spaces you plan / arrange?
2. What do you take into consideration when preparing space for office work?
3. What are the common requirements made by users when requesting for space?
4. After you have prepared the space what changes do the users make for themselves
   a. And what kind of changes do they or request for?
   b. What are their reasons for making those changes?
5. How often do you alter the space arrangements? What are the reasons for the alterations?
6. Are their permanent things that cannot be altered?
7. What are the common additions or alterations done?

Appendix III

COVID-19 impact statement.

1. Planned data collection.

The research approach included collecting data through observation of office workers in the designated office and alternative workplaces, and carrying out face-to-face interviews. The data collection was planned to take place between March and April 2020. In March 2020, however, the Government of Kenya announced measures that it had put in place to mitigate the spread of the coronavirus pandemic (COVID-19) The measures included restrictions on physical movement, gatherings, and meetings. The government also encouraged non-essential workers to work from home and imposed a 7 p.m. to 6 a.m. curfew. The COVID-19 transmission mitigation measures included restricting access to public places such as offices, limiting movement and maintaining physical distance between persons. This necessitated a change of data collection tools during the two phases of data collection.

2. Revision of data collection methods and tools

During the first phase of data collection, due to the travel and assembly restrictions imposed by the government to mitigate the COVID-19 pandemic, observations of the participants in their setting were limited, since physical access was restricted. The data collection tools were revised to include work logs captured by participants' self-recording. The work logs enabled the researcher to gather information from the participants about the location, activities and objects involved in the enactment of practices during various ranges of time in a day. Since work logs did not adequately compensate for participant observation, additional details of the activities, opinions and experience of the participants were obtained using semi-structured discussions. To ease the task of recording the work log, the researcher designed a form providing a list of choices where the participants could select the boxes that described their work and surroundings. The work logs were also developed to serve as observation templates that captured data on the objects, locations, services, and facilities used. Additionally, where face-to-face interviews were not possible, telephone interviews were carried out, but the researcher did not capture any non-verbal communication between office workers in the workplace. Video recordings were taken where possible. However, the video recordings were found inadequate to compensate for direct participant observation, as the equipment was static, thus capturing only the view of a limited area. Since the video recordings excluded activities the office workers carried out away from the area being recorded, they could not be used as substitutes for participant observations.

3. Compliance with COVID-I9 mitigation measures during data collection

During the second phase of data collection, the assembly restrictions had been lifted, but the office workers were required to wear face masks and apply hand sanitisers when sharing objects. Thanks to the reduction of restrictions, physical interactions within the office and face-to-face collaborative work were permitted. This enabled observations, informal discussions, and semi-structured interviews to be carried out within the office setting. During the observation, the guidelines for mitigation of the spread of Covid-19 were observed. These

guidelines required office workers to always wear face masks while in the office and minimise physical interactions. The guidelines also required windows and doors to be kept open so that spaces were well ventilated.

In the second phase of data collection, adherence to COVID-19 mitigation guidelines in the workplace was engrained in the organisation's norms and was considered part of the compliance required of all office workers. The researcher and participants complied with the guidelines as part of the everyday setting of office work in the situated case.

Appendix IV

Self-recording Observation Form   **Work activity record for the morning session before tea break**

Thank you for accepting to take part in this research on office work, workplaces and the experiences of office workers. The information provided will be treated with confidentiality, anonymity and used for academic research purposes only. Only I and my research supervisors will have access to the information provided. Participation in this research is voluntary and you are free to withdraw at any time.

Please record your work activities for a period of one hour for the time band selected.

Part 1 of this form is to record your work and workplaces where you worked from during the <u>one-hour</u> period. **Part 2** of the form is to record the work activities of your co-workers who were directly involved the work you carried out during the <u>one-hour</u> period recorded in part 1.

Please fill the description of the work and workplaces using the tables. Use the blank boxes to include any items that are not listed.

Name (optional)	Date	Time-band	Before tea / coffee break	v	Between tea and lunch break	After lunch to end of formal work hours	After formal work hours
		Indicate specific time (1-hour period) e.g. 8am – 9 am					

Part 1   Work log

Job role (tick √ to select)		Give general description of work done during 1-hour period.	Location where work was done, available services & facilities (tick √ to select)		Activities involved in carrying out the work (tick √ to select)		Objects available to carry out the work (tick √ to select)		Skill used (tick √ to select)	
Senior manager		E.g. preparing a proposal.	**Location**		Writing		Office desk		Using a computer	
Middle manager			Open plan office		Reading		Chair		Using a telephone	
Project manager			Enclosed / cellular office		Data entry		Dining table		Subject matter expertise	
Administrator			Informal meeting area in the office		Editing / checking / reviewing		Meeting table		Operating an equipment	
Technical support			Formal meeting room in the office		Seeking / giving advice or information		Sofa set / informal seating		System / software knowledge	
Professional			Office / study room at home		Decision making		Other table		Others	
Others			Other room at home		Making presentation		Desktop computer			
			Outdoors / veranda / yard at home		Making / receiving telephone calls		Laptop			
			Restaurant / hotel		Email		Tablet			
			On transit / commute / in a vehicle		Planned formal meeting		Fixed telephone			
			Public park / public space		Planned informal meeting		Mobile telephone			
			Available services & facilities		Spontaneous / unplanned meeting		Paper /physical documents / files			
			Cabled Data connectivity / Wi-Fi		One-on-one interaction		Shared equipment / facilities			
			System / software access		Filing / archiving		Storage / cabinets			
			Printing / photocopying							
			Mobile data connectivity							
			Electricity connection							

Part 2: Are there co-workers directly involved in the work stated in part 1?

Yes		No		**Number of co-workers :** _____

Please use the tables below to describe their involvement. Use one table per co-worker.

1. Co-worker no 1

Role (tick √ to select)		Actions you require from her / him (tick √ to select)		Skills of co-worker (tick √ to select)		Location of co-worker (tick √ to select)		Objects they are likely to be using (tick √ to select)	
Supervisor		Filing/record keeping		Using a computer		In the office		Fixed computer	
Subordinate		Data entry / processing		Using a telephone		At home		Laptop	
Peer		Making presentation		Using specialist software		In a restaurant / hotel		Tablet	
Internal service provider		Note taking		Subject matter expertise		On transit / in a vehicle		Fixed telephone	
External service provider		Communicating / informing		Operating equipment				Mobile telephone	
Facilities manager / designer		Document processing / preparation						Paper	
Technical support		Decision making							
Administrative support									

2. Co-worker no 2

Role (tick √ to select)		Actions you require from her / him (tick √ to select)		Skills of co-worker (tick √ to select)		Location of co-worker (tick √ to select)		Objects they are likely to be using (tick √ to select)	
Supervisor		Filing/record keeping		Using a computer		In the office		Fixed computer	
Subordinate		Data entry / processing		Using a telephone		At home		Laptop	
Peer		Making presentation		Using specialist software		In a restaurant / hotel		Tablet	
Internal service provider		Note taking		Subject matter expertise		On transit / in a vehicle		Fixed telephone	
External service provider		Communicating / informing		Operating equipment				Mobile telephone	
Facilities manager / designer		Document processing / preparation						Paper	
Technical support		Decision making							
Administrative support									

3. Co-worker no 3

Role (tick √ to select)		Actions you require from her / him (tick √ to select)		Skills of co-worker (tick √ to select)		Location of co-worker (tick √ to select)		Objects they are likely to be using (tick √ to select)	
Supervisor		Filing/record keeping		Using a computer		In the office		Fixed computer	
Subordinate		Data entry / processing		Using a telephone		At home		Laptop	
Peer		Making presentation		Using specialist software		In a restaurant / hotel		Tablet	
Internal service provider		Note taking		Subject matter expertise		On transit / in a vehicle		Fixed telephone	
External service provider		Communicating / informing		Operating equipment				Mobile telephone	
Facilities manager / designer		Document processing / preparation						Paper	
Technical support		Decision making							
Administrative support									

4. Co-worker no 4

Role (tick √ to select)		Actions you require from her / him (tick √ to select)		Skills of co-worker (tick √ to select)		Location of co-worker (tick √ to select)		Objects they are likely to be using (tick √ to select)	
Supervisor		Filing/record keeping		Using a computer		In the office		Fixed computer	
Subordinate		Data entry / processing		Using a telephone		At home		Laptop	
Peer		Making presentation		Using specialist software		In a restaurant / hotel		Tablet	
Internal service provider		Note taking		Subject matter expertise		On transit / in a vehicle		Fixed telephone	
External service provider		Communicating / informing		Operating equipment				Mobile telephone	
Facilities manager / designer		Document processing / preparation						Paper	
Technical support		Decision making							
Administrative support									

Page 3 of 4

Self-recording observation form   Academic research on office work practices   Mary Kaaria, University of Reading
m.k.kaaria@pgr.reading.ac.uk

- 8 -

5. Co-worker no 5

Role (tick √ to select)		Actions you require from her / him (tick √ to select)		Skills of co-worker (tick √ to select)		Location of co-worker (tick √ to select)		Objects they are likely to be using (tick √ to select)	
Supervisor		Filing/record keeping		Using a computer		In the office		Fixed computer	
Subordinate		Data entry / processing		Using a telephone		At home		Laptop	
Peer		Making presentation		Using specialist software		In a restaurant / hotel		Tablet	
Internal service provider		Note taking		Subject matter expertise		On transit / in a vehicle		Fixed telephone	
External service provider		Communicating / informing		Operating equipment				Mobile telephone	
Facilities manager / designer		Document processing / preparation						Paper	
Technical support		Decision making							
Administrative support									

Additional comments:

Appendix V

Application for Approval of Research Ethics

Researcher / Student: complete and email to your Supervisor/PI
Supervisor / PI: check and email to:
    sbe-undergrad@reading.ac.uk [for BSc research]
    sbe-postgrad@reading.ac.uk [for MSc and MArch research]
    sbeexecsupport@reading.ac.uk [for PhD, EngD and Staff research]

University of Reading

School of the Built Environment

Section 1 – Project Summary

Project Title: The Influence of Changing Work Practices on Office Design

Applicant (Researcher/Student):

Name: Mary Kaaria

Number (Students only):

Email address: m.k.kaaria@pgr.reading.ac.uk

Status: PhD

Supervisor / Principal Investigator:

Name: Prof. John Connaughton

Email address: j.connaughton@reading.ac.uk

Is this a Nil Return? No

If **YES**:

- **Applicant:** Read **Section 4** (confirming the accuracy of your answers) and email it to your Supervisor / PI
- **Supervisor / PI:** Read **Section 4** and check this is a 'Nil Return'. Approve in the box below, then email to:
  sbe-undergrad@reading.ac.uk [for BSc research]
  sbe-postgrad@reading.ac.uk [for MSc and MArch research]
  sbeexecsupport@reading.ac.uk [for PhD, EngD and Staff research]
- NO FURTHER ACTION IS REQUIRED

If **NO**, please continue to **Section 2**...

Further Information

This must be your University email address. Using your university email is sufficient to confirm your identity and means we do not require a signature.

This must be your University email address. Using your university email is sufficient to confirm your identity and means we do not require a signature.

A research project is classified as a 'Nil Return' if it does NOT involve: direct contact with human subjects, human samples, human personal data, special access to company documents/records, questionnaires, surveys or interviews etc. Usually this means research using secondary data that is publically available.

A Nil Return is approved by the Supervisor / PI and is not usually checked by the Research Ethics Committee.

APPROVAL (to be completed by Supervisor/PI for Nil Return or Simple Survey, otherwise by REC)

Approved (YES/NO) Yes   Name: Date:

Comments:

- 10 -

Section 2 – Research Methods

What is the general subject of your research?

This research seeks to examine how technology has aided mobility of office work and in turn influenced how office work is carried out and the configuration of the spaces where it is carried out.

Will your ONLY research method be a simple Questionnaire or Survey? No

If **YES**:
- PRODUCE A ONE PAGE DRAFT OF YOUR QUESTIONNAIRE, USING ATTACHMENT A (after Section 4).
- **Applicant:** Read **Section 4** (confirming the accuracy of your answers), then email this form including **Attachment A**, to your Supervisor / PI
- **Supervisor / PI:** Read **Section 4** and check **Attachment A** is appropriate. Approve in the box above, then email to:
- sbe-undergrad@reading.ac.uk [for BSc research]
  sbe-postgrad@reading.ac.uk [for MSc and MArch research]
  sbeexecsupport@reading.ac.uk [for PhD, EngD and staff research]
- NO FURTHER ACTION IS REQUIRED

If **NO**, please give more detail here and complete Section 3...
Describe your research methods:

Data will be collected in 2 phases covering office and home / third spaces settings
Participant observation, work logs and semi-structured interviews will be used to capture work activities of 10 office workers and their co-workers.
In the office, observations will be carried out, video recordings and photographs taken. In home / third spaces, workers will fill a work log and provide photographs /sketch of their workspace.
In both settings, interviews will be held at the end of the working day.

Using 'ATTACHMENTS' (below, after Section 4), include any other information. Usually:

- **Information sheet (Example in ATTACHMENT B)**
- **Consent form (Example in ATTACHMENT C)**
- **Draft Interview Questions (Use ATTACHMENT D)**

Section 3 – Ethical Issues

Outline your ethical issues, and how you intend to deal with them:

1. Consent and voluntary participation: The participants will be requested to volunteer and their consent will be recorded using the consent form.
2. Use of video recordings, photographs and sketches of participants' workplaces: Permission will be sought from the participant before obtaining and using such records. Providing such records will be optional.
3. To protect the privacy of (third party) co-workers, only a short description of their activities and role will recorded. Their identity will not be recorded.
4. Confidentiality and discretion: Other than description of work activities and workplaces, participants will not provide confidential personal or organisational information and will chose the time of day to be recorded. Their identity will be anonymised in reports.
5. Information obtained will be for academic purpose and only accessed by the researcher and the supervisors.

If your research involves any of the following, your application may be raised with the University Research Ethics Committee.

- Medical procedures or samples?
- Patients or clients of the NHS?
- Psychological research using human participants?
- People unable to give informed consent?
- Educational research?
- Food research?
- The use of personal data?
- Participants who are in a 'Special Relationship' with you
- Deception

Does your research involve any of the above? No

How will you store your data (including signed Consent Forms)?

During the research period, the data will be stored in password secured computer only accessible to the researcher. Physical documents will be stored in the researcher's lockable office cabinet.

How long will you retain your data?

On completion of the study, the data will be retained for 3 years and thereafter destroyed.

Further Information

Issues might include: confidentiality, privacy, anonymity, payment to participants, controversial or sensitive research topics, proprietary technical information, involvement of young or vulnerable people, existing relationships with participants (student, spouse etc.), cultural or language differences, coercion or deception, place of interaction (public place, workplace, hazardous environment etc.), revelation of criminality, uncovering health issues, exposure to pain or distress, physical contact generally, consumption of food or drink, risk to personal safety of the researcher and the participants, inconvenience or intrusion, environmental impact.

THIS LIST IS BY NO MEANS EXHAUSTIVE - YOU MUST IDENTIFY ALL ISSUES RELEVANT TO YOUR OWN PROJECT AND EXPLAIN HOW YOU WILL DEAL WITH THEM.

If an application to the University Research Ethics Committee is required, you will be contacted by the SBE Ethics Committee. If you are unsure, please contact the SBE Ethics Committee before submitting your application. People 'unable to give informed consent' are usually children or vulnerable adults. It is a legal requirement that staff and students undergo a Disclosure and Barring Service check before engaging in research when in a position of trust. 'Special Relationship' includes for example: spouse/partner; employer/employee; teacher/student etc.

All data, including signed consent forms, must be stored securely (e.g. on a password protected laptop; in a locked office etc.) All data must be removed from personal storage and returned to SBE (usually to the PI) if/when the researcher leaves SBE.

BSc / MSc dissertation data would usually be destroyed 1 year after completion. PhD / Staff research data should be retained for 3 years post-research by default. Research supported by external funders may have specific requirements (e.g. note RCUK requirements).

Section 4 – Confirmation

Applicant:

- To the best of my knowledge I have made known all relevant information to the Research Ethics Committee, and I undertake to conduct this research in line with the information provided. I will inform the committee of any such information that subsequently becomes available, whether before or after the research has begun.

- **To confirm this statement, please email the completed form (including the 'ATTACHMENTS' sections as required) to your Supervisor / PI (from your university email address)**

- NO FURTHER ACTION IS REQUIRED

Supervisor / PI:

- I have checked the content of this form and the attachments, and to the best of my knowledge I have made known all relevant information to the Research Ethics Committee, and I undertake to inform the committee of any such information that subsequently becomes available, whether before or after the research has begun.

- **To confirm this statement, please email the form (from your university email address) to:**
  sbe-undergrad@reading.ac.uk [BSc]
  sbe-postgrad@reading.ac.uk [MSc and MArch]
  sbeexecsupport@reading.ac.uk [PhD, EngD and Staff]

- NO FURTHER ACTION IS REQUIRED

Further Information

It is important that if you have any queries, you discuss with your Supervisor / PI or contact the SBE Ethics Committee before submitting this form.

Using your university email is sufficient to confirm your identity and means we do not require a signature.

Using your university email is sufficient to confirm your identity and means we do not require a signature.

Attachment A - Draft Questionnaire / Survey

Use this page if you are conducting a questionnaire or survey. Surveys often do not allow for the distribution of information sheets and signed consent forms. To obtain informed consent, researchers should begin the survey with a short paragraph informing participants of the nature and topic of the project and indicating that by completing the survey, they are consenting to participate.

Copy / Paste your Draft text into the box below. You might simply edit the example text already given. Note, THIS IS ONLY AN EXAMPLE, any relevant information must be modified to suit your project, including all that text in italics (right click on text to select/remove italics). Include a representative selection of your draft questions. Do not exceed this one page.

Add all or some of your questions here

Attachment B - Draft Information Sheet

Use this page if you are conducting interviews or face-to-face meetings (e.g. observations, focus groups etc.) Each participant should be informed of the purpose and methods of the research, on an Information Sheet. This should be on University of Reading headed paper, and MUST include contact details for the researcher and supervisor / PI. Leave a signed copy of the Information Sheet with the participant.

Copy / Paste your draft text into the box below. You might simply edit the example text already given. Note, THIS IS ONLY AN EXAMPLE, any relevant information must be modified to suit your project, including all that text in italics (right click on text to select/remove italics). Include a representative selection of your draft questions. Do not exceed this one page.

University of Reading

School of the Built Environment
University of Reading
Whiteknights
Reading
RG6 6AW

THE INFLUENCE OF CHANGING WORK PRACTICES ON OFFICE DESIGN

INFORMATION SHEET

My name is Mary Kaaria and I am a PhD student in Construction Management, from the School of the Built Environment at the University of Reading. I am carrying out research on the work activities undertaken by office workers and their co-workers to understand how the office environment and facilities affects office work. I want to understand the workers' experiences when working from different locations and at different times of the day.

If you are willing to participate, you will be requested to record your work activities using a 'work log' for three or four 1-hour periods during a working day when you are working from home. In the 'work log', you will be asked to identify the work activities of those who worked with you on these activities at these times. You will also be asked to provide details of your work environment (e.g. using photographs or sketches) When you are working from the office, I would like to observe the activities you undertake at your workspace, again for three or four 1-hour periods during the working day. I would also like to take photographs, video recordings or make sketches of the workspace; alternatively you can provide these to me. In each case (when you are working from home or in the office) I would like you to take part in a discussion of about 45 minutes, at a time and place of your choice, on aspects of the work you carried out that day.

During the discussion, I will ask you questions on the activities that constitute your work and the time and place where you undertake those activities. I will also ask you questions on what informs your choice of the time and place that you carry out various work activities. With your permission, I would like to record the discussion and transcribe sections of it later for analysis. Copies of the transcript will be available on request and any changes which you ask for will be made.

You can choose not to answer any questions. Photography, sketches and video recordings are optional and you may choose to not have them taken. You are free to withdraw from the study at any time. At every stage, your identity will remain confidential. Your name and all identifying information will be removed from the 'work log' and the written transcript once these are complete. My supervisor and I will be the only people who will have access to the information you provide. This data will be kept securely for a period of three years after the completion of the research (this is a University requirement) and them destroyed, which will be a maximum of 12 months from the completion of the research. The data will be used for academic purposes only. Copies of any outputs, such as articles or presentation slides, will be available on request.

If you have any questions or concerns, please contact me at m.k.kaaria@pgr.reading.ac.uk , or my supervisor at j.connaughton@reading.ac.uk.

This project has been subject to ethical review, according to the procedures specified by the University Research Ethics Committee, and has been given a favourable ethical opinion for conduct.

Signed: Mary Kaaria

Date: 6 May 2020

Attachment C – Draft Consent Form

Use this page if you are using Information Sheets. If the participant is happy to be part of your research project, they need to confirm this by signing a Consent Form. ALL CONSENT FORMS MUST BE RETAINED ALONGSIDE THE COLLECTED DATA, AND SUBJECT TO THE SAME DATA MANAGEMENT PLAN. Make sure this is the same as you outlined in Section 3.

Copy / Paste your Draft text into the box below. You might simply edit the example text already given. Note, THIS IS ONLY AN EXAMPLE, any relevant information must be modified to suit your project, including all that text in italics (right click on text to select/remove italics). Include a representative selection of your draft questions. Do not exceed this one page.

University of Reading

School of the Built Environment
University of Reading
Whiteknights
Reading
RG6 6AW

THE INFLUENCE OF CHANGING WORK PRACTICES ON OFFICE DESIGN

Participant Consent Form – to be retained by the researcher

1.   I have read and had explained to me by Mary Kaaria the Information Sheet relating to this project and any questions have been answered to my satisfaction.
2.   I understand that my participation is entirely voluntary and that I have the right to withdraw from the project any time, and that this will be without detriment.
3.   I understand that my personal information will remain confidential to the researcher and his/her supervisor at the University of Reading, unless my explicit consent is given.
4.   I understand that my organisation will not be identified either directly or indirectly without my consent.
5.   I agree to the arrangements described in the Information Sheet in so far as they relate to my participation.

Signed:
(Participant)

Date:

Attachment D – Any Other Information

(including Draft Interview Questions)

Use this Attachment page to include representative interview questions. Also use this page to include any other information such as leaflets, adverts, recruitment emails etc. This needs to provide enough detail for the Ethics Committee to understand what you are doing and the ethical issues involved.

Copy/paste images or text, or type in, but do not exceed this one page.

Draft Discussion Questions

1. Describe your typical workday from the place and time you start doing work until when you end your workday.

2. How different is today (day indicated in the log from) from your typical workday?

3. Why are you and your co-workers working from different locations, and how does it impact your work?

Those working away from the office.

1. Why did you choose to work in the space / place you are working from today?

2. Describe the re-arrangements you made on the space and objects you to enable you accommodate that work? Request participant to send a photo or sketch of the space.

3. What time of the day did you do your most important work today and why did you chose that time?

4. Other than the locations you have worked from today, which other locations do you work from and why do you select them?

5. How do you compare working from the office with working from other places?

Those working from the office

1. Why did you choose to work from the office?

2. What time of the workday did you do your most important work today? Why did you choose that time?

3. Describe the re-arrangements you made to the space and objects to enable you carry out your work? Request participant to send a photo or sketch of the space.

4. When you are not working from the office, what locations do you work from and why?

5. How do you compare working from the office to working from those other places?

Appendix VI

Example of research license issued by National Commission for Science, Technology and Innovation (Kenya)

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 708938

Date of Issue: **30/March/2021**

RESEARCH LICENSE

This is to Certify that Miss.. Mary Kaaria of University of Reading, has been licensed to conduct research in Nairobi on the topic: The influence of changing work practices on office design for the period ending : 30/March/2022.

License No: **NACOSTI/P/21/9807**

708938

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document,
Scan the QR Code using QR scanner application.

Appendix VII

Authorisation to carry out research within the organisation

Kenya Power

The Kenya Power & Lighting Co. Ltd.
Central Office – P.O. Box 30099 – 00100, Nairobi, Kenya.
Telephone – 254-02-3201000 – Telegrams 'ELECTRIC'
Fax No. 254-02-3514485
STIMA PLAZA, KOLOBOT ROAD

Our Ref: KP1/5BA/42D/DEO/mi

5th August, 2019

Mary Kaaria,
P. O. Box 30099-00100
Nairobi, Kenya.

Dear Mary,

RE: DATA COLLECTION AUTHORISATION

Reference is made to the subject matter mentioned above. You have been allowed to carry out field research on the use of office buildings with a view of examining how work practices influence design of offices.

The data collection will be conducted between **August 2019** and **December 2020** within the Company premises.

This authority notwithstanding, you must exercise confidentiality of company information. The Research Project should also not disrupt normal working hours and Company's flow of work.

A soft copy of the final research project should be forwarded to the Manager, Learning & Development.

If in agreement with the above, please sign hereunder:

Researcher

Name: ...Mary Kaaria... Sign: ....
Date .....5/8/2019................ Academic Institution: ...University of Reading, UK.

Yours faithfully,
For: KENYA POWER & LIGHTING CO. LTD.

D. N. MBURU
For: MANAGER, LEARNING & DEVELOPMENT

Kenya Power

The Kenya Power & Lighting Co. Ltd.
Central Office – P.O. Box 30099 – 00100, Nairobi, Kenya.
Telephone – 254-02-3201000 – Telegrams 'ELECTRIC'
Fax No. 254-02-3514485
STIMA PLAZA, KOLOBOT ROAD

Our Ref: KP1/5BA/42D/HAO/eo

3rd March, 2021

Mary Kaaria
P. O. Box 30099-00100
NAIROBI.

Dear Mary,

RE: EXTENSION OF RESEARCH APPROVAL

Reference is made to the subject matter mentioned above.

We have extended by one year (from 31st December 2020 to 31st December 2021) an approval granted to you to carry out research in the company following your request via email dated 18th February 2021.

Yours faithfully,
For: **KENYA POWER & LIGHTING CO. LTD.**

HUMPHREY OTUKO
For: MANAGER, LEARNING & DEVELOPMENT

Information sheet to participants

School of the Built
Environment
University of Reading
Whiteknights
Reading
RG6 6AW
United Kingdom

1st June 2020

THE INFLUENCE OF CHANGING WORK PRACTICES ON OFFICE DESIGN

INFORMATION SHEET

My name is Mary Kaaria and I am a PhD student in Construction Management, from the School of the Built Environment at the University of Reading. I am carrying out research on the work activities undertaken by office workers and their co-workers to understand how the office environment and facilities affects office work. I want to understand the workers' experiences when working from different locations and at different times of the day.

If you are willing to participate, you will be requested to record your work activities using a 'work log' for three or four 1-hour periods during a working day. In the 'work log', you will be asked to identify the work activities of those who worked with you on these activities at these times. When you are working from the office, I will request to observe you at your workspace. I will request your permission to take photographs, video recordings or sketches of the workspace or request you to provide me with a photograph or sketch of the workspace. At the end of the working day, you will be requested to take part in a discussion of about 45 minutes, at a time and place or medium (e.g. via telephone or video call) of your choice, on aspects of the work you carried out that day.

During the discussion, I will ask you questions on the activities that constitute your work and the time and place where you undertake those activities. I will also ask you questions on what informs your choice of the time and place that you carry out various work activities. With your permission, I would like to record the discussion and transcribe sections of it later for analysis. Copies of the transcript will be available on request and any changes which you ask for will be made.

You can choose not to answer any questions. Photography, sketches and video recordings are optional, and you may choose to not have them taken. You are free to withdraw from the study at any time. At every stage, your identity will remain confidential. Your name and all identifying information will be removed from the 'work log' and the written transcript once these are complete. My supervisor and I will be the only people who will have access to the information you provide. This data will be kept securely for a period of three years after the completion of the research (this is a University requirement) and then destroyed, which will be a maximum of 12 months from the completion of the research. The data will be used for academic purposes only. Copies of any outputs, such as articles or presentation slides, will be available on request.

If you have any questions or concerns, please contact me at m.k.kaaria@pgr.reading.ac.uk, or my supervisor at j.connaughton@reading.ac.uk.

This project has been subject to ethical review, according to the procedures specified by the University Research Ethics Committee and has been given a favourable ethical opinion of conduct.

Mary Kaaria
1st June 2020

Appendix IX

Participant consent form

School of the Built Environment
University of Reading
Whiteknights
Reading
RG6 6AW
United Kingdom

THE INFLUENCE OF CHANGING WORK PRACTICES ON OFFICE DESIGN

Participant Consent Form - to be retained by the researcher
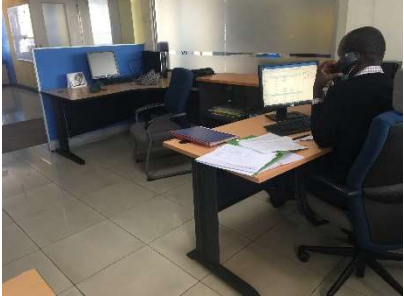
1. I have read and had explained to me by Mary Kaaria the Information Sheet relating to this project and any questions have been answered to my satisfaction.
2. I understand that my participation is entirely voluntary and that I have the right to withdraw from the project at any time, and that this will be without detriment.
3. I understand that my personal information will remain confidential to the researcher and his/her supervisor at the University of Reading, unless my explicit consent is given.
4. I understand that recording of the interview will only be carried out with my consent and any portions that I do not wish to be recorded will be blanked out.
5. I understand that photographs / sketches and video recordings of my workspace will only be taken with my explicit consent.
6. I understand that my organisation will not be identified either directly or indirectly without my consent.
7. I agree with the arrangements described in the Information Sheet in so far as they relate to my participation.
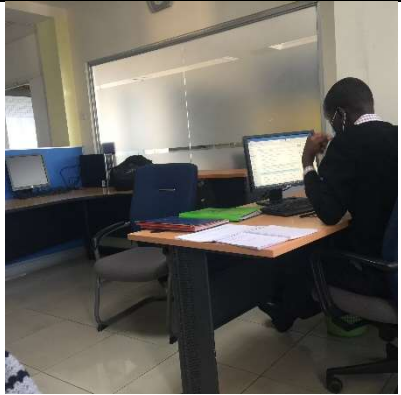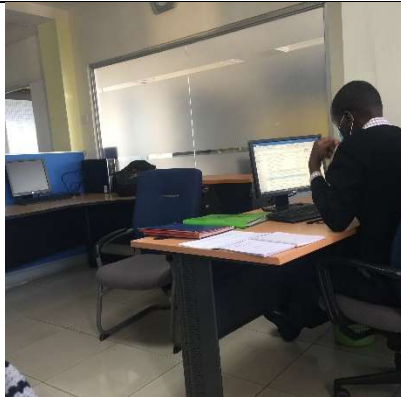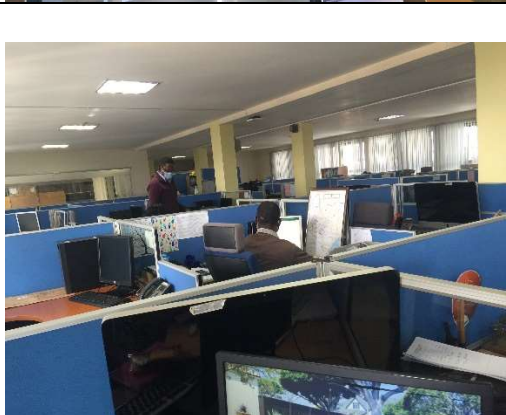
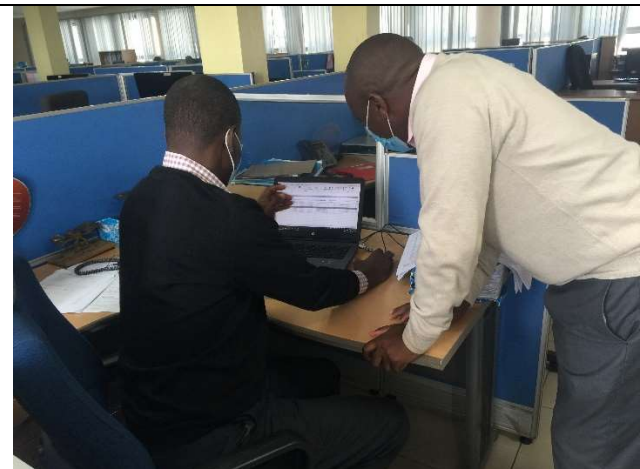Signed:_____
      (Participant)

Date:_____

Appendix X

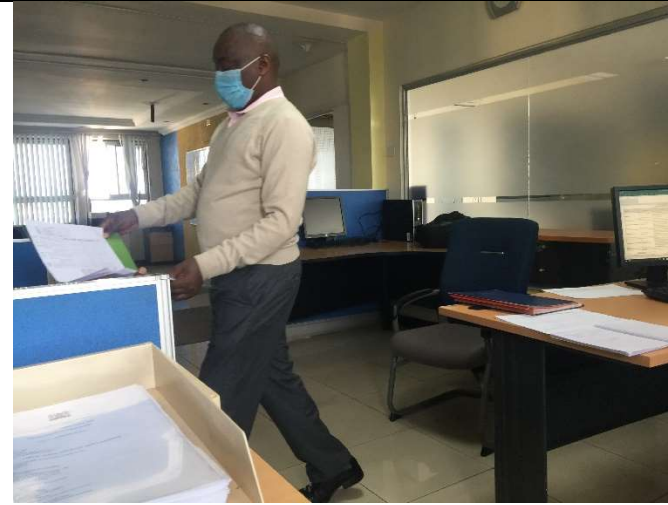**Extract of tabulated field notes**

Description of what is going on – the observation	Transcribed semi-structured interview and discussions with P1 and additional images	Transcribed discussion with CW1 and additional images	Images of setting
9.30 Speaking on telephone extension while working on a word document on the PC and reading the various paper documents that are spread out of an open green spring file. The papers are not files but are loose. The manager's folder is also at the tip of his desk but its closed. Picks another call on the telephone extension and talks about relocations that are proposed. He seems to give assurance to the person at the end of the line on the location selection.	Participant was working on his appraisal document and that of his team members. He was on the phone with HR asking them to give him information he required to attach as evidence. When the phone extension rang, the caller wanted to know where they were going to be relocated to. 'I was assuring them that we can't move them without telling them so we will make do layouts and discuss with them'.		
9.33 he arranges the documents into the green spring file and closes it clearing his desk and arranges the green file, a printed appraisal form, his notebook and the manager' folder on is desk.	Do other people also give memo /hard copy document a higher rank? I believe so, but there is a level of understanding of how the office works but when a document is sent with a memo most team members, including my colleagues in other departments, take it more seriously. In serious of communication between coming physically or sending an email? From other departments, if they come my desk then I know the matter is serious. Maybe they know I have not read their email or I have not been at my desk so am not accessing email. Like today there is someone who came so I gave them full attention and take them seriously and give feedback by end of the day. The reason that why the person comes is what gives it importance and not the mode. If some takes a walk I feel some one has a real issue. Its different from writing an email. If CW7 says I want to speak to you Mr P1, I say let me finish what am doing I listen to you.		

9.34 am He focuses his attention back to the PC and uses his mouse to move from the word document to the email window. He then switches from email to an excel document and back to the email. He is looking for information to collaborate hard copy documents on his desk. The excel document is a performance appraisal and the hard copies on his desk are performance appraisal documents of staff and documentary evidence they have given to support the achievement they have stated in the appraisal document. He also has a printed copy of his appraisal which he has made handwritten notes various parts on the document. The printed copy is an older version and he has a current version which he has opened in his computer.	The appraisal submission deadline was communicated to him last week by GM last week ..it came last week. 'and I had a deadline – today, and there were so many other things more urgent that her deadline. So yesterday I decided to plan that today morning when I arrived I start with that and by the end of the day I submit and meet the deadline. So I started with that item in the morning. It came by way of email and I slotted it in my daily to do list. For the whole list my items are about 20 (shows me the note pad with a list of things to do). I have done 4 conclusively, the appraisal was low on my list'. The to do list is listed in his notebook. When dealing with a senior person is it different? When senior than me, am very polite, harmless listen to them then I unleash mine. this is on face-to-face. I hardly call if its senior than me unless if I found a missed call. If a matter must be sorted by someone senior than me I do face-to-face, I don't do email. Unless if I am responding to a query. If was working with a GM I don't know the last time I did an email to gm because the structure is almost manager to manager. So if its GM I have to walk there and state the matter. Those below? I just walk to them and give instruction from their desk ' people we need this can we have it'. They are my peers though I am more senior in position, so when I get to their desk I give instructions and when I realise they don't realise it's a matter they need to take seriously I say ' this is an instruction and am going to follow with an email'. Because they forget sometimes and think we are equals. We are equals yes but in terms of work I am the one who gives instructions. They can send the emails anytime. And for them before they send they come and say.		
9.37am Arranges the documents into the green file and closes it. The places the green file side by side with the manager's folder at the far-left corner of the desk. He also opens a page on his notebook and spreads the open notebook in front of him on the left side of the desk. He pulls out his printed appraisal document and other documents from the green file and places is in front of him between the notebook and the file. He refers to the notebook as he browses emails looking for a specific email.	Order / sequence of the appraisal activity? For that activity, no. because there were several items and I had to get what was pending. So I had to get what I could immediately get. So I couldn't wait until I get to one to get to the next. It was based on availability.		

9.47am Calls CW2, opens the green spring file gives him some of the papers he has. They are documents on performance appraisal of staff that need to be returned to staff for clarification. CW2 returns back to his desk and later takes the documents to the respective staff. CW2 gives him a printed A3 document and a piece of paper written by hand.	I had appraisal document, what am assessed on, I was verifying the data from CW10 and CW2 and was verifying if we had put the right information as what we have in the folders. So I had to confirm. Every time a document is going to the next level I have to confirm and consult with my colleagues, whether they are here or I call them or I walk to them.		
9.48 the green file and he has pulled out some documents closer to him. He browses his cell phone. Calls ICT on network issues – can't access shared folders Th email window on his PC is still open.	The phone was very important because there was information, I needed from people who don't seat here with us. So I kept calling them on the extension. I called our HR office and asked them 'where is the document?'..'scan it'.. so I used the printer, office phone. When I could not get them on the extension, I used the mobile.		
9.49am Calls out to CW1 and asks him if he can access the shared folder online. A one and a half meter walkway separates CW1's desk with P1's. CW1 is working on his laptop at his desk. He responds aloud 'let me check' without removing his eyes from the laptop. Using his mouse, CW1 moves to the my documents screen on the laptop and click on some folders. He turns to Were and says the he can access.			
9.51am P1 goes to seat at CW1's desk to access shared folders from CW1's laptop. On right hand side of CW1 desk is a large blue spring file which CW2 had retrieved from the bulk filer. On top of the file is a drawing printed on A3. On the left hand side of CW1's desk is a telephone extension and another drawing printed on A3. .	The computer is everything for us. The network was low, so I called ICT to fix my network so that I could access the details from the shared folders. I was just imagining if ICT could not have restored my folders. The shared folder has made it better, especially during the period when I act. I not only have the information of my section but also the information of other sections. Am able to get information immediately because I can access it from the folders. Remember when you were looking for information on management paper Nyali and you were in a meeting? Before the meeting ended we already had the information. Instead of going to the files and not all of us are familiar with the filing catalogue.	We are engaging technology. For example whatever I was looking for from CW2, I have come to see that I had it in the shared folders (online), am able to access the same document that I could not get in the (physical) file through what I had saved in the shared folder. The same is what P1 was requesting, at the moment he was not able to access his shared folders so technology I am able to access on his behalf and I can get the material through the system. So even the drawing that we are preparing, once we agree, we scan then and share them in the shared folder. Even when I am not around some else can access and go on with the work that required urgent attention. We are also developing another application for inter-relating our work within the dept. At the moment we have not reached there but we are working on it.	

While seated at CW1, Were calls CW2 who is seated inform of him. CW2 stands at the edge of the partition and faces P1. CW2 and CW1 are separated by a half height partially glazed partition. P1 and CW2 hold a conversation.			
9.53am. P1's phone extension rings. He goes back to his desk to pick it. ICT are checking if his network now ok. He bends over and looks at to his PC screen and uses his mouse to manoeuvre around the screen. He seats and continues to use his mouse.			
9.53 P1 returns to CW1s's desk and seats on CW1's chair.		Change of interaction following entry of shared folder? Yes, the frequency of getting to the files – retrieving, since the materials (records).. if you scan them as you file them you will find there is no need of getting to the files now and then. So you can access the shared folder and attach it what is required. It reduces the time it takes to get to the files, looking, searching,.. even if you don't have someone acquainted with the filing system you are able access the records.	
9.54 CW2 turns to his desk and gathers the papers he had to picked from P1 and takes them to Alice.			
9.57 He calls CW1. CW1 comes and they both look at an excel sheet of the schedule of ongoing projects that is on the laptop screen. P1 points at the screen while speaking to CW1 and shows him the discrepancies he has identified.			

9.58 P1 asks CW1 to bring the green folder that is on his desk. CW1 goes to P1's desk and picks an open green spring file while putting together the documents that are loose so that they don't spill out of the file. He carries it while it is open without closing the file. The documents are not in a neat pile and some are slightly overflowing outside the file. P1 received the file and opens it. He goes through the documents and points a particular one to CW1. CW2 returns and joins them in the conversation. The conversation is about the information given to back the achievement on the appraisals.		
9.59 CW2 returns and joins them in the conversation. The conversation is about the information given to back the achievement on the appraisals		
10.00 P1 returns to his desk with the green file. The A3 printed project schedule and Manager's folder is still on his desk. He places the file on his desk on top of his desk next to his notebook. The documents he has come with are not arranged properly in the green file. He arranges them and puts them inside the green file. P1 still has the printed appraisal form on top of his desk. CW2 has followed him to his desk and stands by his desk and has come with 2 other appraisal forms that have their supporting documents stapled to them. P1 places his printed appraisal form on top of the green file. They both look at a printed appraisal forms for the staff that CW2 has come with. CW2 shows him the adjustments that the staff have made on their forms. P1 is sorting some of the documents on his desk and CW2 is pointing at particular ones..	Reviewing documents with CW2: That is a daily affair. CW2 is a bridge between me and the team. He is the second last eye. Before it gets to me it has almost passed the test so I just check through and ask him what he has checked. So the rest of the team sends documents there and he scrutinises it. So for me because of the hurry I may not verify everything so he checks correctness of documents.	

They are appraisal documents for other staff. CW2 checks the completeness of the documents and arranges. CW2 rearranges the documents while standing. At the same time, CW1 goes to printer sanitized and starts to press the printer buttons.			
10.04 P1 picks a call on telephone extension. CW2 is still standing at his desk. CW2 then seats on the visitors fabric chair in front of P1's desk. CW1 returns from the printer and stands at P1's desk with printed documents. CW2 stands and goes to the printer. P1 picks a phone on the mobile. CW1 returns to his desk. CW1 is compiling documents for a payment. He prints the documents.			
10.05. P1 is speaking on the his mobile phone while looking at the computer screen. He completes the conversation, places the phone on the desk and continues moving the mouse and concessionary typing on the keyboard. He moves from the excel sheet he was working on to the email and opens another excel sheet attached to the email. The excel sheet contains the list of staff and the outstanding leave days and those that should be taken by end of June.			
10.08m P1 call out CW7 who is passing by on the central corridor. CW7 turns and approaches P1's desk. P1 starts talking to him as he turning his computer screen to face the direction CW7 is coming from him. P1 gets distracted by a ringing phone and CW7 goes to his desk and seats. P1 picks the mobile phone talks about leave and asks for more information on other items required for the appraisal. The caller at the end of the line is a HR staff.	Phone call was to HR about leave days schedule:		
10.10 P1 calls out CW7 again. CW7 stands to have view of the P1 over the half height partition that separates his cubicle with P1's. P1 asks him when he plans to take his leave. CW7 responds that the leave days in HR report are wrong. This bringing laughter to	People walking to desks and not using extensions? Infect I don't know their extensions. I have never thought of it but it could be out of culture - 'Why should I speak to you on phone and you are just here? why cant you come to my desk?' including emails within ourselves ' why should I write no CW7 an email?' if I do that then it is a matter that		

the staff around him. The staff around CW7 join in the conversation about annual leave while P1 continues referring to an excel document in his pc. CW7 clarifies that he has taken leave and his pending leave days should not be as many as reported. P1 asks where CW6 is. CW7 responds over the partition that CW6 in not in the office.	must be tracked and is on record. Other wise I just walk to his desk.		
CW7 seats the cubicle next to P1's. CW7's cubicle has 5 other staff all belonging to the same section with those of P1's cubicle. P1's cubicle has 4 staff.			
10.15am CW1 goes back to the printer, sanitizes and scrutinizes the printed work before returning to his desk.		My routine is whenever I have shared something, even the drawings we were sharing, when I get back to my desk … I have a small sanitizer there.. I sanitize. I hand over something and get it back, I sanitize. When I get to the printer I sanitize there and when I get back I sanitize. Wherever I am I have to have my sanitizer, even when I am walking around.	
10.15 amP1 works on an excel document. Starts to prepare an email.			
10.16am CW2 comes with his tea and starts working on SAP.			
10.20am CW2 brings back a document to P1. P1 continues to working on the email.	its abit hard to retrieve the physical documents. Everyone sends CW2 not because they are lazy but because they cannot retrieve it as fast as him. I cannot also retrieve hard copy documents as much as I can but the shared folder is just a lick. The challenge is when there is no network. But the shared folder is more convenient.		
10.23am CW7 comes to P1 desk they have a discussion as P1 walks to CW10's desk.			
P1 stands at CW10's and has a starts discussing to him. CW10 is pointing at his computer screen as they speak. CW10 seats in the third second cubicle after the door. there is one cubicle between P1's and CW10's cubicle. CW10 shares his cubicle with 5 colleagues in his section.	CW10 was working on a critical activity in the department. He was meant to have done a response of our letter from the Treasury, so there are documents I had requested on his behalf .. the board resolution, the procurement plan.. I received the document from Joyce and sent to him. I wanted to confirm that he understands this is the documents he required to attach and concur with him that this is ok. He was also compiling his own report and I needed to confirm. They were running concurrently, and I needed to carry him along.		
10.28 am While at CW10s desk P1 hears his cell phone rings. He goes back to his desk to	'When I go to his desk I don't seat. I stand and its it's a discussion I turn his PC. He takes me through. He is the one who takes me through. But when he comes, then he		

pick it. He walks back to Philemon with it while still speaking on the mobile.	expects me to ask questions about what he is doing. But when I go, he takes me through. When he comes here he expects me to ask questions (as supervisor), when I go he takes me though (as peer).		
	no I don't carry my hierarchy when I go there, but when they are here I am almost the supervisor so when they come they say ' you called me ' but when I go they say 'here it is' 'what you wanted, give me time'		

Appendix XI

Coding structure

A. List of descriptive codes developed.
    1. The physical environment
        a. Movable and fixed objects. Fixed objects being objects that were static during the performance of the work. This includes objects that had predetermined arrangements and the office worker was not at liberty to move them. Movable objects being those that were not static during the observation.
        b. Spaces including individual workspaces and shared spaces.
        c. Physical attributes
        d. Spatial arrangements
            i. Prefigured
            ii. Rearrangements
    2. Activities of office workers:
        a. Doings
        b. Sayings
        c. interactions
    3. Roles and use of observed objects and spaces.
    4. Boundary and connecting roles of observed spaces and objects.
    5. Factors contributing to roles and uses of objects and spaces including:
        a. Choices and preferences
        b. Shared objects
        c. Importance of object, space, activity
        d. Benefits of attribute,
        e. Concurrent use
        f. Conflicting use
    6. Meanings assigned by the office workers to activities, objects, and spaces. This includes:
        o Significance of objects and space
        o Significance of activities

B. Development of relationships between codes

Relationships in literature	Relationships identified from the data collected
1. Practices are connected by materials, meaning or significance and competences of agents. (Shove et al 2012) 2. Practice arrangements and material arrangements determines the social (human coexistence) (Schatzki 2010) 3. Time interconnects and determines material arrangements (Schatzki 2010; Orlikowski 2007) 4. Site of the social and the actions of practice are prefigured by material arrangements (Schatzki 2010) 5. Site of the social and context determines agencies and artefacts of practice (Halford and Leonard 2005) 6. Materials and material arrangements determine practices and practice structure. (Miettinen and Virkkunen 2005; Schatzki 2010) 7. Practice structure determines temporal ordering (Kietzmann 2013; Southerton 2006; Orlikowski and Yates 2012) 8. Time (both objective and real) determines and organises social practice (Moran 2015; Ramo 2004; Schatzki 2006;; Southerton 2012; Orlikowski and Yates 2012) 9. Time / temporal organization of the day determines temporal ordering and structure of practices. (Orlikowski and Yates 2012; Southerton 2012) 10. Practice structure and material arrangements have mutual relationship with practice (Nicolini 2007; Nicolini 2009; Schatzki 2006) 11. Material arrangements determine /precede practices (Schatzki 2010: Orlikowski 2007)	1. Doings with spatial arrangements. 2. Connections with convergence – including convergence as a temporal connecting role. 3. Choices and preference of objects and spaces and significance attached to the objects and spaces. 4. Choices and preferences of use of objects and spaces with roles they were used for. 5. Mode of interactions with objects used. 6. Mode of interaction with (re)arrangements. 7. Roles and significance of observed objects and spaces. 8. Role of objects and spaces with spatial arrangement. 9. Physical attributes of observed objects with spatial arrangements. 10. Concurrent use of spaces with mode of interaction – temporal uncertainty and disorder. 11. Sayings with relevant mode of interaction.

Relationships in literature	Relationships identified from the data collected
12. Practices determine temporal structures (Southerton 2012; Orlikowski and Yates 2012) 13. Agents are the carriers and key objects of practice (Reckwitz 2002)	

C. Categorisation of themes

Theme	Categorisation framework from existing literature		Items to be identified from data collected
	conceptual	theoretical	
Type of work	Collaborative, communication and concentration work	• Social practice elements: skill, meaning, materials. • Interconnectedness of social practices.	• Objectives of the (inter)actions of workers. • Objects, spaces and facilities used. • Role of worker and co-workers • Mode of interaction / access to work and to co-workers. • Reasons for interaction • Objects, spaces used for interaction. • Linkages used for interaction and to interconnect workers and work (objects, time and spaces).
workspace	• Locations • Objects: tools, furniture, • Facilities available • Open / closed office (visual and acoustic privacy)	• Site of practice • Spatial arrangement • Material arrangements	• Objects and facilities used at various spaces. • Fixed and changing use of spaces and objects. • Shared and single user objects / spaces. • Reasons for use those objects / spaces. • Improvisation, sharing and rearrangement of

			objects in the spaces used.
Time of work	• Routines • Ad hoc / spontaneous	• Temporal arrangement • Temporal ordering • Temporal sequence	• Schedule / sequence of work in a day. • Routine/ predetermined work. • Spontaneous work • Discretion on when to do work. • Reasons for time of work.
Intention	• Purpose of work • Roles assigned	• Meaning	• Norms • Preferences