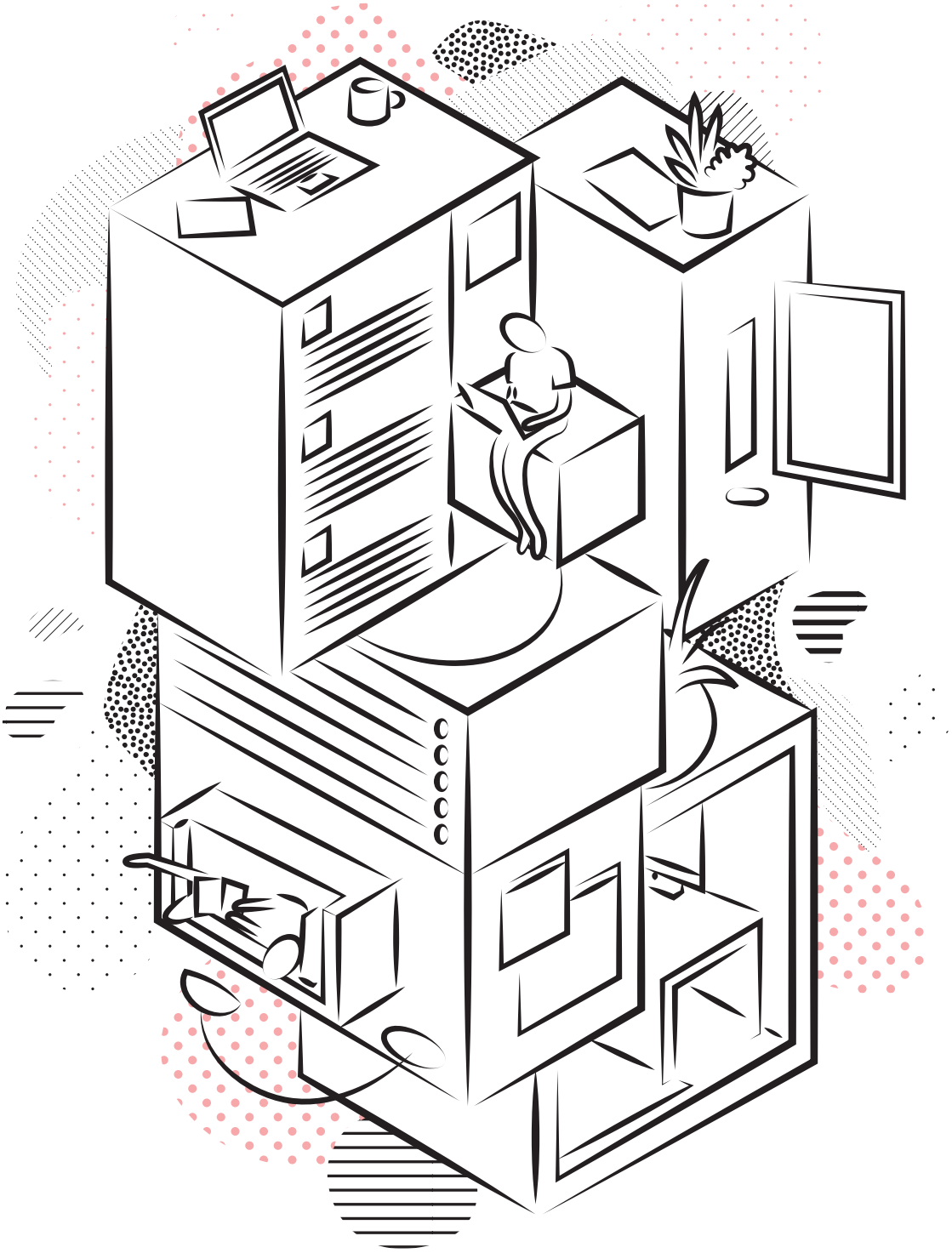
Re: Remote work

AN EXPLORATION OF THE PAST, PRESENT, AND POTENTIAL FUTURES OF OUR WORKPLACE SETTINGS

RACHELLE BUGEAUD



Re: Remote work

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BY

RACHELLE BUGEAUD

A major research project submitted to OCAD University in partial fulfillment of the requirements for the degree of Master of Design in Strategic Foresight & Innovation.

Toronto, Ontario, Canada
December, 2018

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ABSTRACT It is no secret that the way in which we work has been changing. We are working from more locations, on more projects, and in more collaborative ways. However, there is room for improvement as a more personal, human-centered approach to the design of workplace settings and/or services could render working from remote locations more enjoyable. These locations comprise the ‘alternative workplace’ that is gaining in popularity as numerous trends shape the future of work, of workers, and of workspaces.

This is an important area of investigation as we attempt to transition our society towards more efficient, engaging, and flexible ways of working. The research question this project explores is, “how might we better design workplace settings to best support the needs of current and future remote workers?” The research aims to uncover existing frustrations associated with the alternative workplace experience by way of survey, cultural probe, and observations. These findings are used to inform a range of opportunity areas, and inform a designed concept briefly described as an example solution. The research looks at the past, present, and potential futures of the workplace in order to understand ways in which our workplace settings and/or services might be made more suitable to the changing workplace demands and our human needs and desires.

Keywords:

WORKPLACE, FORESIGHT, FUTURE OF WORK, REMOTE WORK, WORKPLACE SETTINGS, WORKPLACE SERVICES, HUMAN CENTERED DESIGN, TRENDS, SCENARIOS.

ACKNOWLEDGEMENTS This project would not have been possible without the unfaltering support and words of motivation of my partner, Cody, and my parents. Thank you for believing in me and giving me hope in me in my most stressful moments.

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Finally, thank you to all of those who managed to share their opinions with me. To those who took the time to fill out the online survey or participate as a workbook participant. To those who agreed to be interviewed, and to those willing to share pertinent finds. To those eager to help me work through an idea, and to those just willing to hang-out and get me out of the house! Your contributions have helped shaped this project in a significant manner.

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This is what you're about to get yourself into.

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FOREWORD

Before we get started.

It is equally useful to note the intended audience of this research project in order to better understand its organization and style of delivery. The way this project was approached was first and foremost as an academic research project for OCAD University, with the added benefit of serving as an example project for clients wishing for in-depth research framed by a research question. In this sense, the pacing and investigatory nature of the project is highlighted, and the overall design of the presentation of the research has been done in such a way to make the information as accessible and interesting to the widest possible audience. As such, this MRP was designed as a sort of magazine, with a pair of booklets to supplement the main report. The sections of a traditional research paper are included, albeit presented in a less rigid manner.

Readers that may find this research interesting include those who find themselves in remote working positions, those in human resources, those involved in devising workplace change strategies, those in furnishing industries, workplace technology outfitters, and coworking spaces.

SUPPLEMENTS

Trends booklet

Scenarios booklets

ABOUT THE AUTHOR

Rachelle Bugeaud is a designer working to improve the human experience by tackling complex design challenges. She holds an Honours Bachelor of Design degree from the University of Alberta (2011), with semesters spent at the Köln International School of Design, and the Fachhochschule Münster. Her background lies in product design, although her skillset branches beyond the design of physical artefacts to include the design of experiences, information, and services.

EXECUTIVE SUMMARY

TL;DR

This MRP outlines the ways we may begin to think of the workplace as more than just furniture in space but rather as a personalizable platform capable of (re) defining who we feel we can become. By thinking of the workplace as a platform composed of workplace tools, services, environments, and experiences capable of shaping our social connections, expanding our knowledge, and inspiring self-growth we may begin to define the potential that the future holds for creating flourishing workplaces.

Remote working is a popular alternative to traditional office life, and is a practice that is projected to gain in popularity and potentially come to define the future landscape of work. For this reason, this project explores the design of current and future workplaces from the lens of remote workers in order to find opportunities to render the remote working experience more enjoyable to its users. There is reason to improve this experience in order to render it a more viable option to a larger demographic.

The research question this MRP uses to frame the boundaries of investigation is “how might we better design workplace settings to best support the needs of current and future remote workers?” This research question is essentially composed of three sub-questions which guided the investigation.

The first is how can we design better workplaces? To answer this part of the question I looked at the current best practices for designing workspaces - what are some themes guiding the ways designers currently approach workplace design, what theories rationalize our relationship to space, and what are some contemporary manifestations of it. It’s in this phase that I also took a look at the past and created a historical timeline of the workplace.

The second sub-question is what are the needs and/or desires of current remote workers? To uncover this I sent out an online survey as well as cultural probes (Workbooks). I also did observations when I myself was working remotely.

These primary research activities uncovered opportunities for workplace tools and/or services that could mitigate feelings of social isolation, and designs that would allow individuals to customize their personal workplace environments to suit their changing desires for auditory and visual distractions, safety, and security. Another wish expressed by participants was that of more comfortable workplace furniture that took into consideration mental, physical, and emotional comfort.

From looking at the research completed for these first two sub-questions I distilled the findings into four key design guidelines that inform the needs and desires of remote workers with regards to their workspaces. These desires are for efficient (productive, adaptable, convenient), comfortable (physical, mental, emotional well-being), social (social connections and belonging), and inspirational (self-actualization, self-expression, discovery) workspaces.

The last sub-question of the research is what are the needs and/or desires of future workers? To uncover this I did a horizons scan and compiled macro-trends that informed a foresight exercise in which four scenarios were written. These were framed by the use of a critical uncertainties cube (an expansion of the traditional 2x2 critical uncertainties matrix) made up of the following axes: trust or distrust of technology, separation or integration of work and home, and work being motivated by inner or external values.

These scenarios expanded the scope of possibility for the design of future workplaces. They helped frame a strategy composed of five innovation intents. The five innovation intents are adaptable and responsive environments, the pairing of artificial and natural intelligences, shared workplaces and tools, the expansion of socially acceptable working preferences, and more forward thinking uses of existing spaces and future workplace developments.

Finally, the MRP wraps up with a series of guiding visions and strategic initiatives for public, private, and shared workplaces. These initiatives are meant to act as actionable points for designers and creators of future workspace tools, furnishings, surroundings, and services. The guiding visions are as follows:
Private space: Design of home offices that support proper ergonomic comfort and help a user maintain a desired work-life balance.

Private-shared spaces: Shared spaces that leverage the network of individuals and tools to provide a more high-performing and inspired workspace.

Public-shared spaces: Semi-private workplaces that are mindful of an individual’s desire for privacy and fast, reliable connectivity, as well as is mindful of strangers’ desires for an undisturbed environment.

Public spaces: Public work settings that maximize personal comfort, safety, and connectivity while leveraging the entirety of urban environments.

The very last section of the paper summarizes the project’s next steps and future research opportunities which includes rounds of more targeted research for each of the types of workplace environments identified, and generative sessions with remote workers which could help individuals reveal further insights for the design of future workplaces.

To summarize, this research has demonstrated that by approaching the design of space from a more holistic point of view, we may better position ourselves to successfully design future workplaces as platforms that allow ourselves to flourish as individuals, and by extension facilitate our societies to prosper and our economies to thrive.

INTRODUCTION

To begin, let's frame what this research is about and why it's worthy of further investigation.

WHAT THIS CHAPTER IS ABOUT

This chapter is about setting the groundwork for the rest of the report. Its purpose is to help us better understand the extent of the problem area.

CHAPTER HIGHLIGHTS

Overview of workplace shifts
Boundaries of investigation
Workplace ingredients
Layers of the workplace

01 What is changing about the way we work?

Before we begin, let's outline the types of changes today's workplace is seeing.

It is no secret that the way in which we work has been changing. Digital nomadism, a term used to describe the practice of being a location-independent worker, and advances in information technology (IT) is allowing individuals to pursue their careers with more agency than ever before. Our working styles are therefore becoming more flexible, and this flexibility is extended to our choice of workplace environments. Head to any local coffee shop and you will most likely find at least one individual working away in front of their laptops. Indeed, technology has facilitated the development of digital tools and mobile products that are, among other things, facilitating our flexible working styles, allowing employees to spend the day working from home, freelancers to work while traveling, and permitting international project teams to collaborate with relative ease.

To attempt to describe all of the changes affecting the current reality of work would require a global, systemic, and holistic analysis of macro-developments, sociocultural interplays, and personal motivators. This task is outside of the purview of this project, however, it is possible to use larger trends to describe some of the ways in which our notion of work and the workplace is shifting. These larger tendencies include items A-H listed on this page.

Admittedly, it is not difficult to notice the numerous trends shaping the future of work, of workers, and of workspaces. Curiously, what does not seem to be evolving much are workspace services, tools, and environments that cater specifically to remote working tendencies. Other than coworking spaces and home offices, there are not many specifically designed remote working innovations.

This research project therefore looks at a compelling area of investigation that lies at the intersection of the design of workplace settings (which includes furnishings, tools, and environments) used by remote workers and the difficulties (such as maintaining proper work-life balance, feeling socially isolated, and challenges in maintaining productivity) associated with the remote working experience.

The question this research raises is whether the difficulties experienced by remote workers could be mitigated through better designed workplace settings and/or experiences. The research project seeks to inform the design of workplaces purpose-built for remote working needs and desires, as opposed to having individuals continue to make do with co-opted settings as workplaces. This project also seeks to push the definition of workplace settings to not only include physical considerations such as space and materials, but also intangible considerations such as social value and emotional well-being. As such this project takes an interdisciplinary lens to attempt to clarify how we might create more ideal work settings of the future.

This is an important problem to solve as we hope to transition our style of working towards one that is more sustainable for cities and enjoyable for individuals. Our ecological footprint is growing, and we must find ways to limit and reduce our consumption. Although offering remote working options to employees may not seem like it would have a great impact on the sustainability of our cities, research suggests that teleworking can be used to lessen urban sprawl (Nilles, 1991), and the decentralization of a traditional downtown working core could render cities more resilient should any event disrupt them (Sato & Spinks, 1998).

A — Changes in the ***way individuals choose to pursue their livelihoods***, ranging from selectively shortened employment periods (career jumps) to choosing to partake in the gig, or contingent work, economy.

B — A shift in ***who makes up the workforce***, with a move towards increased employee diversity and questions of artificial beings coming into the workplace.

C — Changes in ***what we consider to be a workplace***, including developments of coworking spaces.

D — Changes in ***where we feel comfortable working***.

E — Shifts in ***when we're expected to work***.

F — Changes in the types of ***workplace flexibility we expect of employers***.

G — Shifts in the ***types of tasks*** expected of employees and teams.

H — Changes in the ***types of projects*** and the types of teams required to accomplish said projects.

02

Boundaries of investigation

The area of investigation for this Master Research Project lies at the intersection of the workplace, shifting trends, and user-centered design. FIGURE 1 provides a visual representation for the boundaries of this research project. Within these boundaries, the subset of 'remote worker' emerged as a key link between all four themes, more so because it is a growing demographic expected to include 40% of the American workforce within the next five years (Sosa, 2018).

Remote workers are individuals who work from an alternative workplace, often away from their managers, if they should have one (Staples, 2001). Other terms used to describe remote workers include agile workers, digital nomads[1], neo-nomads, global nomads, modern nomads, and new nomads (Müller, 2016). The main determinant of a remote worker is that they work anywhere other than a traditional office setting, however, we have to be mindful that part-time remote employees are still to be considered part-time remote workers even though they spend the majority of their time working from a traditional office setting.

As will be discussed in forthcoming chapters, remote working practices act as a signal of change that is actively shaping the future of work and by extension, the future of the workplace. The term worker is used in this research project since it is a term that includes individuals in various work arrangements, including freelancers, contractors, and employees. Broadly speaking, this project seeks to explore the ways in which remote workers of all backgrounds influence the built environment, and the ways in which the built environment shapes the behaviours, emotions, and actions of remote workers.

Although an interesting question, this research does not investigate *why* workplace furnishings have not changed much over the centuries. Instead, the crux of this research project seeks to offer an *evaluation* of current remote working environments and an *exploration* of possible future remote working scenarios in order to craft strategies guiding the design of more enjoyable workplace experiences and settings.

1 THERE IS, HOWEVER, A DIFFERENCE IN THE GLOBAL PERCEPTION BETWEEN A REMOTE WORKER AND A DIGITAL NOMAD. REMOTE WORKERS ARE A GREATER COMMUNITY COMPOSED OF PEOPLE WHO WORK FROM ALTERNATIVE WORKPLACES AND DIGITAL NOMADS ARE INDIVIDUALS WHO DO THIS WHILE TRAVELLING THE WORLD. IN SHORT, A DIGITAL NOMAD IS A REMOTE WORKER, BUT NOT ALL REMOTE WORKERS ARE DIGITAL NOMADS.

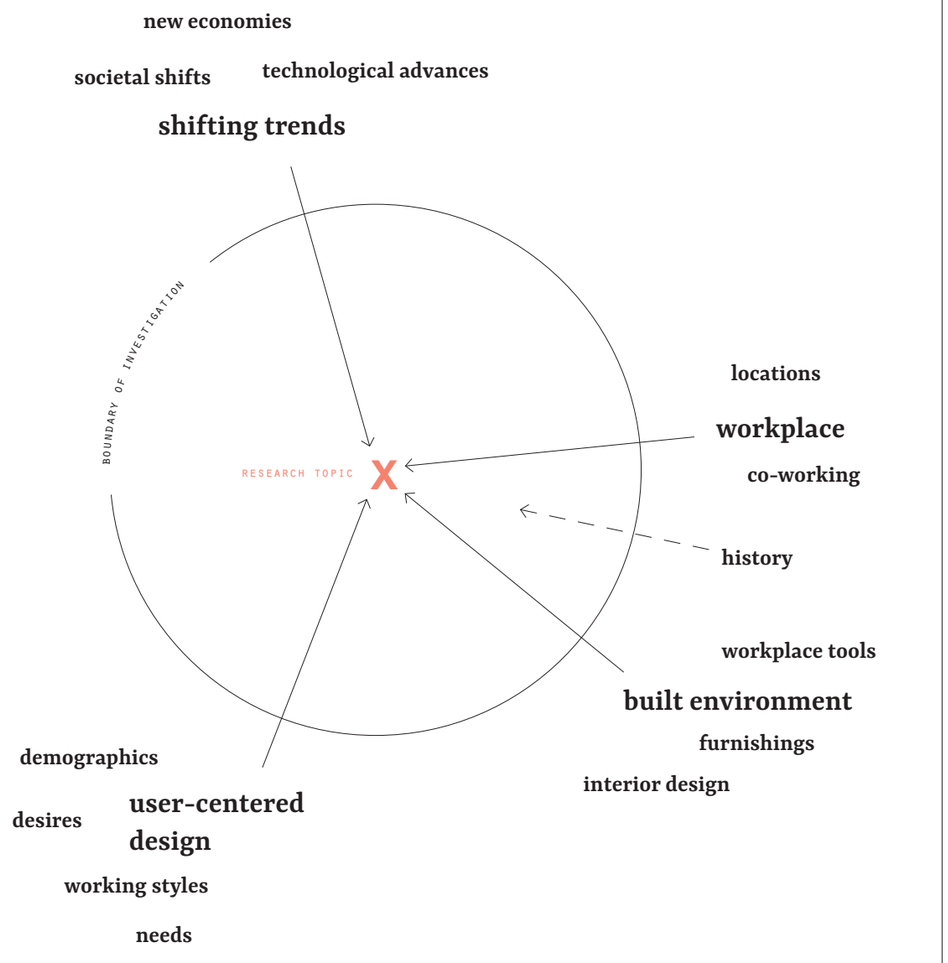


FIGURE 1 - ILLUSTRATION VISUALIZING THE BOUNDARIES OF THIS RESEARCH PROJECT.

03

Why are we increasingly working remotely?

Appendix A takes a look at some of the macro and micro-drivers influencing the uptake of remote working practices. In summary, the gig economy and the sharing economy are two modern influencers of the economy that are helping popularize remote working. The gig economy, also called the freelance economy, refers to "workforce participation and income generation via 'gigs,' single projects or tasks for which a worker is hired" (Rinne, 2017). The sharing economy describes the "focus on the sharing of underutilised assets, monetised or not, in ways that improve efficiency, sustainability and community" (Rinne, 2017). The sharing economy is a term that should be used to describe our changing values of ownership, whereas the gig economy is a term that should be used to describe the shift towards freelance contracts.

Other macro-driving forces (or more external factors) for the uptake of remote working practices is its association with cost savings and its reduced environmental impact (Apgar, 1998).

"I need fresh air, I work in the park. If I need human interaction, I work in a co-working space. If I have sick kids, I work from home."

(Heuston, 2015, location 545)

"Giving a workaholic a [portable computer] is like giving an alcoholic a bottle of gin."

Kaplan (1996, p. D7) retrieved from Ellison (1999, p. 348)

Some micro-drivers (or more internal factors) informing the popularity of remote working practices include an individual's desire for self-actualization through the promise of more autonomy and flexibility in designing one's own work-life balance. Work-life balance speaks of the traditional differentiation between work roles and life roles, and the necessary, albeit subjective balance necessary between the two (Berg & Piszczek, 2013). Through self-fulfillment a remote worker can satisfy their desire for achievement, health, and happiness. For many, work provides structure to their daily routines. It provides a sense of purpose and meaning, especially if the field of employment is directly in line with the worker's choosing. In this sense work can be said to help supplement, if not craft, our identities (Pratt, Rockmann & Kaufmann, 2006). By working remotely, individuals have even more influence over the way their work can supplement their lifestyles.

04 Where and what is the workplace of today?

If work can now be completed from anywhere, and from any time, what then are the physical, spatial, and or psychological considerations necessary to define a space as a 'workplace'?

The Merriam-Webster Dictionary (2018) defines a workplace as "a place (such as a shop or factory) where work is done," with its first recorded use having been in 1708, this however, is not the first historical instance of a workplace[1]. A workplace, under this definition, can take a wide range of forms, from a park bench, to an office space in a high-rise tower. Therefore, this definition does not help us define the modern, nomadic and transient workplace of today.

One way we can begin to define today's work settings is by categorizing them as either belonging to the 'traditional' or the 'alternative' workplace. By traditional workplace we mean the nine-to-five office space where each employee has a dedicated workstation, or at least a guaranteed place from which to work if workstations are non-allocated and shared (a practice called hot desking or hotelling). On the other hand, an alternative workplace is one that Apgar (1998) defines as "the combination of nontraditional work practices, settings, and locations that is beginning to supplement traditional offices."

Apgar's definition includes popular alternative workplace practices such as hot desking and telecommuting which Apgar (1998) defines as "performing work electronically wherever the worker chooses", alternative workplace settings such as "hotel" workspaces composed of shared office space that can be "rented" per hour, day, or week and customized for each employee's stay, and alternative workplace locations such as satellite offices, home offices, and coworking spaces.

For the purposes of this research, we will be using the term alternative workplace to primarily refer to the alternative physical locations of workplaces although other terms exist such as the multilocational workplace, the agile workplace, and the ambulatory workplace. Furthermore we will be defining the workplace as a physical milieu where "white-collar" and knowledge work is completed. White-collar is a term used to describe "workers who labor in the professional and clerical capacities," with their employment being driven by technology, information management and the service industry (Olson & Mendoza, 2015). This thereby excludes factories and labour-intensive workplaces from the research.

1 A GREATER LOOK AT THE HISTORY OF THE WORKPLACE IS PRESENTED IN APPENDIX D.

REMOTE WORKPLACE LOCATIONS
Workplaces can be broadly divided into private or public spaces. Furthermore, they can be subdivided into purposeful workplaces and improvised workplaces. The compiled list of remote working locations can be found in FIGURE 2. By mapping it out on a quadrant, four types of environments can be defined. The environments are private space, public space, private-shared space, and public-shared space.

The types of tasks completed in these alternative workplaces is varied, yet nearly always includes the use of information technology systems such as a laptop, a tablet, or a mobile phone. Due to the wide span of industries now participating in remote working practices, attempting to characterize or list the various tasks completed by remote workers is rendered futile as the tasks are so numerous and personalized, the list would become unreasonably long. Instead, we may be able to describe broader types of tasks completed by remote workers. For example, it is reasonable to consider the tasks of white collar remote workers as involving a mix of organizational, administrative, communicative, and production tasks, all of which can be accomplished via the use of digital tools.

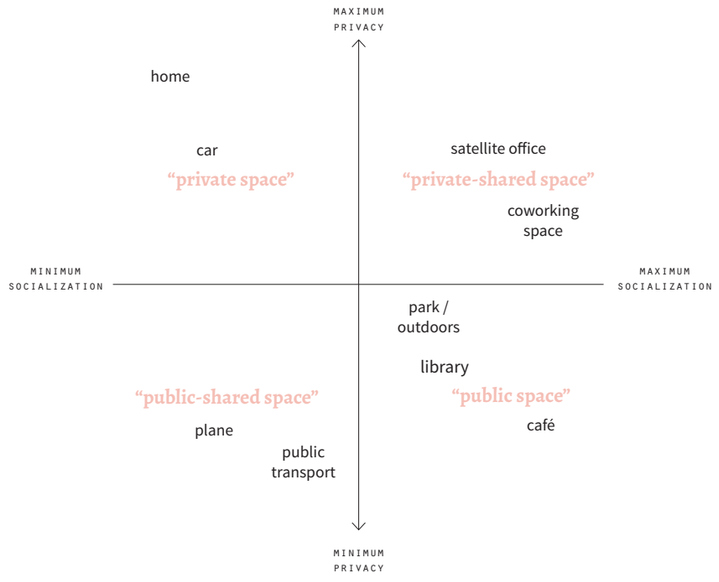


FIGURE 2 - REMOTE WORKING LOCATIONS PLOTTED ON A 2X2 DIAGRAM WITH PRIVACY AND SOCIALIZATION AS AXES.

Today, the economy is utilizing more collaborative approaches for getting work done, one such example being the crowdsourcing of work (Kittur et al., 2013). Companies are building more task specific teams to tackle increasingly complex projects, allowing them the flexibility to pick the best individuals, from different locations and different time zones, to work in unison on a project. These working teams can be composed of a mixture of full-time employees, contract workers, and external consultants. This is a significant shift from the working styles of the not so distant past where a typical employee might only have expected to interact with their own coworkers, clients, or sales people.

Additionally, the types of projects completed are more complex and of larger scope than those in the past, the completion of which has been facilitated and driven by the use of digital infrastructure, information technology systems, and greater collaborative networks (Weaver, 2018).

Locations where work was performed

Based on a 2005 survey of 135.4 million American workers.

45.1 million
worked from home

24.3 million
worked from a client or customer's location

20.6 million
worked from their car

16.3 million
worked from vacation

15.1 million
worked from a park or outside location

7.8 million
worked from a train or plane

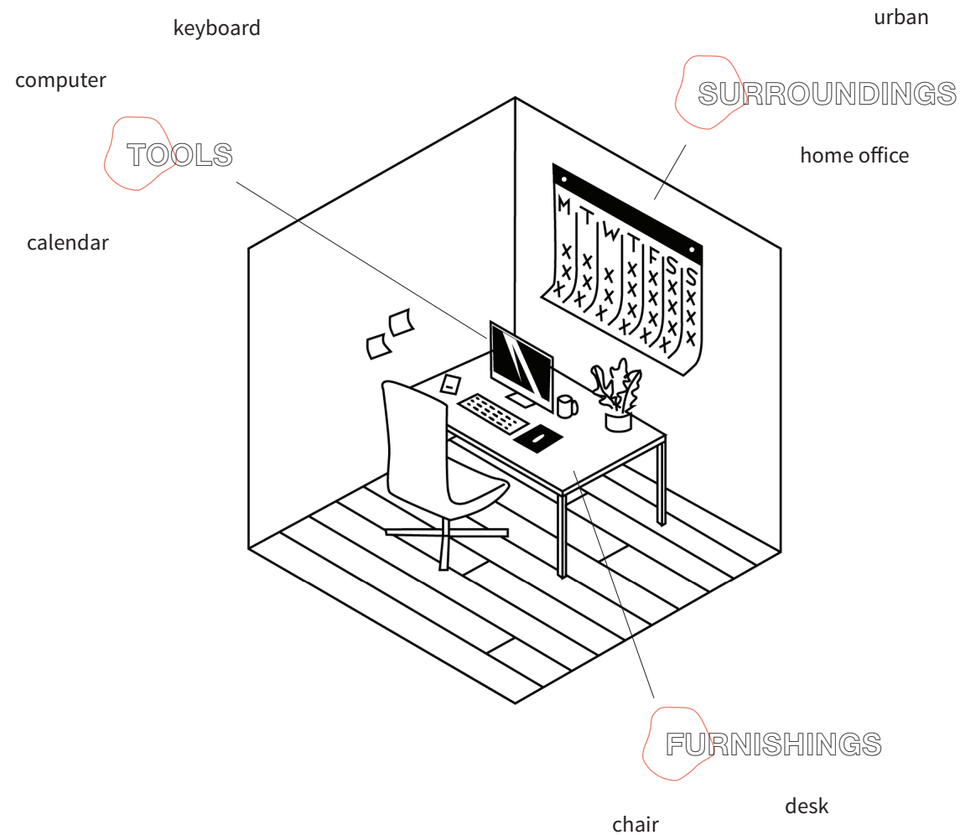
BASED ON RESEARCH DONE BY ITAC FOR DIERINGER RESEARCH GROUP IN 2005. 135.4 MILLION AMERICAN WORKERS WERE SURVEYED. (VARTIAINEN, 2006, P.2)

05

Workplace ingredients

This project will be looking at the design of workplace settings by thinking of them as recipes for space use, an approach popularized by Herman Miller, a company well known for their office furniture (Herman Miller, 2017b, p.39) (FIGURE 3). Each recipe is composed of three types of ingredients that can be mixed in different proportions to provide different flavours of workplaces. These core three ingredients are surroundings, tools, and furnishings. Surroundings include things like the architectural space and the interior design. Tools include for example technology, whiteboards, lamps, and other office products. Finally, furnishings include such things as desks, chairs, tables, and dividers. These three ingredients to workplaces are individually surveyed in tables in APPENDIX B.

FIGURE 3 - A VISUALIZATION OF HERMAN MILLER'S RECIPE FOR SPACE USE.



EXAMPLE OF CERTAIN TOOLS, FURNISHINGS, AND A SETTING THAT COMPRISES A WORKSPACE SETTING.

06 Layers of the workplace

Another way of thinking of the workplace is by thinking of it as a set of layers. These layers are those of the physical, digital, and mental space.

In many ways, for remote workers, the 'true' workplace is perhaps our screens and the frames made by our digital work tools. The traditional 'chats by the watercooler' are instead replaced by a Slack channel used for gossiping and the stand-up meetings are instead attended as a video call. A clear understanding of the role of the digital workplace will be an important consideration for the design of future remote working settings as perhaps the tools we require to aid with productivity and focus are digital in nature.

To further define the workplace we must look at the mental workspace. This workspace is a construct of the mind. It is that 'place' we go to in our heads when we say we "have to get to work," meaning to focus oneself on the task at hand.

The workplace is in flux as we reimagine the boundaries of the workplace.

Cognitive scientists choose to refer to our ability to produce and rearrange visual imagery using a widespread neural network as the 'mental workspace' (Schlegel et al., 2013). For them, the mental workspace is a series of actions, mental behaviours and capacities. It is important to note, it is not an actual section of the brain in which mental work is completed. Although scientists remain unsure of its complex behaviours and functioning, the mental workspace remains a critical space where tasks are cognitively completed.

Rather hard to define and abstract in nature, the mental workspace is individual and personal to each. If too stressed, or if someone is said to have "too much on their mind," their productivity often suffers as a result. Finding ways to manage one's personal mental workspace is key to understanding how to maintain a productive and efficient remote working habit. Some primary research participants referred to this type of mental space as their "workflow."

This triad of the workplace represented in FIGURE 4 has also been identified by author Matti Vartiainen (2006) in his book *Workspace Methodologies – Studying Communication, Collaboration and Workscapes*. In it he further outlines the term 'workscape,' referencing authors Harrison, Wheeler and Whitehead (2004) who describe it as the combination of physical and virtual workplaces (Vartiainen, 2016, p.6). Vartiainen (2016) goes on to describe workscapes as layers of workplaces (FIGURE 5). He describes three layers: the first is the real or virtual work setting (i.e. the desk and the information technology), the second is the physical space (i.e. a meeting room), and the third is the environment (i.e. home).

Although useful to think of the workspace as a type of 'landscape' of layers, I propose an alternate workscape diagram (FIGURE 6). The outermost layer is the macro-environment (i.e. home). Contained within the macro-environment is the micro-environment, or the personal workplace (i.e. home office). Here there is an interim layer comprised of the workplace tools which allows a worker to interface with the next layer that is the virtual workplace (i.e. word editing program). Finally, the innermost layer is that of the mental workplace (i.e. thoughts). By nesting the layers of the workplace, we can begin to investigate the ways each layer influences the next.

We may also begin to define each sphere of the workplace, including the trends affecting their development, as well as the ways in which the workplaces are expressed. For example, if we look at the personal workspace, author Anna Yudina who has written *Homework: Design Solutions for Working From Home* (2018) characterizes personal home workspaces as either being an island or a cloud. An island workplace is one that is in a fixed, permanent location whereas a cloud workspace is one that appears and disappears as needed, often thanks to adaptable and transformable furniture and interiors (p.12).

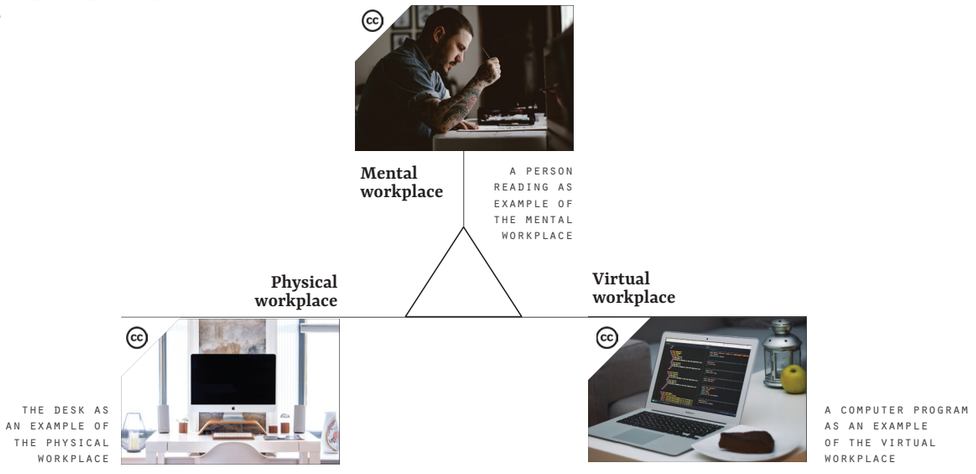


FIGURE 4 - THE TRIAD OF THE WORKPLACE.

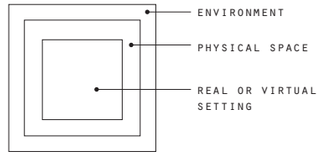


FIGURE 5 - VARTIAINEN'S LAYERS OF WORKPLACES. ADAPTED FROM (VARTIAINEN, 2016)

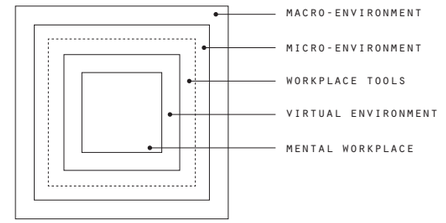


FIGURE 6 - ADAPTATION OF VARTIAINEN'S LAYERS OF WORKPLACES. ADAPTED FROM (VARTIAINEN, 2016)

APPROACH & METHODOLOGY

Now, let's take a look at the way we will be investigating this topic.

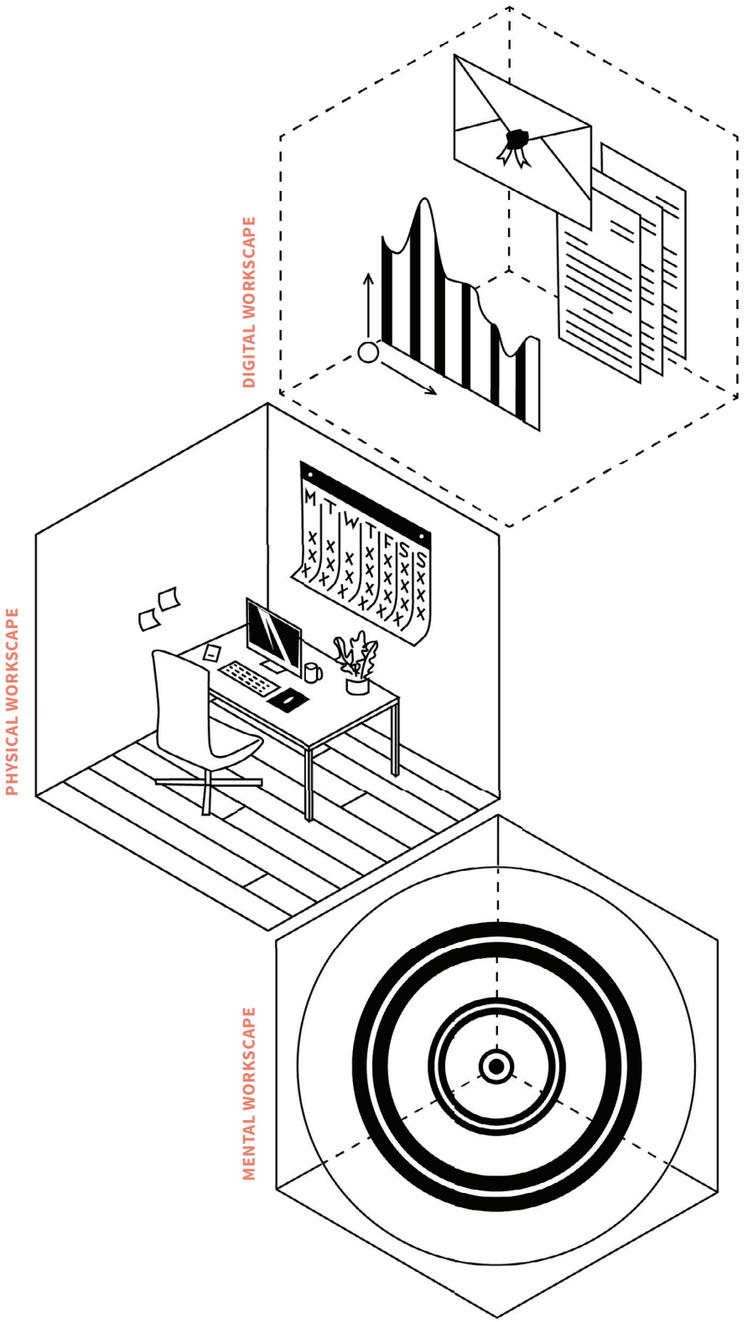
WHAT THIS CHAPTER IS ABOUT

To properly address this research topic, a clear research question, research plan (methodology) and project approach must be laid out. This chapter takes a look at exactly those elements.

1

CHAPTER HIGHLIGHTS

RESEARCH QUESTION
PROJECT APPROACH
PROJECT METHODOLOGY



RESEARCH QUESTION

How might we better design workplace settings to best support the needs of current and future remote workers?

A

What type of new workplace settings may be developed to better respond to these needs?

B

How might we rethink the role of the workplace in our lives? How might this impact our relationship with work?

1 What is informing the approach to this project?

As previously mentioned, the goal of this project is to present an evaluation of the current and future remote working settings composed of artefacts (furniture and tools), environments, and experiences in order to frame strategies for developing more desirable alternatives.

USER-CENTERED AND STRATEGIC DESIGN

This research project is informed by a user-centered design approach. User centered design (UCD) is "the technique, process, and methodology for designing user-friendly products and systems" (Lee, Jin, & Ji, 2011). The main way UCD differs from traditional design is by placing the user at the center of the product development process, by giving them agency and by giving them center stage. The results are products and services that cater to individuals, as opposed to having individuals modify their natural actions or behaviours to interface with a product or service.

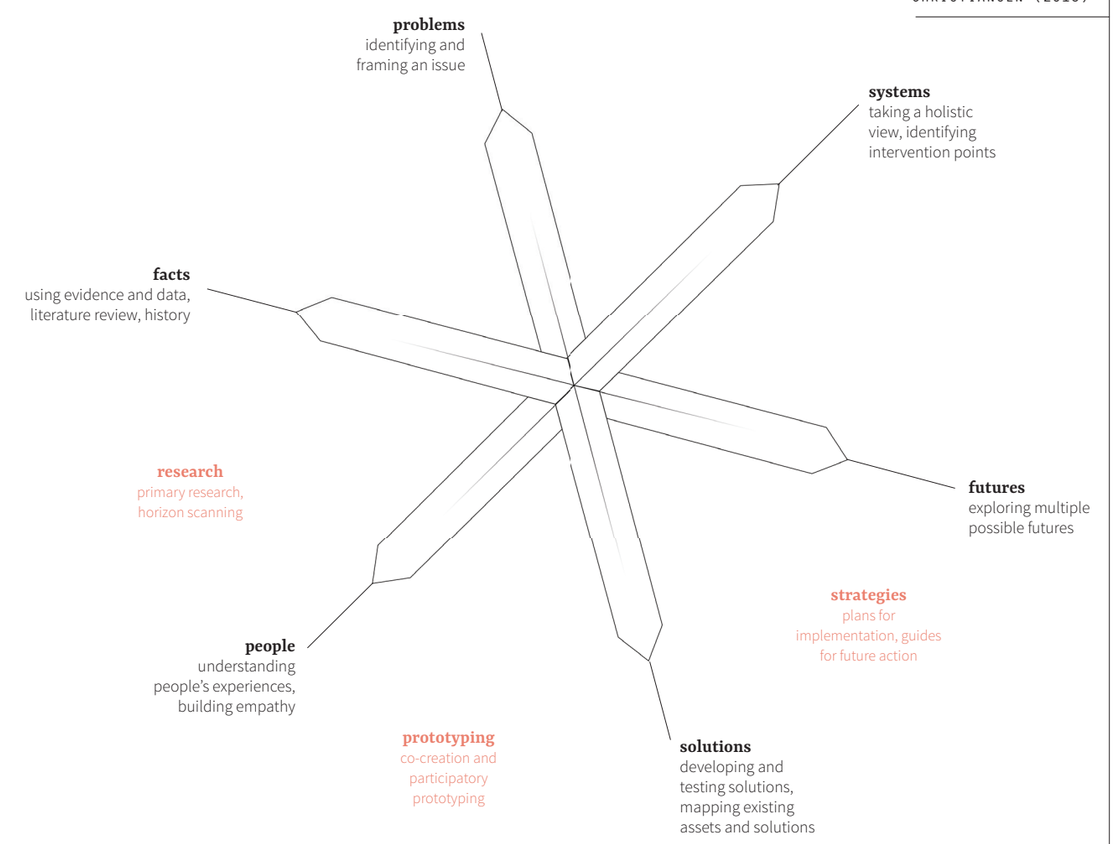
Another approach for this project was treating the research as a strategic design project. Dan Hill, author of *Dark Matter and Trojan Horses: A Strategic Design Vocabulary* (2012), characterizes strategic design as such:

"strategic design attempts to move beyond products, services and spaces into relationships, contexts, and strategies, yet without losing sight of the symbiotic relationship between meta and matter, and genuinely engaging with the public and civic as much as with the commercial."
(Hill, 2012, p.168)

This project not only looks at the physical artefacts of work (the matter), but seeks to understand the relationships between actors (the meta), the broader context informing change, and ultimately looks to provide strategies (by way of potential design solutions) for crafting a desired future.

Even though this project seeks to improve the physical and tangible experience of remote working, the approach was to use design as a cultural innovation instead of a simple problem solving activity (Hill, 2012). This means approaching design as a catalyst for change. Here, for this project, the intent and hope is that through considered research and design, a thoughtful solution that not only improves the current remote working experience but also encourages a shift in remote working culture can be designed. In such a way, a simple product design can encourage a cultural shift in our work practices and in the way we relate to one another.

Figure 7 - Axes of innovation. Adapted and expanded from a diagram by Quaggiotto, Leurs, & Christiansen (2018)



1 2 Project methodology

The methodology for this project is a hybridization inspired by Richard Lum's (2016) '4 Steps to the Future' framework and the Design Council's Double Diamond design process model (UK Design Council, 2005). Further information about the development of the project's framework can be found in APPENDIX C. Key to this project's hybridized framework is taking a look at the past, present, and potential futures of workplace settings and alternating between generative phases and phases dedicated to the synthesis of information.

TOOLS AND METHODS

The research completed for this project includes secondary research in the form of extensive literature review, and primary research methods that include an online survey, a physical workbook, and observational studies. A few expert interviews were also completed for this project. A mixed methods research approach was used to gather both qualitative and quantitative data for analysis.

FIGURE 8 - IMAGE OF THE WORKBOOKS THAT WERE DISTRIBUTED TO PARTICIPANTS.

ONLINE SURVEY

An online survey was circulated in order to gain first hand accounts of remote working experiences. It received 28 responses, 23 of which could be included in the research (5 indicated they were not remote workers which prevented them from completing the survey). The questions helped form insights related to the themes of motivation, locations, tools, rituals, distractions, privacy, safety, and likes/dislikes of remote working practices.

WORKBOOK

The workbooks (FIGURE 8) were designed as a type of cultural probe intended to inspire participants to provide deeper insights. Ten workbooks were delivered to participants around North America (4 out of province, 1 international, 5 local). The booklets had the same questions as the survey but also included three additional activities that encouraged participants to work from three different locations and note their findings. Because of an unforeseen postal strike, two of the workbooks that were completed out of province were not received back in time to be analyzed and included in the research results.

OBSERVATIONS

Whenever I, the primary researcher, worked from a shared or public location, I would make detailed notes of my surroundings, as well as observing how those around me were working. These observations helped me notice important patterns and behaviours that could not be gained from the online survey or the workbook.

EXPERT INTERVIEWS

Interviews (and in some cases unstructured conversations) were completed with the following individuals:

- Senior Workplace Knowledge Consultant at Herman Miller, a well-known furniture company.
- Senior Workplace Strategist with Gensler, a large design and architecture firm.
- Vice President of Corporate Real Estate Advisory at Deloitte, a large multinational professional services consultancy.
- Workplace Research Lead at WeWork, a well-known coworking space company.

OTHER METHODS

In addition, several synthesis and generative research methods were used to understand the research topic. Examples of these methods include stakeholder network mapping, scenario generation techniques, timelines, and visual surveys.

SCOPE AND LIMITATIONS

The researchers acknowledge that the number of participants received for the survey and the workbook were fairly small. Additionally, it is acknowledged that the probability is high that all participants were North American, simply due to the channels used to distribute the calls for participants. As such experiences from global remote working communities were not accounted for.

PAST & PRESENT OF WORKPLACE DESIGN

How did we get here? What has led to the development of the modern workplace?

WHAT THIS CHAPTER IS ABOUT

By taking a design-centered exploration of the workplace we will uncover the ways in which the workplace environment has evolved, both in terms of a space and in terms of physical furnishings. This helps us understand what has happened, what has not, and why what happened happened.

2

CHAPTER HIGHLIGHTS

BRIEF OVERVIEW OF HISTORY
KEY THEMES INFORMING CURRENT WORKPLACE DESIGN

2 1 History of the workplace

Futurist Richard K. Lum (2016) describes that by taking a look at the past, we may be able to recognize recurring patterns, identify cycles of change, and gain an appreciation for the way in which chance and randomness have shaped our current situation. He goes on to paraphrase Mark Twain in saying that "history doesn't precisely repeat, but it does tend to rhyme" (Lum, 2016, p.9). It is our task as designers and change makers to understanding the rhyming tendencies of history in order to better design resilient and relevant solutions.

Thinking forward through the past.

Understanding the driving forces that shape the design of our environments and products will help creators better comprehend how future environments and products may be developed from current technological, cultural, and mindset shifts. Nikil Saval's *Cubed: A Secret History of the Workplace* (2014) offers many insights on this subject, most of which have been incorporated in the following timeline outlining the history of the workplace. Additional details about the history of the workplace can be found in Appendix D.

Figure 9 - An Italian writing box from 1550-80. Image source: Metropolitan Museum of Art, Public Domain (CC-BY-0)

A QUICK LOOK AT THE HISTORY OF THE OFFICE

By the 1960s the service economy begins to take shape alongside the use of computers, and the Burolandschaft movement takes hold. This movement looked at office spaces from a more humanistic perspective, by taking an early human-centered approach to the design of office layouts in order to optimize communication flows. It is also in the 1960s that the cubicle is invented and that Herman Miller introduces its take on a modular cubicle system (the Action Office Series). During this decade, designers begin to view ergonomics not only in terms of physiological considerations, but also in terms of cognitive considerations.

The 1970s are characterized by an interest in ergonomics as supplemented by human-centered approaches and ethnography. During this time, work is steadily becoming more intellectual in nature, and further characterized by collaboration.

By the 1980s, the original cubicle systems have been re-interpreted by companies looking to boost their spaces' efficiency. This led to the dreaded "cubicle farms" characterized by a grid of tall partitioned spaces and drab factory-feeling workspaces of the 80s and 90s. Coincidentally, it is also during this lamentable period in office design that workers begin to display more mobile behaviours with hot-desking beginning to be used in office spaces, and agile and activity based work becoming more popular.

As the technology continues to improve, workers have the ability to become more mobile. A greater look at the way digitization has helped shaped remote working tools and environments is located in Appendix E.

By the 2000s corporations recognize that the office space can act to attract and retain top talent. Pinball machines and bowling lanes start to be introduced in the interior design of office space. Think of the less traditional working environments of Google, Apple and Nike. These big corporations transform the workplace into a type of company town complete with recreational activities, wellness services, and restaurants. Whether these types of corporate campuses promote healthy work-life balances is questionable, with some labelling it an of architecture of submission (Saval, 2014). Companies also put a bigger emphasis on the design of healthy, wellness-centric environments. Designers and manufacturers jump on the bandwagon, offering sit-stand desks, treadmill desks, and all types of variations intended to get employees moving.

Nowadays organizational hierarchies are more fluid, and this change is reflected in the design of workplaces - with more shared workplaces and fewer corner offices for high-ranking executives. Coworking spaces begin to become more common and grow in popularity as alternative workplaces.

The evolution of the prioritization of the workspace from one focused on efficiency to one that prizes the human experience has been evidenced through the evolution of interior design and architectural styles. The current architectural style leans towards open-concept offices, yet as Edenius and Yakhlef (2007) point out, these spaces are often characterised by excessive noise, movement, and chaos that does not provide the appropriate scenario in which to think and reflect. Companies such as Herman Miller are now offering product solutions to better define the open-concept office into efficient work settings. In essence, the pendulum is swinging back towards a style of modern, flexible cubicle space.

With shifts in what society values, side hobbies

Figure 10 - Timeline of historical workplace developments.

1200s

Worktables for the the select few

Those working in science and commerce begin to use worktables more regularly.

800 - 1200

The original standing desks

Scriptoriums, found in monasteries, are rooms where monks worked standing up at 'desks' copying manuscripts.

1600 - 1700s

Paperwork for the state

The creation of centralized states leads to an increase in paperwork and bureaucracy. More archives and administrative roles are created.

Image credit: (Hamilton, 1896)

1726

First office?

In London, the Old Admiralty Office is built to handle the paperwork of the Royal Navy.

1700s

Coffee shop culture

During this period, coffee shops gain popularity in Europe as locations to meet and share ideas (in a more civilized manner than in an alehouse).

"East India House" by Thomas Malton the Younger

1729

First office?

Once again in London, the first purpose built office materializes. It is the offices of the East India Company.

1852

Up we go!

Elisha Otis invents the elevator which allows for the design and build of taller office towers.

Image source: ('Larkin Administration Building', n.d)

1906

The first modern office sees the light

Design by Frank Lloyd Wright, the Larkin Administration Building is the world's first modern office.

1860s

American offices

The first commercial offices appear in the United States of America. They are designed with Taylorism in mind, as as 'factories for workers'.

0 500 1000 1400 1500 1600 1650 1700 1750 1800 1850 1900

Classical Antiquity

Early Middle Ages (Dark Ages)

High Middle Ages

Late Middle Ages

Renaissance

Age of Enlightenment (1715-1789)

Early Modern

WORK STYLE
Individualistic, craft-based.

OFFICES
For the elite few who's employment permits the use of a worktable.

WORK STYLE
Driven by paper: scriptures, administrative documents.

OFFICES
Personal locations where one can learn.

Figure 11 - Continuation of timeline of historical workplace developments.

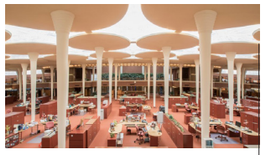
steel frame construction

air conditioning
electric lighting
telegraph system

A taylorism inspired office. Image source: ('Taylorism inspired office', n.d.)

OFFICES

Efficiency is the name of the game.
Office design adopts a scientific approach to optimize efficiency. Workers are organized in lines, with supervisors situated on the outskirts. This approach was called 'Taylorism'. It was blamed with disregarding social elements of work.



The Johnson Wax building image source: ('Johnson Wax Headquarters, n.d.)

1939
The open-concept office is born
Frank Lloyd Wright designs Johnson Wax building. Gives pride to employees who experience increased productivity.

1950s
Home sweet office
Office becomes more home-like. Le Corbusier promotes the ideology of the 'functional city'.

Burolandschaft office space Image source: ('Burolandschaft workplace', n.d.)

1960s
Office landscapes
The Burolandschaft office landscaping movement takes hold. It promotes designing the office as a landscape to optimize communication flows. It took a more humanistic and social view of the office space.

1960s
Block by block
Modular furniture begins to take off.

1960s
Female power
More female workers enter the workforce. ('modesty boards' required on the front of desks).

The Action Office Series 1 Image source: ('the action office', n.d.)

1960s
Action Office Series
Herman Miller creates the 'Action Office Series 1', a panelled office space. It creates alternate work settings for staff, and more privacy.

1960s
Service economy
The service economy takes off thanks to advanances in technology (computers).

1970s
Ergonomic interest
Designers become really interested in ergonomics. Henry Dreyfuss and Niels published "*Human Scale*" and "*Measure of a Man*".

As technology develops, workers become more mobile.

Cubicle upon cubicle Image source: ('cubicle farm, n.d.)

1980s
Cubicle farms
Herman Miller's Action Office Series is modified by companies to maximize space, with the results being nicknamed 'cubicle farms'.

1980s
Hot desk
Hot-desking begins to be used in office space.

1995
Predecessor to coworking spaces
C-base is a hackerspace located in Berlin, perhaps the first modern coworking space.

2000s
People first offices
Office space becomes more informal in an attempt to encourage creativity. The workspace becomes more "human". Sense of fun in the workplace (pinball machines).

2005
First official coworking space
In San Francisco, Brad Neuberg creates the first modern coworking space, nicknamed a "home for wellbeing" with desks available for rent. (Foertsch & Cagnol, 2013)

NOW
Sit or stand?
Ergonomic and wellness furniture are still popular. Sit/stand desks are appearing more regularly in the traditional office environment.

NOW
Comfort for all
Office much more comfortable. Companies recognize that an office space can retain top talent.

NOW
Plant life
Rise of biophilic design.

NOW
Against the open-concept office
Herman Miller's Overlay system, to make the open-plan office more intuitive, flexible, and unique.

1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 PRESENT

WWI
Roaring Twenties
Great Depression
WWII
Digital Revolution

Late Modern
Contemporary
Big Data Age
Social Age

WORK STYLE
Work is more intellectual in nature, based on collaboration.

WORK STYLE
Workspace centres around the individual. Designed to promote productivity and efficiency, creativity and wellbeing.

and second careers are encouraging individuals to participate in the gig economy, often resulting in work from home scenarios or impromptu offices set-up in coffee shops. The traditional office design is being redesigned to offer more workplace flexibility. Additionally, a broader rethink of the role that office spaces play in our modern working styles is underway as companies find their office spaces emptying of workers. Deloitte has found that anywhere from 40-70% of a company's office space is currently sitting empty because of growing remote working practices (Deloitte, 2016). Thought is being invested in shifting the office from a place where work gets done, to a place where knowledge is shared and social networks are maintained.

Additionally, increased interest in the future of the workplace begins to be manifested, with the Museum of Modern Art in New York City organizing the exhibit *Workspheres* in 2001, as an exploration of the ways the personal workplace could be optimized to better respond to practical realities.

2 Key themes informing current workplace design

Some of the key ways interior designers are developing modern workplaces includes thinking about the wellness, the sustainability, and the efficiency of space in acting as a tool to attract and retain talent, as a tool for productivity, and as a platform for communication flows. In depth looks at each of these is located in APPENDIX F.

The most important takeaways from these themes are that workplaces are continuing to be designed with employee wellness at the forefront. However, nowadays workplace wellness goes beyond physical wellness to include emotional wellness, and cognitive wellness. This more holistic view of the workplace environment extends to the sustainability of the built environment. Increasingly, efforts are made to address the growing number of office furnishings that are discarded each year by businesses and consumers (Forrest et. al, 2017). In the European Union, each year up to 10 million tonnes of office furniture is discarded each year (Forrest et. al, 2017, p.3). In response to our wasteful consumption new ways of approaching product design such as cradle-to-cradle thinking (McDonough & Braungart, 2002) and Design for Sustainable Behaviour (DfSB) are growing as more sustainable alternatives to traditional industrial design (Hebrok, 2016).

Another way interior designers and workplace strategists are designing the modern workplace is as a tool to recruit and retain talent. As the gig economy continues to grow, and employees are making career jumps faster and faster, companies have realized that the environment they offer their office workers can help provide incentives for workers to stay on with the organization. Modern workplaces are increasingly blending leisure, office, and domesticity to essentially become lifestyle locations. On the other hand, certain residential buildings are now including coworking amenity spaces in their layouts (Velsey, 2017).

"Wellth is the new wealth"
(GOODE, 2016)

Next, current workplaces are designed with adaptability and flexibility in mind, with many environments offering a variety of workplace landscapes within a given space (i.e. private workstations, collaborative rooms, lounging areas). Another manifestation of this theme is that of adaptable furniture systems, such as sit-stand desks and modular office systems that can quickly be reconfigured according to the day's task.

Meanwhile, democratic design is looking to provide individuals with the ability to personalize and influence their working environments. It also promotes a less hierarchical view of space and objects (a democratization of space) (Moreno, 2018).

Finally, workplace strategists and designers are recognizing the workplace of today as a

predominantly social environment. If individuals no longer have to come in to get work done, then they may want to come in to escape the social isolation. Examples such as WeWork's Hong Kong office space (which is 60,000 square feet) is designed as a series of neighborhoods spread over eight floors. It is purposefully designed to encourage members to wander through different 'neighborhoods' in order to maximize encounters and inspiration (Angelopoulou, 2017).

One of the largest disruptors to the field of traditional workplace design is the coworking model. Coworking spaces are often membership based office spaces for remote workers, start-up teams, and increasingly, touchdown points for employees whose employers purchase memberships for them. According to the 2018 Global Coworking Survey conducted by Deskmag, by the end of 2018 about 1.7 million people will be working around the world out of 19,000 coworking spaces (Foertsch, 2018).

SUMMARY

The overview of the workplace helped better understand the wider shifts in workplace design, with pendulum swings from thinking of the workplace as one meant to optimize efficiency to one meant to optimize comfort. Other shifts in workplace design sees trends pin-balling from open-spaces to cubicled spaces, and back to open-spaces.

Our idea of the office potentially began as rooms used to manage bureaucratic paperwork and has evolved in slow bounds to become the digital offices that we know of today. These changes reflect broader shifts in our culture, society, and technologies. As a result, the ways the office has morphed in the last decade mimics the pace of technological acceleration. Understanding what was possible in the past helps us better frame what may be possible in the future.

As this chapter has shown, there are a number of larger themes informing the design of modern day workplaces. Ranging from a focus on workplace wellness to advancing sustainability efforts, the ways designers are approaching the creation of new workplace surroundings, tools, and furnishings is evocative of the greater change we want to see in the world.

HISTORICAL STRENGTHS & SUCCESSES

5 most important strengths from history to carry into the future

1

Continuous improvement of ergonomic needs being addressed through comfortable and aesthetically pleasing designs.

2

Imbuing artefacts with high levels of craftsmanship and/or personal history in order to provide them with heirloom qualities.

3

The division of labour and the trust / relationship between employer and employee influences the interior design of office space and the types of furnishings.

4

Industrial revolution, material innovation, and mass production efficiencies (making good design accessible to the masses).

5

Digitization of tools and tasks allowing for flexibility in workplace and time (from spoken word, to written word, to digital word).

SECONDARY RESEARCH & THEORY

Now let's take a look at some of the theories and knowledge that related fields have to add to the notion of workplace settings.

WHAT THIS CHAPTER IS ABOUT

This chapter takes a look at some of the theory informing current workplace design including furniture design considerations. It also takes a look at the ways artefacts and spaces affect human behavior.

3

CHAPTER HIGHLIGHTS

Furniture considerations
Spatial theory
Semiotic considerations

3.1 Furniture considerations

Now that we have heard about some of the themes informing current workplace design, let's understand some of the considerations and theories informing these themes.

The Merriam-Webster Dictionary defines furniture as "movable articles used in readying an area (such as a room or patio) for occupancy or use" ('Furniture', 2018). However, this definition seems too broad as according to this definition any piece of interior décor and any movable product would be considered a piece of furniture. Rather, defining furniture as a craft-based or industrial-based product of larger scale intended to support human activities, whether physical or cognitive, seems to capture the essence of the role furniture plays in our lives.

ERGONOMICS

A more straightforward interpretation of support is that of physically supporting the human body. This type of furnishing includes objects such as the office chair, the hammock, the bar stool, and beds.

In his book *The Human Factor*, Vicente (2003) stresses that whenever humans interface with a technological system critical physical, psychological, team, organizational, and political human needs must be catered to if we are to design successful solutions. A technological system can, for example, involve the office computer employees interact with, or a modular, movable office partition system. These considerations are called human factors and are studied as the science of ergonomics, which is divided into two sub-disciplines: micro- and macroergonomics[1]. While micro-ergonomics focuses on the interactions between humans and system elements (such as machines and furniture), macro-ergonomics examines the design and efficiency at the system level (Hendrick, 2000).

The book *A Guideline on Office Ergonomics* (1989) prepared by the Canadian Standards Association lists relevant ergonomic considerations that should be kept in mind when designing for the workplace. Suggestions and requirements pertaining to i.e. work surfaces, sitting posture, footrests, recommended stretches, and monitor placement can all be found in ergonomic standards manuals and workplace health and safety handbooks (Occupational Health Clinics for Ontario Workers, 2008).

MANUFACTURING AND PRODUCTION

There are a number of advances in the way furniture is designed, produced, and distributed. As will be described in a few of the trends in the Trends Report, the growth of rapid prototyping and rapid manufacturing techniques are revolutionizing the way in which consumers can access designs.

1 Ergonomics and human factors engineering originated in the 1940s as design processes that sought to optimize the design of physical products by taking into account the human physiology (body shape, body proportions, etc.) of its users (Pratt, & Nunes, 2012). With the advent of cognitive psychology in the 1960s, the focus of 'ergonomic fit' began to include 'cognitive fit'. In the 1970s, the field of ethnography supplemented user centered design (UCD) with research tools to help further inform 'user fit'. Today, the field of UCD is well established, with a repertoire of tools and methods that can be used to build better designs.

A desk: "a location designed for personal achievement and collective advancement"

(Singell, 2017)

3 2 Spatial theory

In the simplest term, spatial theory is the exploration of space and place, with a space being the physical setting and the place being the "outcome of a social process of valuing space" (Meskell & Preucel, 2006). Our present view of space is one that views it as dynamic, agentive, and relational meaning space has the ability to incite behavioural changes. It is not static or passive, rather humans play an active role in shaping, and being shaped by spaces. This shift in mindset is referred to as the "spatial turn" that occured in the early 1990's when academics began actively rethinking our view of space.

Furniture moderates the function of a space. This allows interior designers to carefully design the layouts of a space in order to encourage flows of communication and movement, thereby structuring its function and method of use. In other words, the way we lay out furniture in space can moderate the ways in which we use the space, including ways in which we gather and share information.

SPACE AS AN INSTRUMENT FOR SOCIALIZATION

A greater understanding of how the built environment shapes social interactions has given rise to better designed offices that better support collaborative activities. Not only do modern office space have meeting rooms, but many now have breakout rooms and a variety of social settings created with the help of furniture systems.

Multiple studies have explored how the design of environments and the spatial layout of objects within spaces can influence social interactions and by extension, flows and methods of communication (Sundstrom et al., 1980, Zalesny & Farace, 1987). Herman Miller leads the charge here with their human-centered Living Office approach whose motto is to "refocus your workplace on people" (Herman Miller, 2018). This is a company who self-describes as having been "solving problems for people, including ourselves, for over 100 years" (Herman Miller, 2013). Through their research, they have identified user needs and consequently developed ten 'purposeful settings' that can be mixed-and-matched to create the optimal work setting, many focused on promoting social behaviour. These settings are listed as:

1. Hive: a group of workstations, for spontaneous individual and collaborative work
2. Haven: individual workstation where focused work can be completed
3. Clubhouse: working neighborhood that "belongs" to a team dedicated to a longer-term project
4. Forum: an area for the presentation and discussion of materials
5. Jump Space: "highly approachable work points" where individuals can work for short periods of time
6. Cove: compact collaboration space near an individual work point
7. Plaza: an open hang-out area to socialize
8. Workshop: an intuitive space to generate and test out ideas
9. Meeting Space: a space that supports information sharing
10. Landing: a space next to a meeting spot or forum where teams and individuals can warm-up for a presentation or cool-down from a meeting.

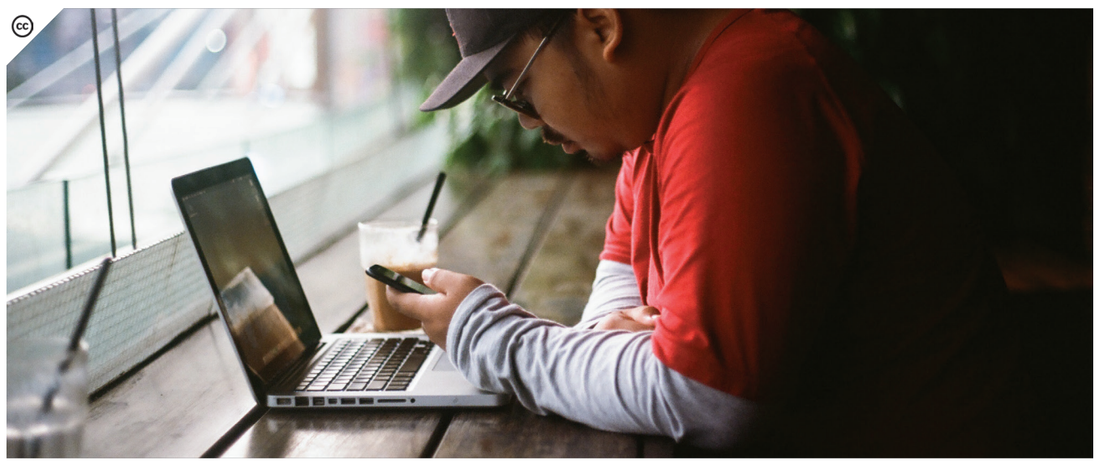
(Herman Miller, 2018a)

Similarly, in *Spaces for Innovation*, a type of workplace 'menu' is presented that lists different items that can be selected for the design of workplaces. These items are divided into four main types of spaces: productive spaces, performative spaces, social spaces, and infrastructural spaces that can be mixed and matched to create an ideal workplace setting (Groves & Marlow, 2016, p.156-7).

Although these settings have been conceived for use in a traditional workplace, the concept that various settings are desired, if not necessary, for the effortless completion of tasks is one that can be applied to the design of remote working environments. In addition, our ability to be social is supported by free-flowing environments in which people (and their ideas) are encouraged to move about and share with others. This in turn leads to a more desirable environment for collaboration and innovation.

Other important ideas related to placemaking and space appropriation coexist with workplaces. Authors Malkowski and Pavalache-Ilie have investigated the concepts of the sociospatial contract and space appropriation, two concepts that have important ramifications for the future of collaborative workspaces, especially with the rise of hot-desking, which is the practice of having shared, non-allocated workstations. Malkowski (2016) investigates how trends in shared working space and flexible working spaces threaten the traditional concept of the sociospatial contract which exist between employee and employer and highlights that it's the familiarity of a space that makes it the most effective for an employee. Moreover, Pavalache-Ilie (2016) outlines two types of spatial appropriation: individual and social, with space both being appropriated and having the ability to appropriate individuals. The ways in which individuals claim space in collaborative, open environments such as coworking spaces or coffee shops is an area of investigation that has not been fully researched through a design lens.

Author Müller (2016) identifies digital nomads as being "unaffected by the socio-spatial context" (p.345). The



socio-spatial approach is one that explores how the development, structure, and functioning of human society is related to the space (usually urban in nature).

Designers thus have to consider the role the environment has on influencing our ability to be productive and to feel comfortable. Fewer walls in an interior design (an open-concept space) is a way of promoting transparency and openness amongst project teams but it can also mean less privacy, more visual, and more auditory distractions for individual workers. Balancing the different requirements of the various user profiles of a given office is an important consideration for interior planners.

"One of the things we've seen in spaces we've designed is real benefit in creating serendipitous instances where people can run into each other and essentially talk to each other and exchange ideas in the same way as if you were walking on the street."

- Scott Witthoft, co-author of Make Space (Himmelstein, n.d.)

3 Semiotic considerations

Objects and spaces have the ability to communicate messages through their shape, form, and colours.

In his book T*he Design of Everyday Things*, Donald Norman (1988) takes a look at the importance of objects as means of communication, with an appreciation for an object's design to thus provide a pleasurable experience for the user. In his book, Norman covers key concepts in the design of objects, including the consideration of a users' mental models which he describes as the interpretation of "perceived actions and its visible structure" (Norman, 1988, p.17). An example of a mental model is a light switch, where the form of the switch proposes to the user a simple action, that of pushing it down. Problems arise in the design of products when mental models of the designer, the user, and the overall system do not overlap correctly (Norman, 1988). Many of the principles presented in this book laid the foundations of user centered design practices in product design.

SYMBOLIC USE OF SPACE

The ways in which products may 'speak to us' can reveal a lot about the intentions of its use. For example, a chair that is designed using a wood surface communicates to the user that they are not intended to sit in that location for an extended period of time. Compare that to a chair that uses a soft, flexible mesh seat as a material, and the intentions of use have been redefined. Much of these ideas are linked to the theory of embodied cognition. Broadly speaking, this theory holds that the ways in which humans think (their cognitive processes) are intrinsically linked with our body's interactions with the world (Wilson, 2002).

We may also use products to symbolize specific emotions or moods to others. One example observed as part of a site visit was a set of open drawer cabinets that communicated to coworkers that the individual was in a focused mode and did not wish to be interrupted. The opened drawers further acted as a makeshift divider between the individual and the rest of the office. The ways in which objects and space can influence our understanding of intents and values through the use of a signifier, a signified, and a code is referred to as semiotics (Chandler, 2007).

SYMBOLIC USE OF ARTEFACTS

As spatial theory outlines, space has the ability to be transformed into a place through the communication of value. This ability to add value to spaces has not gone unnoticed. The physical characteristics of the space, whether they be translated by the furniture, the decorations, or the interior finished, are used to emphasize the organizational culture of a workplace by emphasizing organizational identification, communicating the status of an employee as well as their place within the organizational

hierarchy (Ellison, 1999).

In traditional office space, the CEO typically gets a bigger desk and a bigger office space, while lower tiered workers receive more standardized workplaces. These choices embody the symbolic power of the organizational hierarchy. Stegmeier (2008) writes, "what hasn't changed is that physical space remains a currency, to reward time or performance in the company; a symbolic tribute to the executive's title and power" (p.109). While this might remain true in many office settings, this symbolic treatment of space is being challenged by trends pushing leadership styles towards flat hierarchies and shared leadership models.

A rethinking of organizational hierarchy is happening as it is estimated that unnecessary hierarchies not only create unwanted frustration but also cost the economy up to $3 trillion per year in loss economic output (Hamel & Zanini, 2016). Alternative organizational models include the practice of holacracy which is a practice that distributes authority and renders rules (and repercussions) identical for all members of a team (Robertson, 2015).

Another way objects and spaces can communicate value is through the decoration and personalization of our personal workplaces. Spaces and objects with which individuals surround themselves may indeed potentially reflect their inner lives and personal preferences (Bürdek, 2015, p.142). An interesting book by Uta Brandes and Michael Erlhoff entitled *My Desk is my Castle: Exploring Personalisation Cultures* (2011) takes a look at the ways individuals customize their workspaces in order to reflect their sociocultural, spatial, and personal context.

SYMBOLIC USE OF ARTEFACTS TO MODERATE BEHAVIOUR

Yet another way space is used with a semiotic considerations is by incorporating symbolic furniture shapes to subtly affect the way individuals behave in a space. Designer Andrea Vanecko speaks of such a use of symbols in the design of a popular coffee-chain location where long library-styled tables were used to create a calm environment (Yudina, 2018, p.8). Small details, forms, and other cues can be used to communicate to others the intended purpose of a space or tool, such as the prior example of a chair made from wood or made from a comfortable elastic material.

3 4 Spaces' psychological impact on individuals

Ontological design is an emerging field of design theory that looks at the relationships between human beings and lifeworlds (Willis, 2006). In essence it looks at the ontological claim that 'design designs,' that a designed object, system, or other manifestation of the design process can in turn have repercussions on the way we "design" ourselves.

As humans, we pick up on a lot of these subtle cues in our environments. In his book *The Architecture of Happiness* (2008) author Alain de Botton describes architecture's role in shaping our identity, stating that:

"BELIEF IN THE SIGNIFICANCE OF ARCHITECTURE IS PREMISED ON THE NOTION THAT WE ARE, FOR BETTER OR FOR WORSE, DIFFERENT PEOPLE IN DIFFERENT PLACES – AND ON THE CONVICTION THAT IT IS ARCHITECTURE'S TASK TO RENDER VIVID TO US WHO WE MIGHT IDEALLY BE."

What is important to note is that although architecture and interior design are often seen as frivolous or unimportant, their psychological impacts are profound. They have a deep impact on the way we behave in space, and a deep impact on the way we feel in space. In other words, where we find ourselves can heavily influence who we feel we can be. Understanding how our environments shape us can help provide insight into why individuals choose to work from certain locations rather than others.

Coworking company WeWork is investigating how individuals emotionally react to spaces by using mobile electroencephalography devices to capture their brain's responses to environments presented in virtual reality (Klein, 2018). Through their preliminary results they have found that individuals perform better (increased focus and interest) in spaces that are brighter and filled with natural light (Klein, 2018). The use of technology to capture less subjective data on individual's workplace preferences is one that is helping companies better shape high functioning environments.

35 Space as a source of inspiration

SPACE AS A SOURCE OF INSPIRATION

With this in mind, it is therefore not surprising to consider that space can act as a source of inspiration for individuals. Creativity can be fuelled by serendipity, discovery and random encounters, and so for those who find themselves in creative career paths their productivity can therefore be greatly influenced by their surroundings.

Authors Kursty Groves and Oliver Marlow who co-wrote *Spaces for Innovation: The Design and Science of Inspiring Environments* (2016), list the 5Es of inspiring environments as efficiency, effectiveness, expression, empowerment, and evolution (p.44). Table 1 depicts the 5Es of inspiring environments, highlighting how each level impacts people and space. This table serves as a good starting point for beginning to think about the many considerations of inspiring spaces and efficient physical artefacts.

Table 1 - Potential objectives for the space move, transformation or change. Adapted from (Groves and Marlow, 2016, p.44).

POTENTIAL OBJECTIVES FOR THE SPACE MOVE, TRANSFORMATION, OR CHANGE

	PEOPLE	SPACE
EVOLUTION	Developing talent and cultural change	Flexible and adaptable for changing needs
ENGAGEMENT (EMPOWERMENT)	Collaboration and collective responsibility	Co-design and choice of work settings
EXPRESSION	Authentic cultural reflection	Physical embodiment of values
EFFECTIVENESS	Enhancing productivity and wellness	Access to information and tools
EFFICIENCY	Headcount and density management	Cost per sqm reduction, energy efficiency

SUMMARY OF THEORY

As this section has shown, the ways artefacts and spaces can be used to modify and control people's behaviours and feelings of worth is knowledge that will need to be incorporated and considered for the future design of workplaces. Through interior designs places can be transformed into spaces that inspire their users. Similar, through proper design considerations, artefacts can become comfortable assistive devices.

"For all the new tools of the workplace, for all its electronic appliances and communication apparatuses, for all its human-engineered desks and ergonomically correct chairs, why do so many of us do our best thinking when we're some place else? And does the thinking that we do in our beds, showers, gardens and cars lead to a different wisdom than the thinking we do in our workplace?"
- (Antonelli, 2001, p.13)

IMPORTANT CHARACTERISTICS OF THE PRESENT

5 most important characteristics of the present

1
The ability that artefacts and spaces have over our psychological considerations of self.

2
Semiotic considerations of artefacts and space.

3
Coworking spaces and services as a way to build social networks.

4
Personalization and flexibility of the workspace environment as a method for providing more autonomy to workers.

5
Workplace wellness and focus on biophilic design.

STAKEHOLDERS

Next, let's take a human-centered look at remote working. Who are the stakeholders?

WHAT THIS CHAPTER IS ABOUT

This chapter takes a closer look at the participants of the modern workplace. Through primary research, key information was obtained from remote workers. A look at the relationships between stakeholders is also performed.

4

CHAPTER HIGHLIGHTS

Remote worker demographics
Stakeholder assessment
Stakeholder network
Changing relationships

4 1 Who are the remote workspace users of today and tomorrow?

As has been mentioned in the historical analysis, our current working styles (in this case remote working) reflects developments in our lifestyles, personal preferences, and changing cultural practices. We see these further emulated in programs that truly embrace digital nomadism[1]. Other terms used to describe the phenomenon of working from alternative workplaces are “teleworking” and “telecommuting,” though these have a clear technological component to them. Teleworkers are those that use information technologies to substitute having to commute to the office. However, who are these remote workers? These workers cannot be defined by a specific age-range or gender. They represent the full range of diversity in the workforce, from part-time employees to senior executives. One difference is that remote working permits those with disabilities, or those who have to look after family members (a mother for example), to participate in the economy. In addition, it allows older generations who may have mobility issues to work from the comfort of their own homes. An analysis of the Bureau of Labor Statistics done by the Pew Research Center indicates that Americans aged 65 and over are working more now than at any other time since the turn of the century (Desilver, 2016). As we will see once we explore future trends, the age of retirement is sure to increase as regenerative medicine and technology support us into elderly living.

Millennials are those defined by Pew Research Center as being born between 1981 and 1996 (based on the time of writing they would currently be aged between 36 and 22) (Dimock, 2018). Although they are an important segment of the workforce, as FIGURE 16 shows, there are additional generations within the contemporary workforce. In fact, this may be the first time that five generations will be working side-by-side (Meister & Willyerd, 2009). The newest members of the workforce may be sharing an office space with their grandparents, or potentially their great-grandparents.

There are many different reasons why individuals work from alternative workplaces which leads to numerous ‘kinds’ of remote workers. Workers can be considered a full-time remote worker or a part-time remote worker. Furthermore, it is possible to classify remote workers into broad ‘types’ including those who work from home for health or mobility reasons, those who require to be locationally independent to run their business, those who work while travelling, those who are employed full-time but receive time to work remotely, and those who find themselves working from a satellite office or from a client’s office. This list is by no means exhaustive, but is helpful in gaining an understanding of the variety present in the remote workforce. This research project does not target a specific remote working segment as the needs of remote workers with regards to their environment are fairly consistent, regardless of whether they are employed full-time or whether they engage in more freelance work.

1 ONE SUCH PROGRAM IS REMOTE YEAR WHICH OFFERS MILLENIALS THE OPPORTUNITY TO TRAVEL THE WORLD WHILE WORKING REMOTELY.

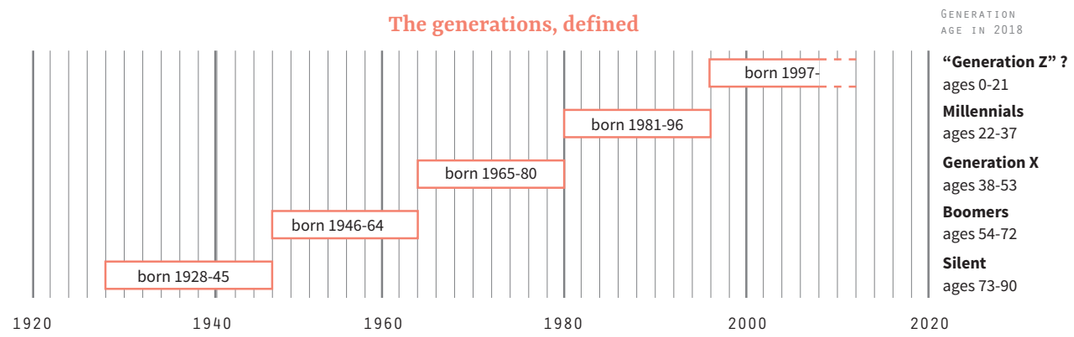


FIGURE 12 - THE GENERATIONS, DEFINED. ADAPTED FROM DIMOCK (2018).

4 2 Stakeholder assessment

To begin to explore the question of "how might we better design present and future workplace settings to best support the needs of current and future workers?" we must begin to make a list of all the stakeholders implicated in this research topic.

Remote workers are but one stakeholder in the ecosystem of today's workplace. Other stakeholders include employers, office furnishing retailers, designers (interior, industrial, product), manufacturers, technology providers, and the environment. The next few pages will look at the main groups who have a stake in the future of the remote workplace.

USER

Remote workers

The values provided by remote workers are those of labour and a diversity of opinions, preferences, abilities, and physical, mental, and social requirements. Each individual also brings with them their cultural and personal background which shapes their working preferences and style.

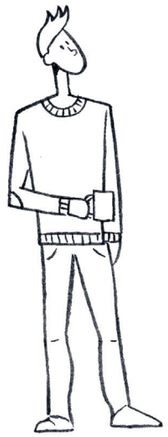
In terms of the needs remote workers require of the greater workplace ecosystem, they include the need for worktools, connectivity, tasks (work), a wage, a workplace location, and workplace furnishings. Some may argue that the need for social networks is also a significant need of remote workers.

PROVIDER

Coworking spaces

This stakeholder provides a workplace location for remote workers as well as connectivity and a sense of community. In some cases coworking spaces can also be used to create a sense of exclusivity and prestige amongst members. The roles of coworking spaces include the maintenance of a dedicated space, the purchasing and upkeep of furniture, the co-creation of a brand represented in the aesthetics of the space, and in some cases event planning.

The needs of coworking studios include members, furnishings, interior design, and the need for physical space and/or real estate.



PROVIDER

Public, improvised workplaces

The hospitality industry represented in cafés, restaurants and hotels often act as improvised workplaces. In addition, libraries and public transit may also serve as remote workplaces. The role of these locations are varied but could be simplified as providing a workplace location and providing connectivity (often free, or low-cost).

The needs of this group of stakeholders include access to a paying clientele (or other source of funding), interior furniture and décor, and in many cases, the need for employees to offer service to the space (i.e. barista, server).

PROVIDER

Employer

Employers of remote workers can take the form of more formal arrangements, such as a full-time worker who receives a few days a work to work remotely, or it can be manifested as a client for those who perform freelance work. An employer provides employment (work) to the remote worker. In some cases they may also provide office space (alternative or traditional), and a social network in the form of fellow employees.

Their needs are those of labour fulfillment, and of finding clients and contracts. Maintaining office space is also part of their job duties.

CREATOR

Product designers

The role of product designers in the greater workplace ecosystem is that of completing the necessary research required to properly identify the needs of users, then to develop a range of solutions that may address the identified problem areas. Furthermore, product designers develop a series of prototypes that allows them to iterate on the details of their design.

Their needs include that of being able to conduct proper, unrestricted research, and of having access to the required materials and tools necessary for their creative process. Furthermore, they require clients and contracts to offset their costs. Another important need of product designers is that of having access to a network of material suppliers, manufacturers, distributors, and representatives.

CREATOR

Interior designer

Interior designers are responsible for the aesthetic and functional considerations of the environments in which remote workers work.

They require clients and contracts, access to materials and furnishings.

CREATOR

Architect

Similar to interior designers, the role of architects in this ecosystem is to design of functional space for others to work in. In essence, they are responsible for the overall quality of workplace buildings, as well as the types of details included in residential units (for example, including built-in furniture).

They require clients, contracts, and a wage. In addition, they need access to materials and the latest building technology innovations. They need to be kept up-to-date with building codes and should be able to conduct research prior to designing.

PROVIDER

Office furnishings supplier

This stakeholder is responsible for making available the various market offerings to consumers. In this case, they may represent a selection of office furnishing brands and be responsible for selling workplace furnishing contracts to bigger clients.

In terms of what this stakeholder requires from the ecosystem, they cannot do business without quality-designed products and furnishings. They are therefore dependent on the outputs of design studios. They are also dependent on their distributors timeliness to fulfill their contracts for clients.

PRODUCER

Manufacturers

Manufacturers are those responsible for the production and final fabrication of workplace tools, furnishings, and materials. Manufacturers is a term that actually encompasses a complex network of providers and makers.

Their needs with regard to the creation of workplace furnishings include the access to materials, raw resources, and to the design drawings and other intellectual property of industrial and product designers. They also have complex needs pertaining to the supply chain management and the distribution of finished goods.

CREATOR / PROVIDER

Soft technology provider

By ‘soft technology provider’ I mean those that provide software and digital services in the forms of apps, websites, and other digital tools. The value provided by this stakeholder group includes digital workplace tools, connectivity software, and applications for completing work.

In terms of needs from the system, they require the ability to conduct research, brainstorm and build their ideas, as well as the ability to test and iterate upon their concepts. Once designed, they require a sales or distribution channel to offer their product, as well as a channel for sending out upgrades or updates to their software.

PROVIDER

Environment

Not a human stakeholder, yet a stakeholder nonetheless, the environment provides important value to this system. The value the environment provides is mostly in terms of raw resources necessary to the production of workplace furniture, buildings, workplace products, and other consumer goods. It also acts as the source of energy for urban systems. Other values include that of providing inspiration for individuals, of physical space, and of regenerating resources and purifying our urban environments.

The needs of the environment are fairly simple. It requires respect and maintenance from all stakeholder groups, not just those directly pulling material resources from the environment. Indirectly, the environment needs structures in place to protect it from unnecessary pollution and unsustainable resource extraction.

CREATOR / PROVIDER

Hard technology provider

By ‘hard technology providers’ we mean those that design and produce the physical, tangible pieces of technology that remote workers use to accomplish their tasks. This includes the companies that design laptops, mobile phones, tablets, cameras, and other such products. The value they bring is in providing the physical tools necessary to access the digital workplace.

Similar to product designers and software designers, they require the ability to conduct research, ideate, iterate, and finalize their designs. They also require access to new production techniques, manufacturers, and material innovations.

CREATOR / PROVIDER / REGULATOR

Government

With regards to workplace environments, government officials are responsible for the creation of policies, workplace standards, and protective regulations meant to optimize the health and wellness of employees. In addition they may provide tax incentives in the form of tax deductions for those working from home.

The needs of government officials include being able to properly assess the needs of the population and anticipate future needs, desires, or points of tension.

4 3 Tracing the value exchanges amongst stakeholders

Outlining the important relationships that exist between key stakeholders groups in order to understand value exchanges and potential leverage points.

As we have seen, there are numerous stakeholders involved in the ecosystem map of remote workplace furnishings and environments. FIGURE 13 highlights the dominant ways in which these stakeholders are connected.

Of importance are the relationships linking remote workers to other stakeholders. This includes value exchanges with the greater workplace community, with employers or clients, as well as with a range of service providers. Research has shown that individuals who work from home and require a workstation for home use are more likely to purchase it from a home furniture retailer than from a large office systems manufacturer who may have devoted more time to research and development of proper work-from-home furnishings because their product offerings appear too complicated and too “official” (Antonelli, 2001, p. 198).

As FIGURE 13 shows, there are four stakeholders that are represented in dotted circles. These stakeholders represent those with influence in a number of points within the system. The value they provide to the rest of the system has been placed at the bottom of the dotted circle.

In the case of government officials, they provide regulations not only to developers, city planners, and architects, but also to manufacturers and employers. They are therefore a stakeholder that has influence on nearly every stakeholder in the system.

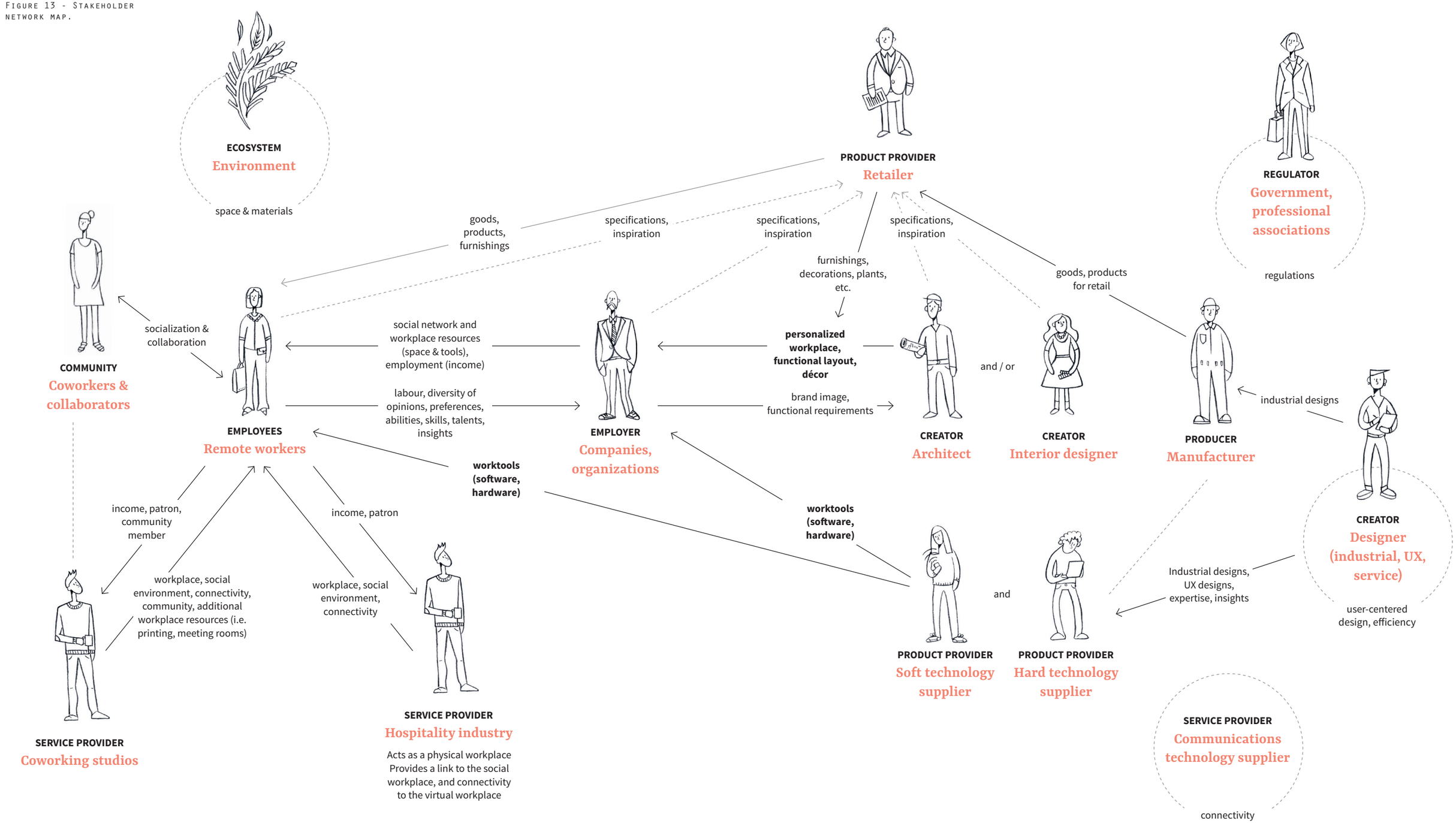
Another stakeholder that has been represented in a dotted circle is that of communications service provider (internet providers) since nearly every stakeholder benefits from their services and would be severely impeded should their connectivity be problematic.

Designers have also been placed in a circle since, even though they have been linked in to the system as designers of workplace furnishings and products, they may also offer their services to a number of other stakeholders and in so doing, also be able to indirectly improve the remote workplace experience. The last stakeholder that has been placed in a circle to symbolize important reach within the system is the environment. All stakeholders directly or indirectly benefit from the value the environment brings. It has therefore been placed off to the side instead of linked within the system.

Dotted lines symbolize value exchanges that a stakeholder may not realize they’re providing, or weaker, more indirect relationships. For example, a product retailer may pull value from employers (organizations, businesses) that hire their services or shop at their store, by gathering data on purchasing behaviour, interests, aesthetic tastes and so on.

Another example occurs between coworking studios and the community. In this case, both sides benefit from each other in a rather indirect manner - through social networking as certain (but not all) members of a remote worker’s community may in fact be a member of a coworking studio.

Figure 13 - Stakeholder network map.



4 Ways in which relationships are changing

Although the previous diagram shows the stakeholder network as static, it is far from such. Important drivers of change are re-shaping the way various stakeholders relate to one another.

One of the bigger trends shaping the future of these relationships are the advances in technology and the desires of users to get involved in the design of their products. Outlined more fully in the TRENDS BOOKLET, our desire to "do-it-ourselves" and leave our mark on our environment is being extended to the design of workplace furnishings as well.

It is now commonplace to be able to select the finishes of a new piece of furniture. Soon, workers may be able to directly design their own desks by mixing and matching previously designed and complementary system parts. In fact, such options already exist. One such example is Herman Miller's Ubi work tools that offers a height adjustable desk with a series of accessories that can be added on to suit each worker's preferences. This caters to our desire to have more 'democratic workplaces' where our own decisions directly impact the results that we get to interact with. Also named the 'ethical workplace', the idea proposes that everyone should be able to inform their ideal workplace. IKEA simply calls it "design for everyone" (IKEA, 2018).

With advances in 3D printing and greater open-source access, it is probable that a greater number of 'designers' will be able to create the environments they want, without the help of traditionally trained designers.

New material and production innovations are changing the boundaries of what's possible to build and manufacture. In addition, added stress on the environment (both natural and urban) means that the industries pulling resources from it will soon be forced to reassess their relationships with the environment. Recycling and repurposing of materials are providing designers with 'new' materials to work with.

DEMOCRATIC DESIGN IS CHALLENGING THE ASSUMPTION THAT ONLY 'TRAINED' DESIGNERS MAY CREATE WORKPLACE FURNISHINGS.

"professional designers play increasingly important roles, less as makers of forms and more as cultural intermediaries (Julier 2008) or as the "glue" in multidisciplinary teams (Kelley and Van Patter 2005). They are interpreters of changes in culture who then create new kinds of cultural form."

(KIMBELL, 2011, P. 286-287)

THE WAY WE BUILD FUTURE RELATIONSHIPS WITH THE ENVIRONMENT MUST BE CAREFULLY DESIGNED TO NOT ONLY AVERT NEGATIVE EFFECTS, BUT IDEALLY SHOULD BE DESIGNED TO MITIGATE PAST DESTRUCTIONS.

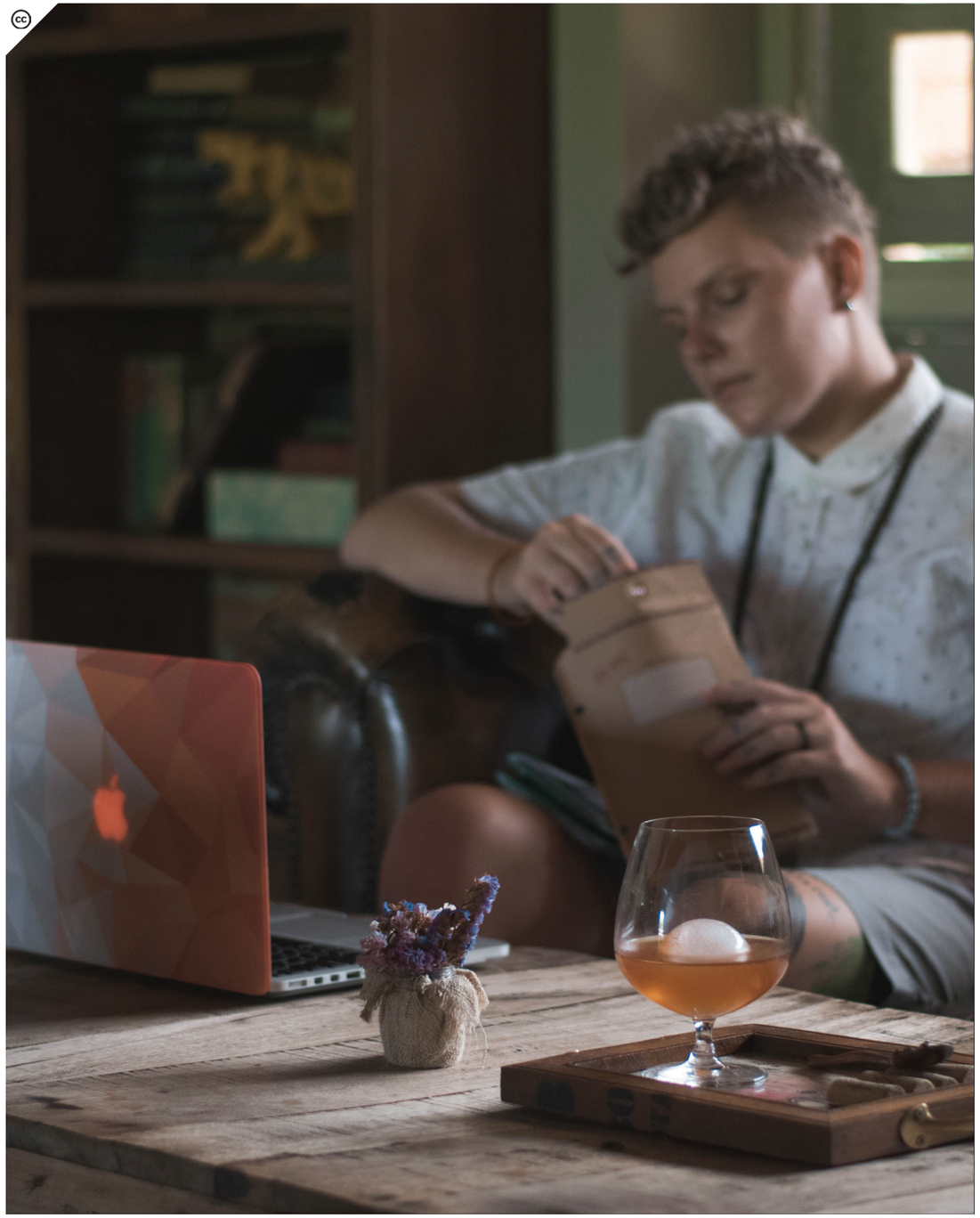
In terms of service providers, there is a trend in service bundling that sees several services bundled for ease of consumption, installation, and other such factors such as cost savings and efficiencies.

The role of employers as providers of office space may also soon be a thing of the past. As coworking spaces are becoming more popular, it is imaginable that certain organizations would instead opt to lease memberships for their employees who can then choose to work from whichever coworking space is closest to them. Similarly, the role of retailers may shift as brick-and-mortar stores disappear and furniture-leasing services enter the market place.

Lastly, a new stakeholder may soon enter the picture - that of sentient artificial agents and smart algorithms. This will present a dramatic rethinking of the entire stakeholder network as it will directly or indirectly affect every stakeholder. It is unclear whether this stakeholder will form its own entity or come to coexist with that of other stakeholders such as remote workers, manufacturers, and creators.

SUMMARY

This chapter has helped us better understand the various relationships between key actors of the modern workplace. In addition, we've been able to gain an appreciation for the ways in which these relationships and roles may change in the future. Next we will take a look at the present-day experience of working remotely.



PRIMARY RESEARCH

Let's take a look at the present-day experience of working remotely.

WHAT THIS CHAPTER IS ABOUT

This chapter is about mapping the present day user experience of remote workers in order to pinpoint potential areas of opportunity. If we are able to understand what individuals like and what they dislike from their current experience, these insights can help inform future directions.

5

CHAPTER HIGHLIGHTS

Primary research findings

5 1 User experience of remote working today

By taking a look at the practice of remote work from a user's perspective, difficulties related to the current experience can be uncovered and synthesized. In addition, it allows us to better understand the motivations and concerns of remote workers.

Knowledge workers "slow down when there is no warmth, empathy, or compassion" (Wander, 2013, p.38). Applying proper workplace considerations to alleviate the perceived lack of such emotions in remote work settings, practices, or behaviours could therefore result in a more productive workforce. To do so, the viewpoint of remote workers was required. As a researcher I was interested in understanding what remote workers thought of their workplace environments, and whether they even cared about the furniture they used to complete their work. As mentioned, I was also interested in gaining a better understanding of what kind of difficulties remote workers faced that may be mitigated through the design of better environments and or workplace tools.

Whenever possible the survey-like questions from the workbook have been compiled with the answers of the digital survey for ease of analysis. Here we will take an overview of the main themes and high-level results that were found from the primary research methods. A more in-depth look at the overall findings of the two research activities can be found in APPENDIX G.

FIGURE 14 - ABOVE: THE WORKBOOK (CULTURAL PROBE). BELOW: THE ONLINE SURVEY.

5 2 Motivation and productivity

To begin, the research shows overwhelming evidence confirming that today's remote workers choose to work remotely because of the flexibility it provides in their days - allowing them to harness their "hours of power" or peak moments of heightened productivity (Heuston, 2018).

It has been well documented that teleworkers report increased productivity (Di Martino & Wirth, 1990; Evans, n.d.; Gordon, 1988; Olson, 1988b; Pratt, 1984). Once again, the primary research corroborates these findings, with several participants listing a sense of more efficient productivity when working remotely. However, difficulty maintaining productivity was the number one difficulty listed by participants (alongside social isolation).

It is no surprise that our ability to complete tasks is in large part influenced by our ability to focus. Our ability to focus is in turn impacted in large parts by the spaces in which we work. Participants provided many tips, tricks, and suggestions for staying productive while working remotely. These are all included in the aforementioned Appendix G.

The research completed for this project sought to highlight the different ways we find our productivity impacted by different workplace locations by asking individuals who were completing the workbook to work from three different locations and compare their productivity and experience in each. Individuals worked from coworking studios, school studios, coffee shops, home, traditional office spaces and restaurants. The location's productivity rating and experience rating reflected the individual's own preferences, with extreme cases such as an individual rating coffee shops as their favourite place from which to work (partly because the distractions there somehow helped them focus), and on the opposite end of the spectrum there was a participant that had too much anxiety in attempting to pack their equipment to go work from a coffee shop that they did not end up attempting it (the participant is one that prefers to work from the comfort and safety of home).

Multiple participants listed the home as their favourite and best place from which to work as it was free of distractions (plus it can be written off as a tax expense), interestingly, a few participants commented the exact opposite - that home was the worst location in which they've worked since it had too many distractions.

This binary perception of home as either being the best or the worst place to work from may indeed be linked to one's personal ability to remain focused on task. In order to successfully work remotely self-discipline is a very important skill to have mastered, especially when the social pressures of the office are not present. Although there are no coworker watching over their shoulder, virtual programs do exist to monitor a worker's progress remotely, often logging keystrokes per minute and movements of the mouse.

Opportunities could exist for the design of a workplace that could help us maintain and develop our self-discipline. This could be achieved through material choice (i.e. isolation panels), virtual programs (i.e. a notification dimmer app), or a virtual personal assistant.

"Coworking / remote work is a blessing and I feel lucky to do it, but realize not everyone wants to do it (they would never work) or not everyone can do it based on work."

Kelsey Reidl,
coworking studio member

5 3 Types of distractions

From the survey results, I found that 61 percent of individuals found loud or noisy ambiences to be the biggest source of distraction when trying to work remotely. The second highest was social media, at 52 percent (participants were able to select multiple answers). FIGURE 15 depicts the research findings from the survey, and FIGURE 14 from the workbook (two different questions to enquire about sources of distractions).

The primary research found that distractions can be visual in nature (i.e. people watching), digital (i.e. e-mails), social (i.e. catching up on social media), or mental (i.e. stress).

"...the space is open and lacks furnishings to construct smaller micro-spaces (like a cubicle for private study or meeting space). Doesn't really inspire creativity."

SURVEY PARTICIPANT

"The din of movement and etherial and anonymous feeling that comes from being alone but among other people has given me some of my post productive work moments."

SURVEY PARTICIPANT

LEGEND

A Compulsively checking phone
B Excessively messaging friends and coworkers (gossip)
C Craving face-to-face conversations
D Surfing the net
E Lack of white noise
F Social distractions / people watching
G Temperature distractions (too hot, too cold)
H Inefficient technological set-up
I House chores / running errands
J Improper lighting
K Improper ergonomics / not enough physical space
L People talking
M Loud or noisy ambience
N Social media
O Phone calls
P Games

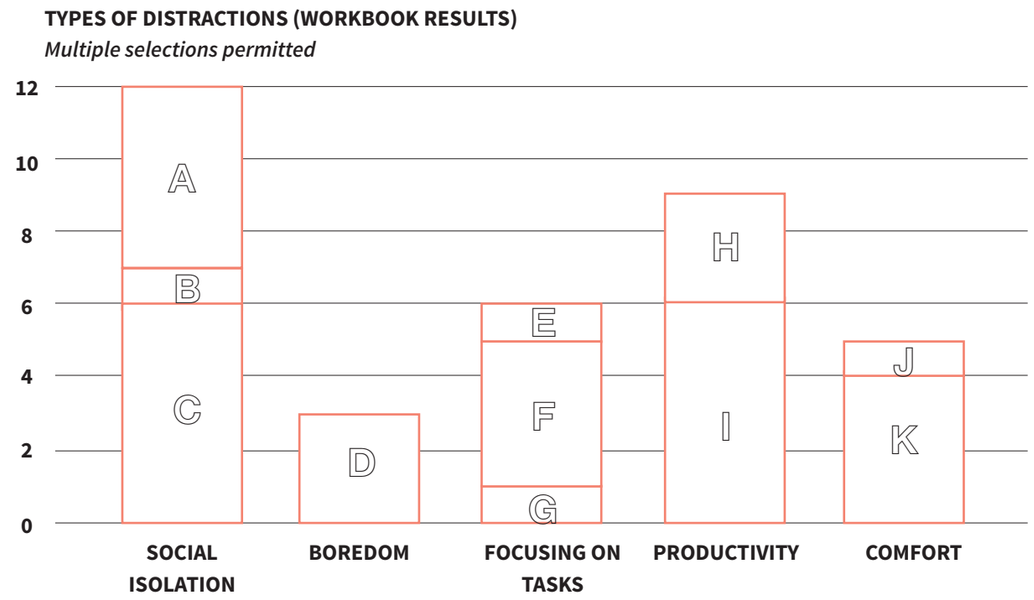


FIGURE 15 - TYPES OF DISTRACTIONS FROM THE WORKBOOK QUESTIONNAIRE.

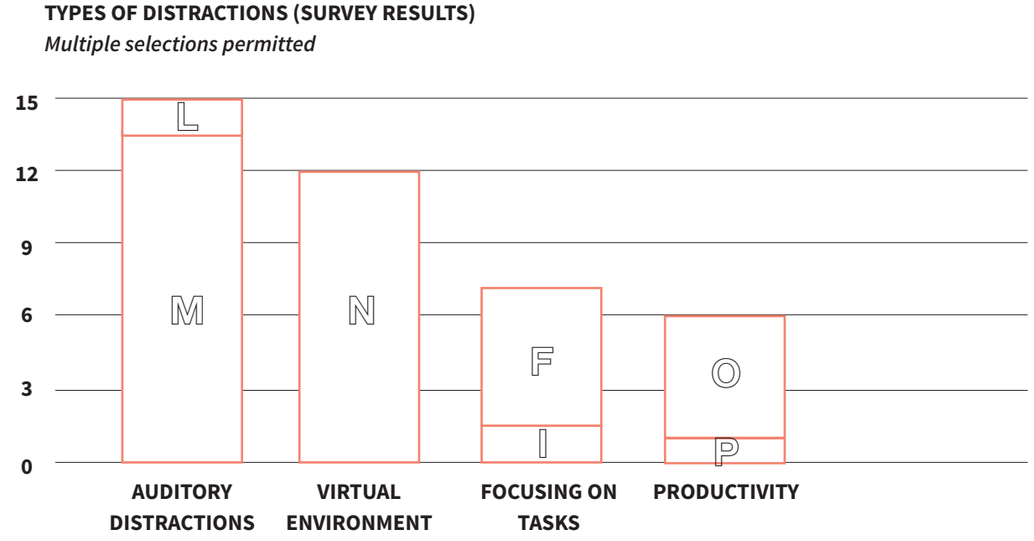


FIGURE 16 - TYPES OF DISTRACTIONS FROM THE SURVEY QUESTIONNAIRE.

5 4 Workplace rituals

Author Mason Currey who wrote the bestselling book *Daily Rituals: How Great Minds Make Time, Find Inspiration, and Get to Work* (2013), describes his inability to write unless he wore a specific hoodie with its hood up, as to him it became a symbol of work (Yudina, 2018, p.9). Another remote worker, Savannah Reising (2018), writes of her own remote working routine:

"A TRICK THAT'S HELPFUL FOR ME IS TO GET READY AS IF I'M GOING INTO THE OFFICE. I DO MY MAKEUP, GET DRESSED, AND HAVE A CUP OF COFFEE ALL BEFORE I SIT DOWN AT MY COMPUTER. WEIRDLY ENOUGH, PUTTING MY SHOES ON MAKES A BIG DIFFERENCE IN MY PRODUCTIVITY TOO. IT'S ALL ABOUT TRICKING YOURSELF INTO BEING IN A PRODUCTIVE MINDSET. MUCH LIKE YOU HAVE A NIGHTTIME ROUTINE TO SIGNAL TO YOUR BRAIN THAT IT'S TIME TO SLEEP (WASH YOUR FACE, BRUSH YOUR TEETH, PUT ON PAJAMAS), YOU CAN BUILD A MORNING ROUTINE THAT SIGNALS THAT IT'S TIME TO GET TO WORK."

These little rituals can help teleworkers create the spatial, temporal, behavioural, or social boundaries necessary to help distinguish work and nonwork roles (Ahrentsen, 1990; Kompast & Wagner, 1998; Smith, 1996 via Ellison, 1999). In traditional office settings, the commute has existed to help workers separate work and home (Ellison, 1999). Now, remote workers are faced with creating their own rituals to help create these mental boundaries to get themselves in the right mental workspace.

Architect Primo Orpilla, principal at the architectural firm O+A, echoes the need for architects to cater to an individual's patterns of behaviour saying that in their own projects they recognize that, "people are very ritualistic and different depending on what the tasks are that day. We want to make sure you have a space to go for all those rituals that matches your mood during the day" (Himmelstein, n.d.).

The primary research findings indicate that remote workers associate the brewing of beverages (tea or coffee) as being particularly important to help them achieve the proper working mindset. Similar to the examples listed above, several participants also indicated that getting dressed as if for a normal workday helped them assume a productive mindset. What is interesting is that only a few of the listed rituals involved physical objects. Some described filling up a water bottle, lighting a candle, and the use of superior paper and stationary items as helping them enjoy remote work. One participant listed the taking of supplements as a ritual they performed in order to get ready for work. Another participant mentioned headphones as being a key tool for their work routine - even if they were not listening to music, it helped them achieve a more focused state of mind.

"I always have my headphones, even if I am not listening to music."

RACHNA KUMAR,
STUDENT / CONSULTANT

Several indicated that exercise was key to their daily routine. Some prefer to do a workout before beginning their workday while others liked to use exercise as a type of break in the middle of their day. When remote workers decided to take breaks, two activities were mentioned a lot as the prefered activity to do when taking a break: taking a walk (for several participants it was with dogs), and eating. Other activities included among other things, catching up on chores and taking naps. These sort of findings help us better understand the lifestyle and desires of this small proportional segment of remote workers.

"A healthy balance of coffee, water, and morning exercise helps prep my brain for the day. I typically meditate before sitting down to work to help slow my mind."

EVAN QUIRK,
GENERAL MANAGER /
MUSIC COMPOSER

5 Types of environments

As was shown in earlier sections, space has the ability to psychologically impact our productivity, our creativity (inspiration) and feelings of self-worth. Participants seemed to be aware of this, with one saying “find a space that inspires you” and another encouraging to “work in different locations” as tips for being a successful remote worker.

Participants were also asked to describe their best, worst, and weirdest workplaces. This was done to gain an understanding where individuals feel comfortable enough to work and paint a more holistic view of modern workplace locations. The results have been listed in Table 2.

Interestingly, traditional office spaces were listed as some of the better workplaces because of their community of colleagues, their better furniture, and their access to tools such as printers, and scanners. This is another aspect of the current remote working experience - that of technical difficulties having to be mitigated and taken care of by the remote worker themselves, often crippling their productivity and ability to work.

The workbook participants were asked to attempt working from a new location of their choice, from a familiar location, and from their home. Interestingly, 75 percent indicated that their favourite workplace were cafés, however, their highest rated environments (in terms of productivity and experience) were not the cafés, but rather their homes[1]. Several participants acknowledged that the distractions of coffee shops help them focus.

“The background hustle [of the café] keeps me going, the white noise of it calms me.”

Chris Cormier, architect

“I typically favor a café or public space to work due to the social aspect. I like a cafe near my house. I’m a regular, the space is clean and yet rustic. Reminds me of home. They don’t have much for food, but the coffee and conversation is good brain food.”

Workbook participant

1 Their café experiences received an average of 3.13 out of 5 for productivity, and 3.13 out of 5 for experience. Home experiences were rated an average of 3.71 for productivity and 4.28 for experience.

THE BEST, WORST, AND WEIRDEST WORKPLACES

BEST WORKPLACES

- Home (x6)
- Office (x5)
- Coffee shops (x5)
- Library (x4)
- School (x2)
- Coworking space (x2)
- New York
- California oceanside café
- On a patio
- Maui
- Pub
- Parent’s place
- Own studio
- Airports
- Hotel

WORST WORKPLACES

- Coffee shop (x4)
- Airport (x3)
- Home (x2)
- Call center (x2)
- Small, closed in office with no natural light (x2)
- Car (x2)
- Shared office space (x2)
- Coworking space (x2)
- Cube farm (cubicle office)
- Library
- Design studio
- Painting studio
- Florida
- Denny’s restaurant
- The subway
- Food court
- Airplane

WEIRDEST WORKPLACES

- Airplane (x4)
- Restaurant (x2)
- Car (x2)
- Public transit (x2)
- OCADU second SFI studio
- Silent places
- Love Child Social (a nightclub)
- Government cubicle
- Boss’s house
- Drop-down space
- Airport
- Trains
- Dog park
- Semi-deserted office in London
- Industrial strip mall bay
- Florida

TOP ANSWERS

BEST WORKPLACES

6x	Home
5x	Office
5x	Coffee shops
4x	Library
2x	School
2x	Coworking space

WORST WORKPLACES

4x	Coffee shop
3x	Airport
2x	Home
2x	Call center
2x	Small, closed in office with no natural light
2x	Car
2x	Shared office space
2x	Coworking space

WEIRDEST WORKPLACES

4x	Airplane
2x	Restaurant
2x	Car
2x	Public transit

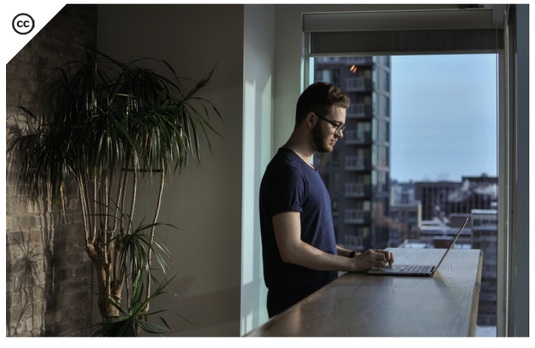
Table 2 - Best, worst, and weirdest workplaces reported by participants.

5 6 Workplace furniture

Overall, there were not many complaints about the workplace environments individuals worked out of. Some of this may be due to the "charm" of the locations, with one participant writing, "for some reason all of the 'distractions' actually help me focus on my work." However, the same cannot be said for workplace furniture. Overwhelming demands for more comfortable, more ergonomic desks, chairs and other furnishings was communicated.

Understanding our reasons for choosing to work from locations that can be less than ideal for the completion of work is key to designing a workplace solution that allows us to retain those desirable characteristic, while improving the general experience.

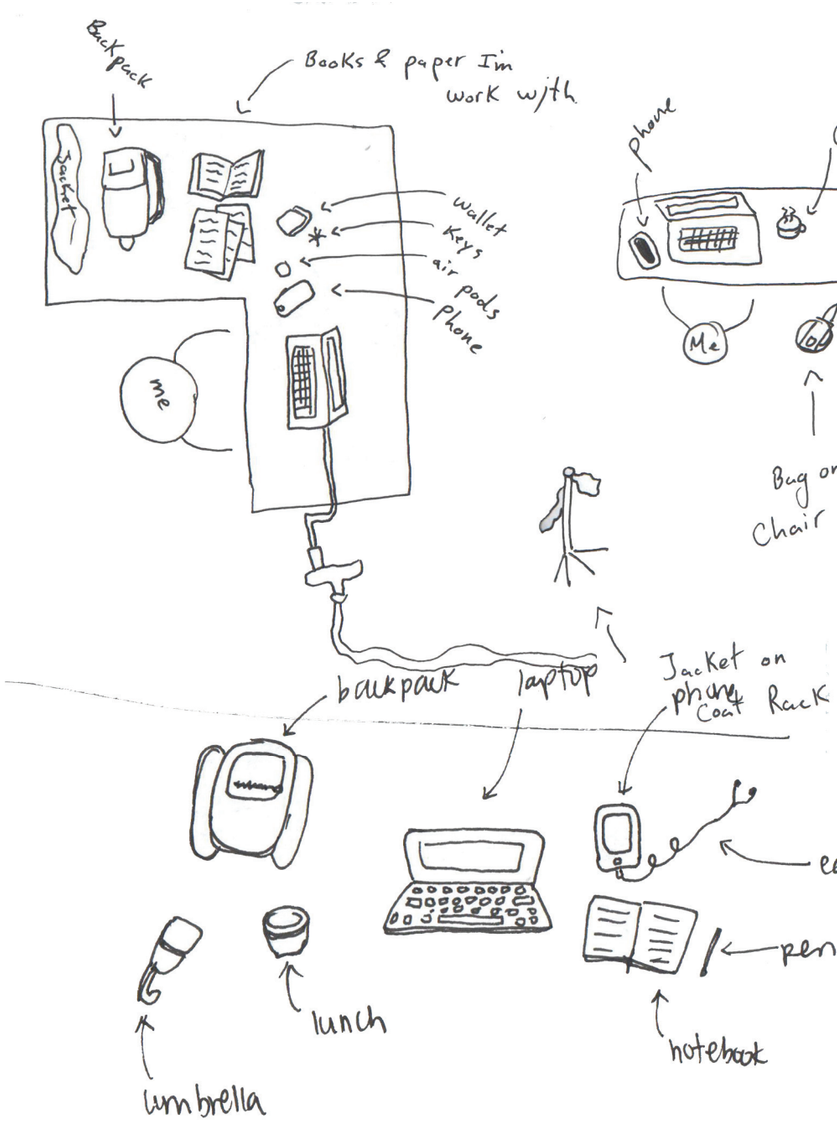
Some participants acknowledged that most of their furniture was not ergonomic enough, although there seems to be an underlying understanding that that is simply part of the remote working experience. For example, one participant described an uncomfortable and inefficient workplace setting yet rated the location a 4 out of 5 for experience and a 5 out of 5 for productivity. Another wrote that "because I have short legs, the high top table chair wasn't ideal, but that usually happens." That same participant indicated that they enjoy trying out different coffee shops to work from, even though they're not all "work friendly" and often don't have the right type of furniture. To them, it seemed as though uncomfortable furniture was just a given aspect of the remote working experience.

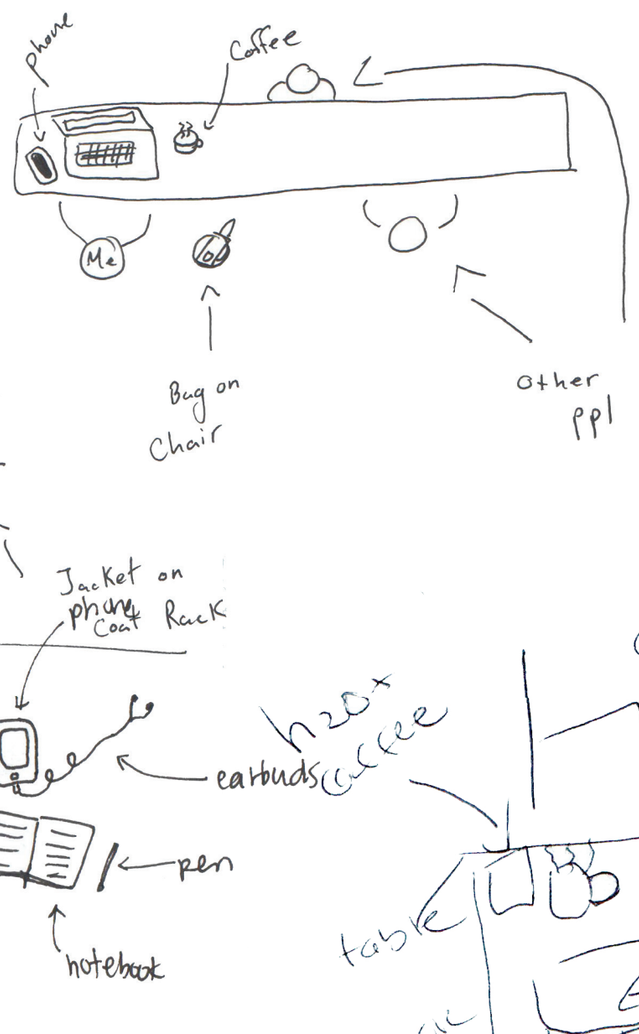


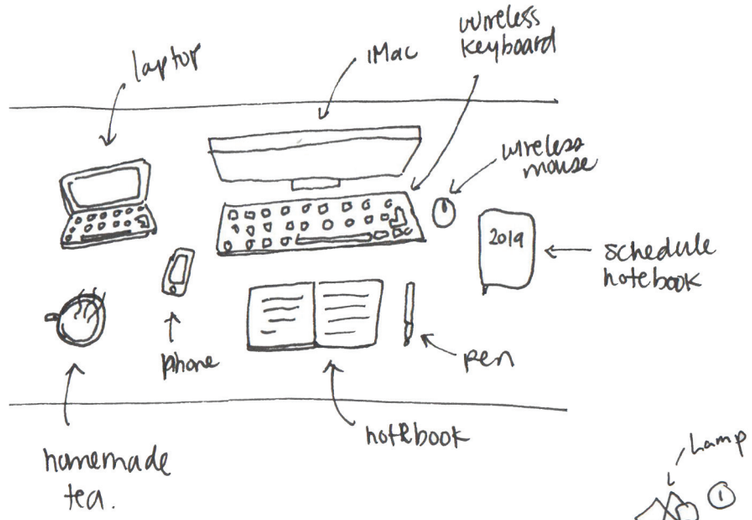
"I wish there was an office chair / arm chair hybrid. I don't like the look of traditional office chairs and if I am sitting all day I want something comfortable and stylish since my office is in my living room."

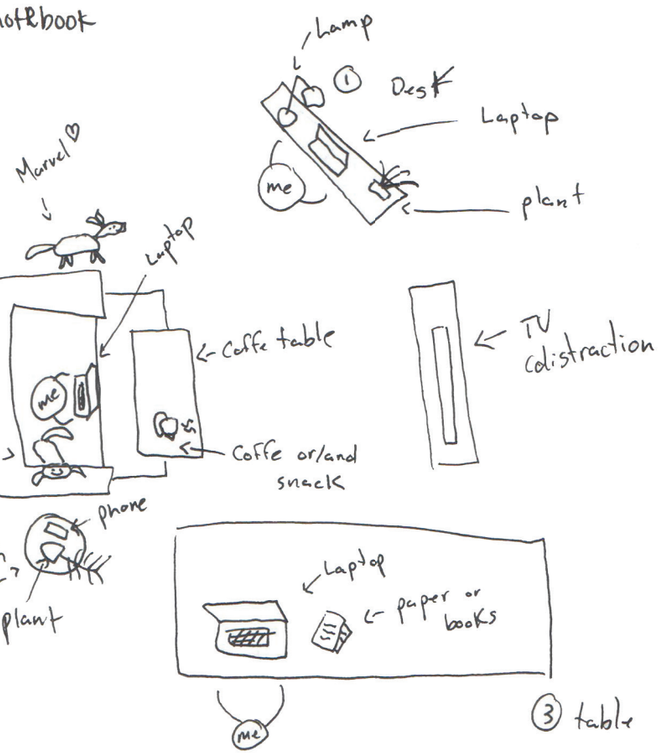
-Survey participant

It is interesting since designing ergonomic furniture is not particularly difficult. Standards and guides exist to correctly proportion chairs, tables, and other furnishings. The problem perhaps is that humans come in many different "proportions" so to speak, and the ergonomic guides tend to standardize all body shapes in order to provide an ergonomic suggestion that would be amenable to the largest percentile, however we are coming to the point where furniture could react to our body measurements and adapt to provide us the most comfortable and ergonomically correct workplace. Perhaps most importantly, we all have different definitions of comfort. Remote working allows us to work from locations we can tolerate, and should they not be to our liking, we may simply pack up and try somewhere new. This idea of the "hunt for the perfect workplace" is one that seems to motivate many participants. Once an amenable workplace is found, we often become repeat customers. Humans are creatures of habit after all.









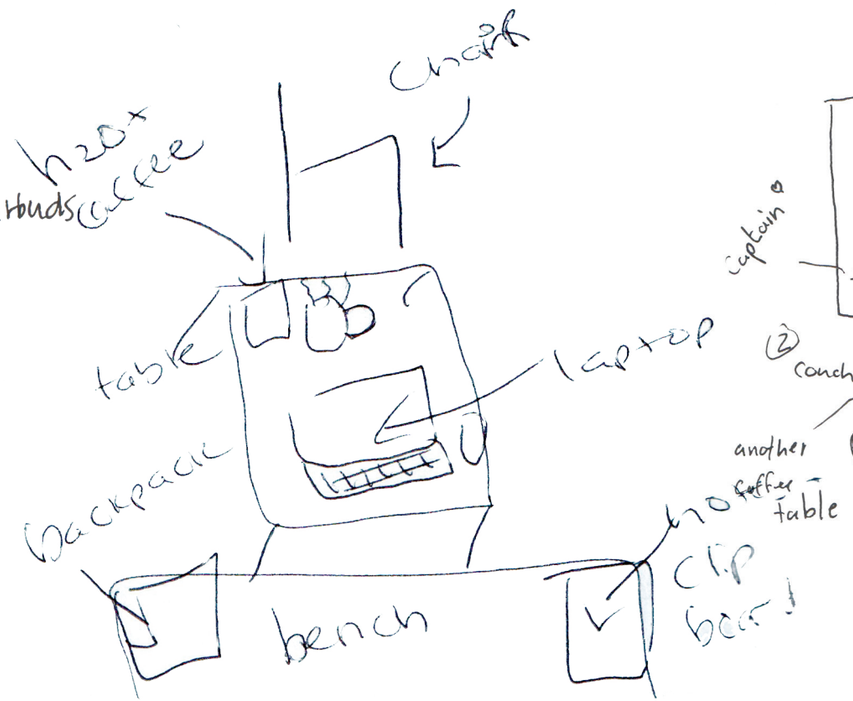
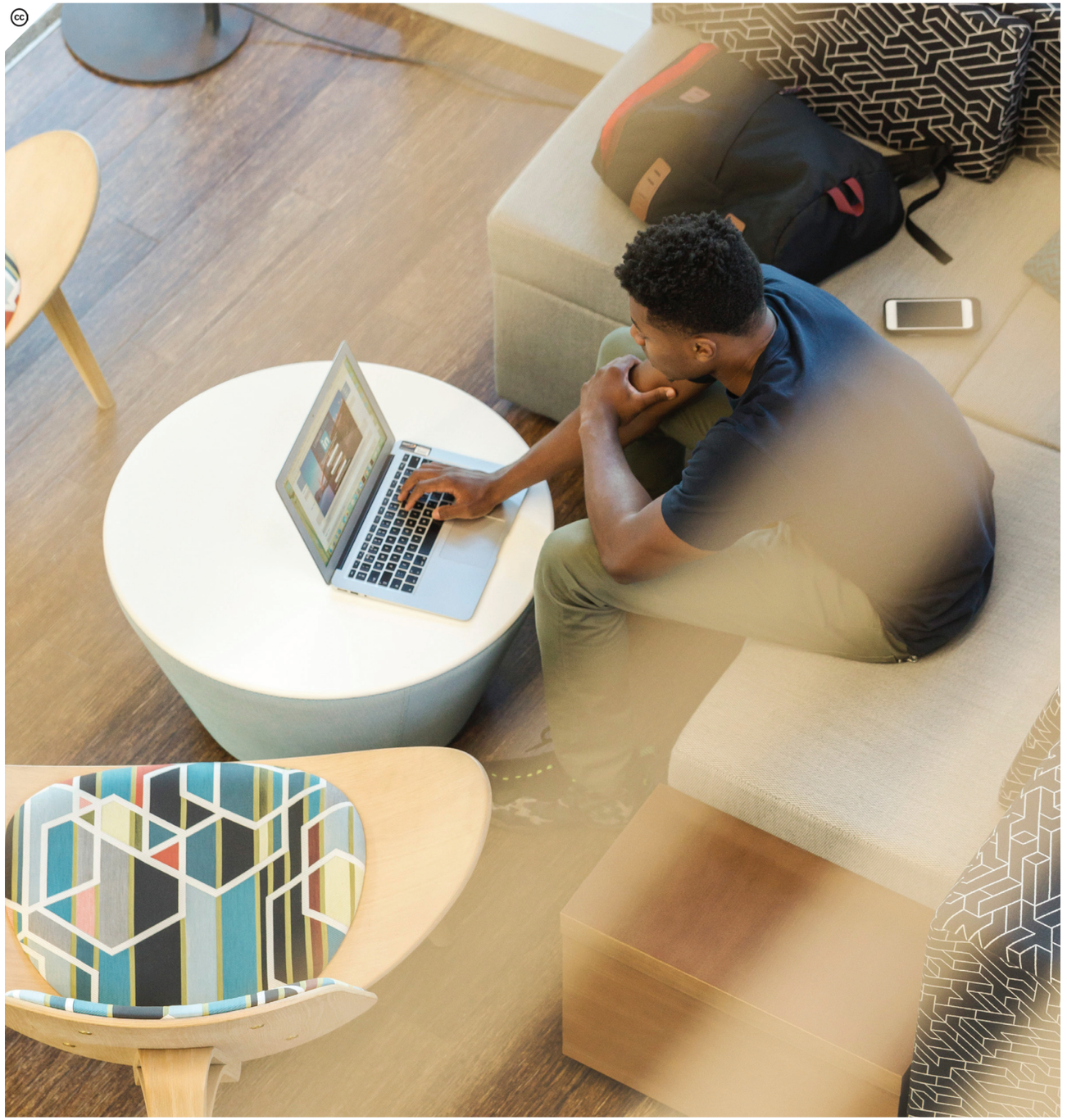


FIGURE 17 - DRAWINGS SUBMITTED BY VARIOUS PARTICIPANTS WHO WERE ASKED TO DOCUMENT THEIR WORKPLACE SETTINGS IN A SERIES OF DAILY OUTTINGS.

57 Workplace wishes

When asked whether they wished anything was different about their workplace products and/or furniture answers were once again pretty varied. When roughly categorized, the biggest wish for workplace furniture was better designed, more comfortable, or more flexible seating options (i.e. for a chair that allows you to sit cross-legged). Demands for additional space was also expressed. Additional room in the digital (i.e. more screens) and physical space(i.e. larger home office) were also noted.

Other wishes for the future of the workplace include wishing more people would adopt remote working lifestyles and that more employers would be willing to support or offer it.



58 Need for belonging

MITIGATING THE INVISIBLE EMPLOYEE SYNDROME

For many the alternative workplace is a type of third place which Ray Oldenburg defined in his book *The Great Good Place* (1999) as a location that is neither home (first place) nor work (second place), but rather an alternate location where individuals can engage in social behaviour and connect with the vibrancy of a community. Moreover, researchers are examining the role digital communities, such as virtual social networks, have as a third space (Yuen & Johnson, 2017).

SOCIAL ISOLATION

Research shows that a recurring reason limiting the adoption of remote working is feared or experienced isolation (Forester, 1989; Olson, 1988a; Pratt, 1984). The traditional workplace is one where we socialize and share with others. It is a place where we are seen and have a presence in the lives of others. This type of interaction positively impacts our daily routines. In research completed by Mogelonsky (1995), some office workers reported that the office gossip was one of the things they would end up missing the most if they were to switch to a telecommuting routine.

It is important to remember that we are, at our core, social beings that crave social interactions. This becomes challenged by remote workers who choose to work from home environments, isolated from human contact for periods of time. Author Yuval Noah Harari outlines that “humans are the only species on earth capable of cooperating flexibly in large numbers” (Harari, 2016, location 2164), and that humans are moved to act according to a warm social logic, rather than a cold mathematical one.

This warm social logic is challenged when individuals find themselves working alone for extended periods

of time. Crucially, a study by Cigna (a health company) has found that young American adults aged 18-22 are the loneliest generation - even lonelier than the elderly (Simmons, 2018). From the survey, 26% of individuals noted that their least favourite thing about remote working was the social isolation. However when asked about their favourite thing about remote working another 26% answered that they really enjoyed the absence of coworkers and the small talk and micromanagement that can come with those interactions. Once again this duality may be partly explained by personal working styles, with certain individuals needing social interactions to feel motivated and included as an important member of the team, whereas other more independent types may cherish the autonomy and "peace and quiet" (quote) associated with remote work. An interesting area of research lies in determining whether introverted and reserved personalities are more attracted to remote working options as it would allow them to bypass the social demands of the traditional office space.

"I wish there were more people my age in the same industry"
-Workbook participant

For those who crave to be included in social relationships, remote working can induce a condition named 'invisible worker syndrome', whereby employees feel underappreciated and forgotten (Heuston, 2018; Blount, 2015). There are several team management practices that can be implemented to alleviate this syndrome, such as maintaining active digital communication channels (i.e. Slack discussion) and organizing regular physical meetings.

SUMMARY
As this chapter has shown, there are many opportunities that participants have highlighted that could improve the current remote working experience. Opportunities ranging from more comfortable furnishings, to services that promote more social interactions amongst remote workers. The flexibility and autonomy associated with remote working is paramount to the experience, as are undertones of adventure and discovery. However, what does the future have in store for the workplace?

CRITICAL PAIN POINTS IN PRESENT EXPERIENCE

5 most important points of the current experience to be improved

1
Ergonomic discomfort: furniture not ideal for body types.

2
Ability to focus: distractions (physical, virtual, social).

3
Social isolation: desire for face-to-face communication, socialization.

4
Disorganization / lack of space: wanting more space (physical or virtual).

5
Community building: wishing to feel part like a valuable member of a team/community.

TRENDS

Now that we have an understanding of the past and present of remote workplaces, let's attempt to cast a look into potential futures.

WHAT THIS CHAPTER IS ABOUT

This chapter will look at the emergent behaviours and technologies that have the potential to shape the workplace of the future in more dramatic ways than has been seen in the previous chapters.

6

CHAPTER HIGHLIGHTS

Summaries of macro-trends

6 1 Further changes on the horizon

It is important to make note of changing spaces, structures, lifestyles, and values in order to gain a better understanding of what forces may shape the future.

The goal of this phase is to investigate societal, technological, and cultural shifts that may shape the future possibilities of the workplace. From important drivers such as steady urbanization and an ageing workforce, to important signals of change like increases in surveillance and the development of smart environments, our current landscape offers important hints as to what the future may hold.

"Think of foresight simply as insight into how and why the future will be different from today."
- Richard A. K. Lum (Lum, 2016, p.1)

This anticipation of future societal states informed by present day change is, at heart, what foresight is all about. Author Richard K. Lum describes it as simply as understanding and anticipating changes in our societies (Lum, 2016), and as "insight into how and why the future will be different from today" (Lum, 2016, p.1). By anticipating the changes, organizations can be better equipped to deal with future circumstances, and in so doing, build resiliency.

Strategic foresight recognizes the changes at play and sets to design strategies that will perform well in the face of uncertainty. In order to design these strategies, a complete map of important trends needs to be compiled. Most futurists use the categories of social, technological, ecologic, economic, political, and value-based changes to organize key trends. A compilation of multiple trends affecting the future of work is presented in Table 3.

From this scattering of trends we can deduct that there are important shifts in the ways we define ourselves, we relate with one another, we connect with one another, as well as shifts in the ways we consumer, create, and destroy[1]. As an example, the virtual world is posing new threats to our cybersecurity, providing new ways to network with one another, as well as allowing the creation of digital identities.

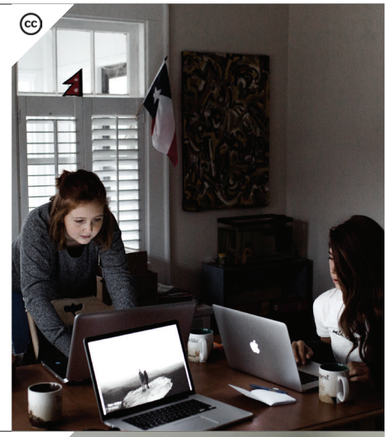
What follows in the pages after Table 3 are macro-trends that have been distilled from a curated selections of these global trends. The individual trends informing each macro-trend can be found described in more depth in the Trends booklet.

1 These categories echoes the VERGE framework, developed by Richard Lum and Michele Bowman. It is a framework that helps "think robustly and thoroughly about the impacts of a particular change from a personal/human viewpoint" (Lustig, 2015, p.138). It is composed of six pillars that each ask critical questions pertaining to the types of connections, impacts, and strategies that are needed to enact a particular change. It is a useful tool to help organizations and, in this case product designers, think through how change might play out.

Social trends

Demographics, lifestyles, social and cultural values, consumer behaviour, ...

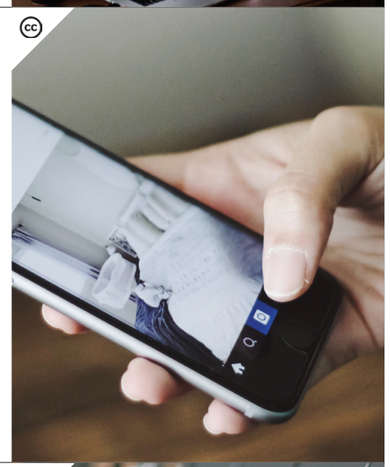
- Ageing working population
- Urban population boom
- No work-life separation
- Knowledge seekers
- Virtual communities
- Digital identities
- Networked societies
- Ethical companies
- Gender fluidity
- Non-nuclear families
- White minorities in North America and Europe
- ...



Technological trends

Innovations, transportation systems, energy, communications, ...

- Biotechnology / biohacking
- Nootropics
- Nanotechnology
- Artificial intelligence
- Automation
- Augmented reality (AR) and virtual reality (VR)
- Wearable technology
- Machine learning
- Internet of things
- Genetic engineering
- Intelligent products and spaces
- 3D printing
- ...



Economic trends

Business models, jobs, taxes, ...

- On-demand economy and instant entrepreneurialism
- Cryptocurrencies / blockchain technology
- User-centric economy
- Gig economy / Globalised work
- Experience economy
- Service economy
- Sharing economy
- Maker movement (prosumerism)
- Prefabrication and standardization
- ...

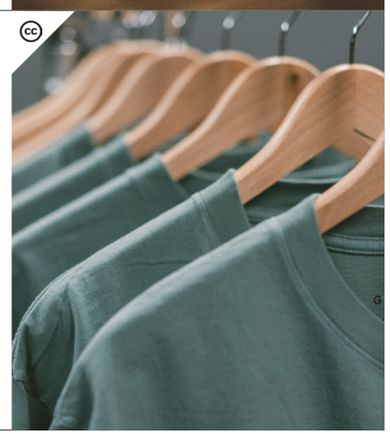


Table 3 - Broader look at important ecosystem trends coming into play.

Environmental trends

Climate, weather, ecosystem, animals, food production, energy, waste, ...

- Rise of technological waste (eWaste)
- Desire for naturals / organics
- Floating communities
- Mixed-use spaces
- Micro-living
- Alternative transportation models
- Cradle-to-cradle models
- Amenitization of space
- Alternative energy sources
- Recycling and upcycling
- ...

Political trends

Laws, governments, hierarchy, power, war, ...

- Participatory budget creations
- Cyber warfare / cyber attacks
- Loss of ‘true’ democracy through hacking - rise of puppet states
- Cultural sensitivity on the rise
- Reconciliation movements
- Privacy movements
- #metoo, #timesup movements
- Female leadership
- Polarization of politics
- Flat hierarchies and holacracy
- ...

Value-based trends

Opinions, desires, motivations, hopes, interests, ...

- Search for authenticity
- Quest for health and happiness
- Opensource
- Right to privacy (as a human right)
- Tech detoxes
- Greater demand for personalization
- Self-fulfillment
- Eco-friendliness
- Transhumanism
- Portfolios of self-expression (new C.V.s)
- ...

LOOK AT MACRO-TRENDS

MACRO-TREND A
Hybridized space

MACRO-TREND B
Upgrading mind, body, skills

MACRO-TREND C
Café of curiosities

MACRO-TREND D
Responsive environments

MACRO-TREND E
Trust & surveillance

MACRO-TREND F
We really care

MACRO-TREND G
Custom, just for me

MACRO-TREND H
Phygital world

MACRO-TREND I
Little helper

MACRO-TREND J
Equal opportunity

MACRO-TREND K
Mindfulness

6 2 Macro-trends shaping part of the future

The presented macro-trends span many themes including those of space, values, technology, and well-being. They speak of important shifts driving the way we will continue to evolve our working styles and our work environments.

As urbanization is projected to continue, the way we manage our urban space is projected to become instrumental in designing sustainable cityscapes (Birch & Wachter, 2011). In fact, as some of these trends will outline, it may become rare to see single use spaces. Instead we may see more shared spaces to encourage the cross-pollination between different industries, furthering the knowledge economy. In addition, shifts towards micro-living environments will push our spaces to become more high-functioning than ever before (Sweeney, 2013).

Not only will our physical space be rendered more powerful, so will our bodies and minds. Through the use of transhumanist developments and nootropic offerings, our abilities are set to be radically redrawn (Hughes, 2012).

Our abilities will be expanded by the use of wearable sensors and sensor-imbedded environments that could detect our movements to offer effortless and interface free interactions (Cook, Augusto, & Jakkula, 2009). Important data privacy considerations will need to be addressed in order to make these high-functioning environments come to fruition.

The future is looking promising for the rise of the digital world. Algorithms and artificial intelligence is perhaps one of the largest trends influencing humanity's future. The increase in automation and machine learning is set to rapidly and radically force us to reconsider our role in the economy (Frey & Osborne, 2013). While virtual overlays may soon augment our realities and render our environments as complex as we wish, some may choose to live their lives in an entirely digital world.

In addition, the way we will craft our careers in the future is looking to be one that is motivated by unusual career paths, driven by personal accomplishment and skill upgrades (Biro, 2016). These trends are preparing digital assistants and social robots to soon accompany us in our life's journey and may even become our perfect coworker. Finally, our physical environment will continue to be designed with human and environmental well-being at its center.

As has been demonstrated by this quick overview of the macro-trends presented in the following pages, the future is looking to blur the boundaries of technology and space. The way we will be working will continue to evolve and will continue to place new demands on the way we shape our built environment. What follows are summaries of the macro-trends that can be found in the TRENDS BOOKLET where their informing sub-trends and signals of change are outlined.

SPACE

MACRO-TREND A

Hybridized space

TREND A.1
MIXED-USE SPACE

TREND A.
AMENITIZATION

TREND A.3
MICRO-LIVING

TREND A.4
COMPANY TOWNS

SUMMARY

This trend is about the ways space is being revised to offer additional functionalities, and a more resourceful use of public and private space. This is in response to the added pressures on urban space, and trends in micro-living.

Several sub-trends inform this macro-trend. Noteworthy examples are those of hybrid-use and shared spaces, and those dealing with the transformation of the office space as a veritable work-life city. As we are seeing smaller living quarters, the way we use space is being redefined through multifunctional interiors and communities.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

It may become rare to see single use spaces. In order to obtain and retain a single use space, people and businesses alike will have to pay a premium. Another implication of this trend is that by sharing space, there may be more cross-pollination between different industries.

In addition, more specific zoning amendments may need to be implemented in order for fully hybridized space to manifest itself. Architectural programs and interior design programs will most likely need to be adapted, with the possibility of a new type of hybrid-planner becoming more popular.

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Furniture and interior spaces will need to be adaptable to facilitate micro-living environments
- Furniture will need to be multi-purpose to work well with mixed-use spaces (potentially modular?)

VALUES

MACRO-TREND B

Upgrading mind, body, skills

TREND B.1
KNOWLEDGE ECONOMY

TREND B.2
TRANSHUMANISM

TREND B.3
WELLNESS ECONOMY

SUMMARY

Here, we see a macro-trend towards the constant optimization of body, mind, and skills. Online learning platforms are offering free, high quality and accessible education to citizens of the world, with other platforms such as Skillshare and CodeAcademy teaching creative and coding skills needed to be competitive in the job market. Participants of the gig economy are aware that their skills, experience and abilities are what will ultimately land them a contract, and as such, are actively pursuing informal education paths.

Yet personal optimization is not limited to the mind. Sub-trends in transhumanism and genetic engineering are steadily upgrading our human bodies to become more high-performing than before.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Legal, illegal and black market offerings for upgrading body and mind
- Cyborg humans
- Revisit of the traditional education system
- Biohacking

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Furniture will need to be made of healthy materials
- Furniture, furniture systems, and environments will need to be designed to promote and sustain healthy behaviours
- Future workplaces should cater to our desire to feel ‘superhuman’

EXPERIENCES

MACRO-TREND C

Café of curiosities

TREND C.1
EXPERIENCE ECONOMY

TREND C.2
TRANSFORMATION ECONOMY

TREND C.3
SUBSCRIPTION ECONOMY

SUMMARY

This macro-trend highlights our growing desire for authenticity and the pursuit of self interests. It has strong links to the experience economy whereby consumers are choosing to consume experiences rather than purchase products. Taking it one step further, the transformation economy proposes that consumers are searching for transformative experiences as a service offering. We see this trend manifest itself through more niche traveling companies, off-the-grid living, and a constant interest in backpacking and RVing.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Development of larger tourism industries catering to remote workers
- The traditional 'career' is long gone, individuals choose to present themselves according to their skills-portfolio rather than their C.V.

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Remote workstations located in hotels, travel locations, RVs, and so on.
- Handmade workplaces that are unique, made by small communities of skilled artisans.

SMART SPACES

MACRO-TREND D

Responsive environments

TREND D.1
SENTIENT AND RESPONSIVE ROOMS

TREND D.2
WEARABLES AND CONNECTIVITY

TREND D.3
QUANTIFIED WORKPLACE

TREND D.4
SMART FURNITURE

TREND D.5
ENERGY

SUMMARY

The macro-trend of the 'health room' is that of the sentient and responsive interior environment. Programmable habitats are achievable by using smart sensors and biometric data. Rooms would then be able to recognize the individuals in a room and configure themselves to their user's preferences. In addition, your space could subtly shape itself to be the perfect aid to your workspace, by increasing the lighting as needed, adjusting the temperature, and curating select smells throughout your workday.

When combined with smart furniture that could adapt to your needs, the rise of responsive and empathic environments is proving a powerful driver for the future of working environments. When combined with wearable technology, rooms would be able to recognize each individual and customize their décor, their ergonomic features (i.e. table and chair height), and their level of lighting, temperature or smell to provide the ideal environment for their user.

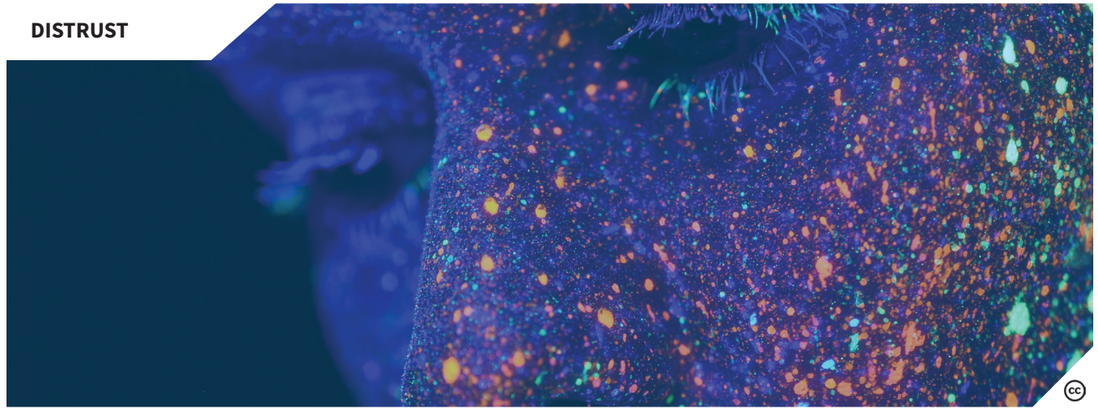
WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Our environments will soon be able to read our biometric data, what happens to this data?
- How will the rooms be used if there is a power outage?

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Workplaces will need to be designed to be able to be reconfigured mechanically (automatically)
- Future workplaces should integrate and interface with our wearables
- Difficulty in using a 'room' to perform work if the software becomes glitchy

DISTRUST



MACRO-TREND E

Trust & surveillance

TREND E.1
SURVEILLANCE

TREND E.2
CYBERCRIME

TREND E.3
REPUTATION ECONOMY

TREND E.4
ANTI-TRACKING

SUMMARY

With the rise of wearable technologies, smart home devices, and sensor-filled rooms, the amount of data harvested per individual will be enormous. This data could be paired with algorithms to understand working patterns and health factors. As another extreme, workers could be monitored around the clock to ensure that they are indeed performing the work they are tasked with.

With individuals ever more aware of the concepts of fake news and data manipulation, people are more wary of digital mediums as a means of communication. Cybercrime also poses a threat to our ability to trust technology in our lives.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Greater distrust in organizations, government, in one another
- Growth of a pro-privacy consumer goods market

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Blockchain could be used to verify and secure the transfer and purchase of 3D printing files

CONSUMPTION

MACRO-TREND F

We really care

TREND F.1
ETHICAL COMPANIES

TREND F.2
SERVICE ECONOMY

TREND F.3
BALANCED WORK-LIFE

SUMMARY

This macro-trend is about the rise in the number of companies that have a philanthropic arm, or are recentering their offerings to be more holistic in terms of user-experience, social, and environmental impact. There is a greater awareness of ethical concerns amongst brands and organizations, reflected in more purposeful and strategic brand building. Companies are acting as unofficial sponsors of particular lifestyles and mindsets that are linked to social responsibility, and environmental justice. In a way, this trend is almost representative of a cultural awakening in response to the global climate crisis.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- More product offerings that are sourced in an ethical manner
- Potentially more circular economy products
- Less planned obsolescence on behalf of the companies

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- The workplace is offered as a service
- The workplace is shared
- The workplace could become sponsored by a company

PRODUCTION

MACRO-TREND G

Made on demand

TREND G.1
MANUFACTURING TECHNIQUES

TREND G.2
OPEN-SOURCED INFORMATION

TREND G.3
RE-USED, NATURAL MATERIALS

TREND G.4
MULTI-PURPOSE FURNITURE

TREND G.5
RAPID ARCHITECTURE

SUMMARY

This macro-trend deals with the rise of affordable mass-customization through new technologies and open-sourced algorithms. We are seeing traditional consumer goods appear in more varied sizes. One such example is the iPhone which comes in different screen sizes not only to cater to personal preferences, but also to cater to different hand sizes.

With technologies such as 3D printing becoming ever more mainstream, the rise of custom-built, personalized furnishings is now looking to be just around the corner. In addition, the speed with which we can modify our urban environment is reaching new records, aided by robotics, prefabrication, and adaptive reuse of infrastructure.

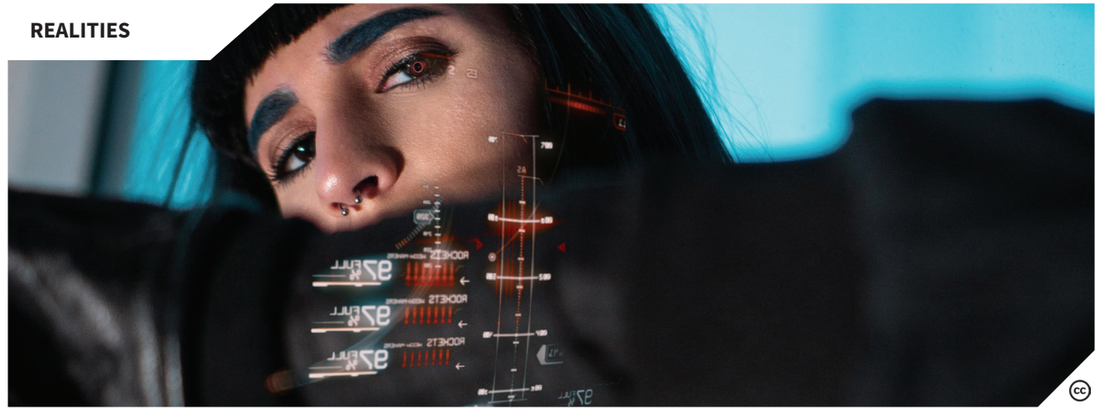
WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Body scanners and biometric data are sourced and used in future malls that act as product showrooms
- Hacked design plans

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Custom built workplaces, based off personal preferences and personal biometric measurements
- Faster turnaround times for production
- Easier and faster to customize furniture

REALITIES



MACRO-TREND H

Phygital world

TREND H.1
VIRTUAL COMMUNITIES

TREND H.2
AUGMENTED WORLD

SUMMARY

Physical and digital space are complementary and integral realities of the workplace. With technologies such as holoportation and augmented reality blurring the boundaries of the real and the digital world, the future of the workplace looks to be a promising blend of supportive technologies to more easily (and naturally) allow us to work remotely and internationally.

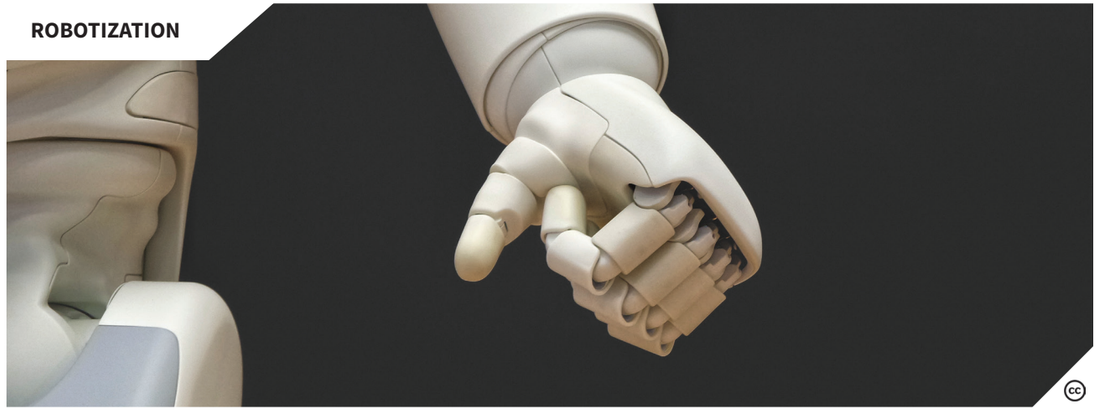
WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- We may end up spending more time in the digital world
- Our digital overlays could drastically transform the way we view the world

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Design of tools to interface with the digital workspace

ROBOTIZATION



MACRO-TREND I

Little helper

TREND I.1
AUTOMATION

TREND I.2
ARTIFICIAL INTELLIGENCE

TREND I.3
SOCIAL ROBOTS

TREND I.4
ROBOT RIGHTS

SUMMARY

Automation technologies, artificial and emotional intelligence, computerization, smart algorithms... the future is certainly directed for a digital and robotic rethink. The job market is at risk of being severely disrupted by such technologies, yet there are also many advantages to be gained. Social robots can provide us company and autonomous vehicles and robots can free us of unnecessary tasks, allowing us to focus our time and efforts towards more meaningful endeavours.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Risk of job loss
- Robots for companionship as well
- Artificial intelligence assistants

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Built by automated supply chains
- Integrated tech in the workplace (digital assistants)

EQUITY

MACRO-TREND J

Equal opportunity

TREND J.1
HOLACRACY

TREND J.2
RECOGNIZING DISABILITIES AS SKILLS

SUMMARY

The concept of equality are being replaced with the concept of equity. The difference between the two is that whereas equality seeks to make everyone equals, often through one size fits all approaches, equity seeks to level the playing field for equal opportunity for everyone, with solutions being customized for each individual.

In organizations around the world, a recognition for the abilities and talents of each individual are being harnessed through such initiatives as holacratic governance models and an appreciation for alternate skills (disability inclusion).

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Job seekers will apply to positions with a portfolio of skills rather than a CV of previous job positions
- Pay may be linked to effort applied to projects
- The diversity of the workforce will increase
- Human centered design will be more crucial in the design of services

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Our workplaces may track our relative efforts as opposed to our productivity

MINDFULNESS

MACRO-TREND K

Mindful balance

TREND K.1
TECH DETOX

TREND K.2
NAPPING

TREND K.3
MEDITATION

SUMMARY

As technology becomes more pervasive, a counter movement looking to unplug and reconnect with the 'real world' is growing. From digital detox retreats to napping clubs, this flavour of the wellness economy is gaining momentum. A renewed interest in mental balance and wellbeing is pushing the adoption of meditation and reflection exercises into the mainstream. Finally, the conversation around work-life balance is being redefined to include the tech-life balance.

WHAT ARE THE GREATER IMPLICATIONS OF THIS TREND?

- Anti tech device areas become more common in public areas
- Mindfulness practices integrated in our consumer behaviour

WHAT DOES THIS TREND MEAN FOR THE FUTURE OF THE WORKPLACE?

- Individuals may have two beds - one for sleeping overnight and the other as part of their coworking space for taking naps.
- Our workplaces might essentially become our spiritual guide

SUMMARY

These trends are useful for understanding broader societal, value-based, and cultural shifts that are echoed in the technological advances, environmental and political movements observable today. Next, we will use these trends to inform a foresight exercise, that of creating "views" (scenarios) of the future.

SCENARIOS

Let’s imagine a few surprising scenes that the future may hold for us.

7

WHAT THIS CHAPTER IS ABOUT

This chapter explains the use and development of a foresight exercise that will allow us to explore four potential versions of the future of the workplace.

CHAPTER HIGHLIGHTS

Futures cone
Scenario development
Scenario recaps

7 1 A view of the futures

Future scenarios are used as a tool to better prepare, inspire, and encourage change within society in order to better prepare it for the uncertainties and potential challenges that it will face. Images of the future have the potential to inform the behaviours and actions of its audience, thereby directly helping craft the future towards a desired state.

By using scenario planning exercises, product designers can identify design requirements for current and future product development (Randt, 2015). The use of futures scenario in product development has been used, but not publicized. As such, this research project is a bit of an experiment. The idea of using scenarios to help inform the design of products stems from the ability of scenarios to provide informed guesses as to future user experiences and needs. These future experiences and needs can then be juxtaposed with current experiences and needs in order to inform a more resilient design brief. This holistic design brief is then better suited to inform a durable, desirable, and resilient solution.

Yet, how can we begin to think of the future? One can think of the future as a set of nested realities. Futurist Joseph Voros was one of the first to publicize the use of the Futures Cone back in 2000, yet he acknowledges that previous uses of the cone were presented by strategists such as Charles Taylor in 1990 (Voros, 2017). The Futures Cone is a cone that visualizes an expanding view of potential futures, with the tip of the cone being our present state. Voros describes seven key futures present in the cone. These are the projected future, the probable, plausible, preferable, possible, and preposterous futures, all included as part of a potential future (Figure 16). It is important to remember that the future is not able to be forecasted with certainty, and although some scenarios may appear preposterous, they may indeed come be manifested.

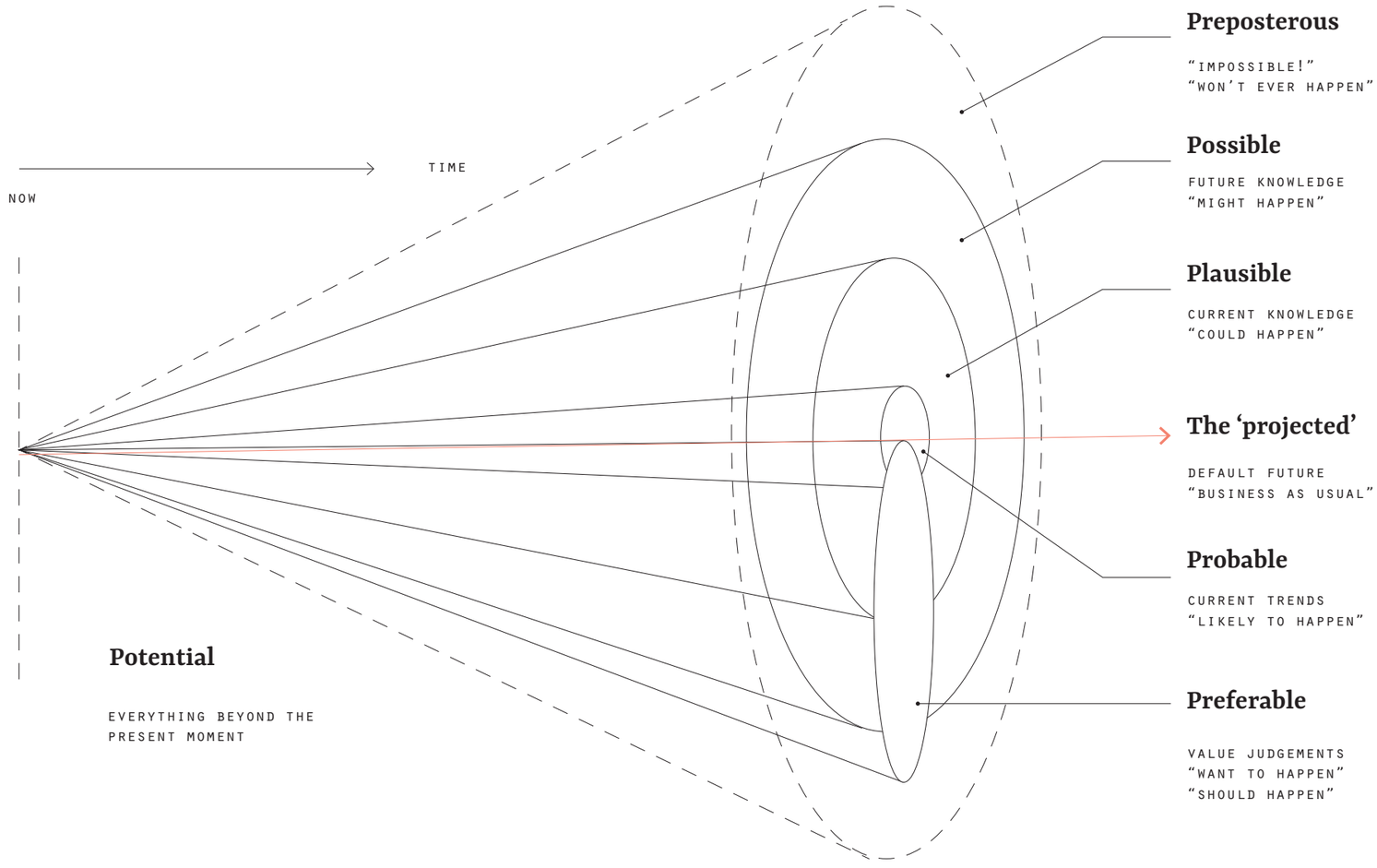


Figure 18 - Futures Cone, adapted from Voros (2017)

7 2 Scenario development

Put in its simplest terms, scenario development are written versions of possible futures. Scenarios can be used for two main purposes, the first is to encourage more diverse views of the future, and the second is to forecast the probability of certain futures (Lum, 2015). For this project, scenarios are used to inspire possible visions of the future, and to encourage discussions and critical thought related to the attainment of these futures. For this reason, the 2x2 Matrix approach, illustrated in FIGURE 19 has been selected as it is best suited for the creation of provocative (as opposed to predictive) views of the future (Lum, 2015). The 2x2 matrix is built by intersecting two critical uncertainties and exploring the results of this intersection in four separate quadrants.

However, when listing the critical uncertainties present in the research, numerous important themes were revealed. Tensions in our tendencies to trust technology yet distrust surveillance, differences in our desire for stability yet our yearning for novel experiences, and our increasing tendency to blur life and work versus our realization that such behaviour could be unhealthy. These three main uncertainties were used to add a third axis to the traditional 2x2 matrix, with the result being a 2x2x2 cube, depicted in FIGURE 20.

“Each and every one of us has been born into a given historical reality, ruled by particular norms and values, and managed by a unique economic and political system. We take this reality for granted, thinking it is natural, inevitable and immutable.”
(HARARI 2016, LOCATION 1030)

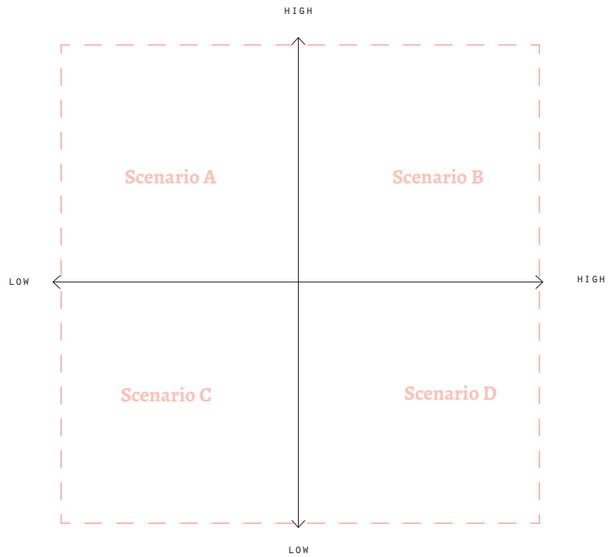


FIGURE 19 - THE TRADITIONAL 2 X 2 CRITICAL UNCERTAINTIES MATRIX.

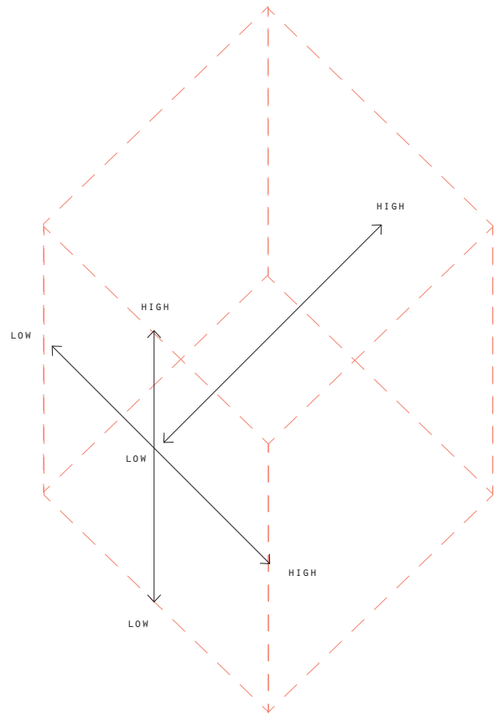


FIGURE 20 - THE 2X2X2 CRITICAL UNCERTAINTIES CUBE.

THE AXES

To build out the 2x2x2 cube, three critical uncertainties needed to be selected. The selected axes deal with trust in technological systems, with the level of work-life separation, and with the amount of commitment to self or to employers. By having three axes, a greater selection of STEEP-V[1] issues can be theorized.

1 SOCIAL, TECHNOLOGICAL, ENVIRONMENTAL, ECONOMIC, POLITCAL AND VALUES.

AXIS A

TECHNOLOGY - SOCIAL - ENVIRONMENTAL

Trust of technological systems

Distrust of technological systems

As technological systems become more and more ingrained in every aspect of our lives, a deep-seated distrust of its ability to gather data and conduct surveillance of our every actions has us questioning its 'friendliness,' our willingness to accept additional data collection, and our ability to control our privacy.

Although we question its level of integration in our lives, technology is nevertheless present in each scenario since it does facilitate collaboration and communication networks crucial for the completion of work, it is more sustainable than running a paper-based operation, and it does generally make our working lives easier when considering such things as searchable note-taking, document sharing, and e-mail.

It is therefore highly unlikely that society would completely forego all technological advances to revert to a less economically and environmentally feasible working style, and less practical system.

AXIS B

VALUES - ENVIRONMENTAL - POLITICAL

Separation of work and home

Integration of work and home

This axis deals with our willingness to integrate offices into our homes and to complete work from a home setting. With trends in micro-living spurring developments in multi-purpose spaces and furnishings, our ability to work from home is becoming easier and easier, especially when considering the mobility presented by the laptop and other such tools.

AXIS C

VALUES - POLITICAL - ECONOMICAL

Motivated by inner values

Motivated by external values

The third and final axis describes the balance between our source of commitment. Being motivated by inner values, our commitment is to our self-interest. Being motivated by external values, our commitment now becomes routed in the values of key influencers such as brands, political figures, and media.

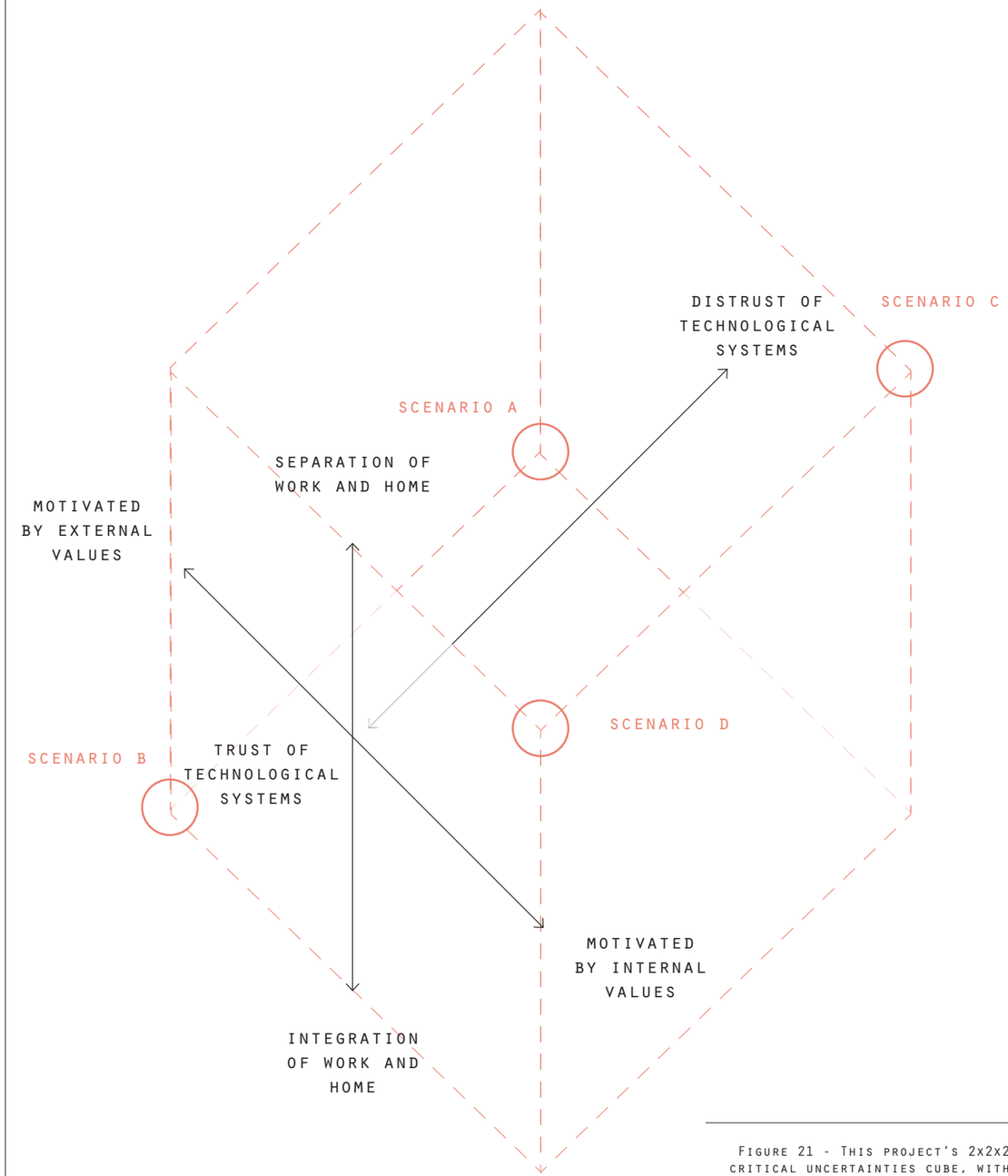


FIGURE 21 - THIS PROJECT'S 2X2X2 CRITICAL UNCERTAINTIES CUBE, WITH SCENARIO PLACEMENTS OVERLAID.

7 3 The scenarios

The created scenarios are subjective judgements that are based on present-day analysis of trends, as such, they are not to be taken as "predictions" as trends can obviously develop in unexpected directions. Wildcards which are low-probability but high-impact events that are hard to forecast can also easily disturb the trajectory of a trend (Petersen, 1999).

The critical uncertainties cube provides framing axes for 8 scenarios. However, for this project only 4 scenarios were written. This decision was on the one hand informed by time constraints, and on the other by a purposeful decision to ensure enough variety amongst the scenarios. A brainstorming exercise was produced for each of the 8 scenarios and resulted in the subjective selection of 4 scenarios that seemed the most different from one another. These were then developed into full narratives.

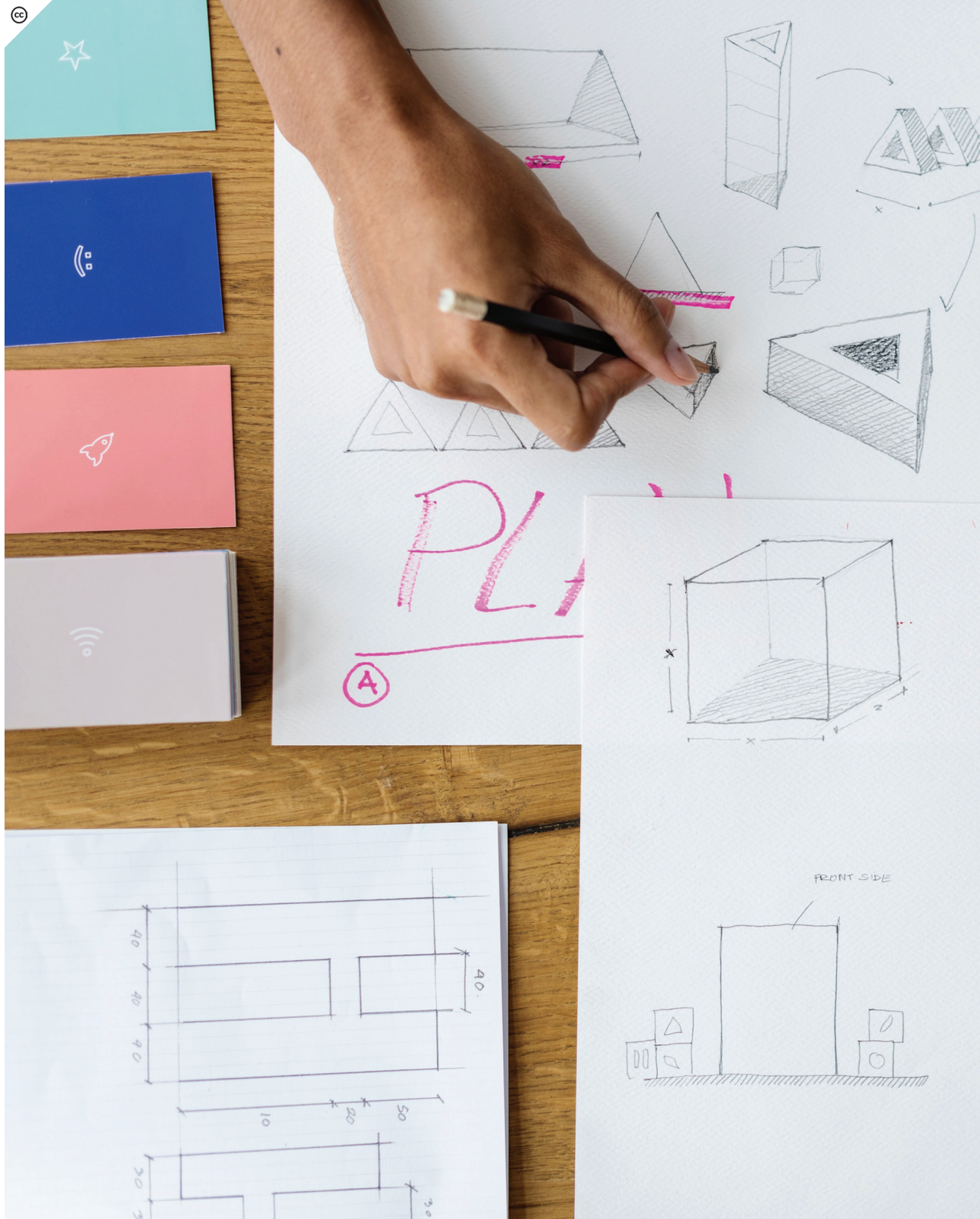
The following scenarios were created with future remote workers as the target audience. For this reason, they explore each world from a human-centered and experience based approach. Other industries such as coworking managers, furniture manufacturers and product designers, as well as urban planners and workplace strategy experts may find value in the exploration of potential future states.

The issues explored in the scenarios include discussions between the need for efficiency and comfort, between our need for inspiration yet our ability to become distracted, and explores issues such as community-building, urban infrastructure, and manufacturing techniques. The scenarios are set in 2045, approximately 27 years into the future.

There are a few points and driving forces that are universal to all scenarios. This includes a societal move towards sustainability, with certain scenarios pushing towards post-sustainability. This is because there is a global heightened sensitivity to our impact on the environment, and unsustainable companies and approaches are unlikely to gain much traction with the general public. Next, all scenarios include a version of a virtual workplace and all scenarios include rich, human-centered workplaces as automation and artificial intelligence enter the workplace, catering to the human in us will become critical to staying engaged in such a time of change.

The full scenarios and their daily experiences are available to read in the SCENARIO BOOKLET. What follows are short recaps of these scenes.

There are four main archetypes of the future. The future can be what I expected, it can be better than I expected, worse than I expected, and finally it can be weirder than I expected.



SCENARIO A

Technicorp's Class of '45

TECH DISTRUST - EXTERNAL MOTIVATION - WORK-LIFE INTEGRATION

In this scenario your workplace is intrinsically tied to a specific lifestyle, accessible through office neighbourhoods. The personal workplace is seen as yet another tool to 'get work done,' and the blurring of work, leisure, and life is a dominant tactic used to increase output (and retention) of employees.

MACROCOSM

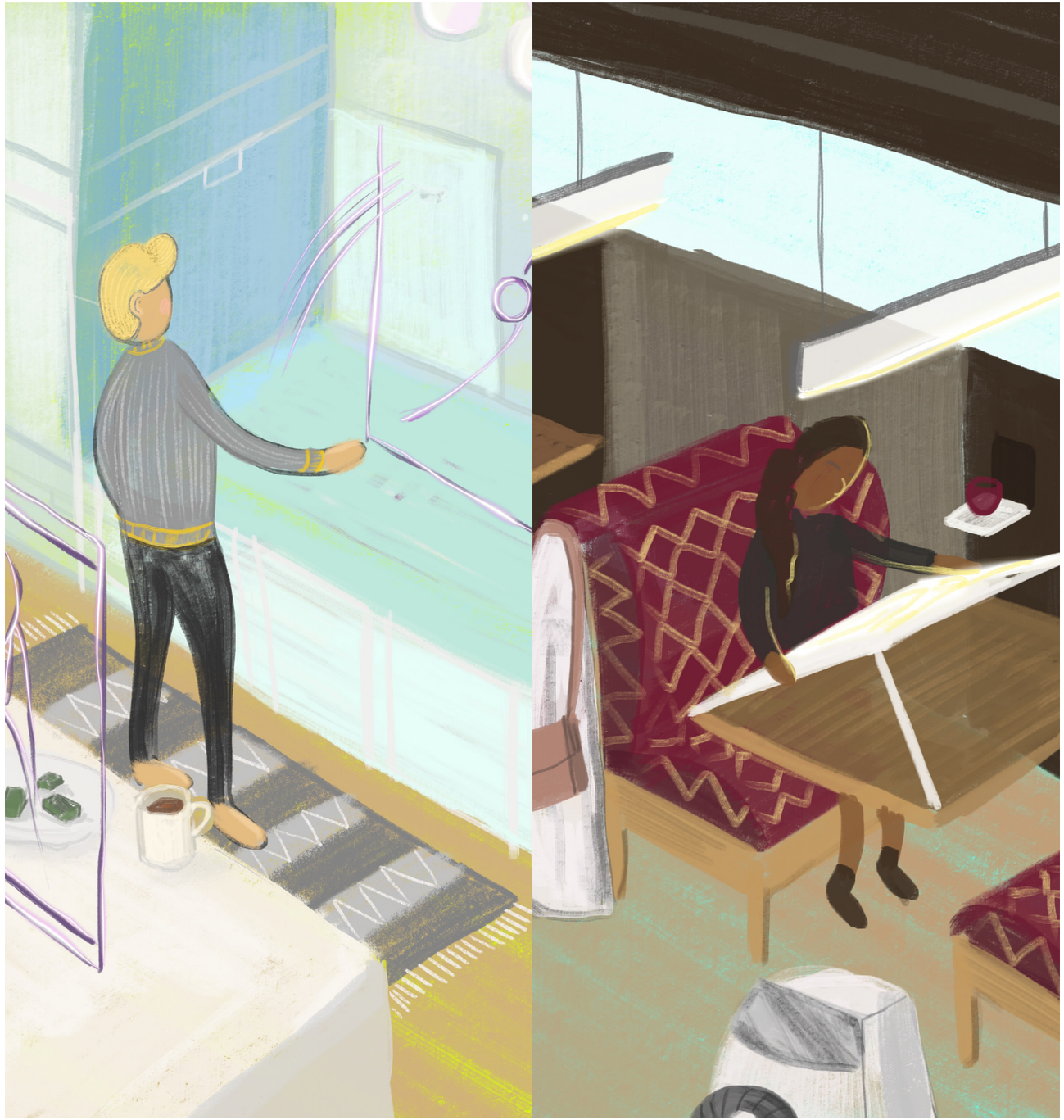
The world is characterized by modern company towns (alternatively called office neighborhoods). The workplaces have become highly experiential as a bid to attract and retain their employees / inhabitants. Additionally, a distrust of technology has evolved yet it is seen as a 'necessary evil' for getting work done.

DAILY EXPERIENCE

This scenario follows a typical work day at home for Ethan who lives with his family in a micro-suite on ByOE Pharmaceuticals' campus.

IMPLICATIONS OF THIS SCENARIO

- Coliving and coworking places could essentially become types of company towns
- All-inclusive living has the ability to create sponsored lifestyles, where employees become part of a "culture clan"
- New urban developments have to include coworking or work-from-home designs
- Workplaces designed as "traps" to retain employees
- Multi-purpose furniture becomes mainstream
- Nootropic coffee and other laced foods are normal
- Cybercrime efforts are to be expected



SCENARIO B

Oui, bonjour, at your service

TECH TRUST - EXTERNAL MOTIVATION - WORK-LIFE INTEGRATION

In this view of the future, the economy has become shaped by the demand for services. Our relationship with work has not evolved. It is still seen in a traditionalist way, primarily as a business opportunity and as a method for obtaining money. Work is not about self-improvement or larger motives but more about the economic benefit it can provide. The workplace has become a bundled service offered by key service providers.

MACROCOSM

The individuals in this world have fully embraced technology as an essential part of life. Citizens live in an augmented reality wonderland, and are borderline workaholics that enhance their cognitive skills with nootropic offerings.

DAILY EXPERIENCE

This scenario takes a look at a typical day for Melinda as she heads downtown to work from one of her favourite 'Workplayces.'

IMPLICATIONS OF THIS SCENARIO

- Augmented reality allows the physical space to be altered to one's personal preferences
- Large amounts of data are collected yet are used to offer us very tailored services and experiences
- Furniture is a leasable service
- Holoportation has facilitated remote collaboration
- Companies have networks of satellite office spaces
- Bundled services can help individuals create their perfect workplace experience
- The informal workplace can become a space to meet new people and build a network
- Government sponsored core worktool
- Smart furniture that adapts to your preferences

SCENARIO C

ReCoCo

TECH DISTRUST - INTERNAL MOTIVATION - WORK-LIFE SEPARATION

This is a world wherein work is predominantly designed as a way to address social issues through a collaborative effort. A feeling of oneness and collaboration prevails as technology becomes more threatening to human employment. We see the workplace being organized and maintained as a community, with coworking and co-living spaces all around. Peer-to-peer knowledge sharing networks have replaced traditional professional development programs.

MACROCOSM

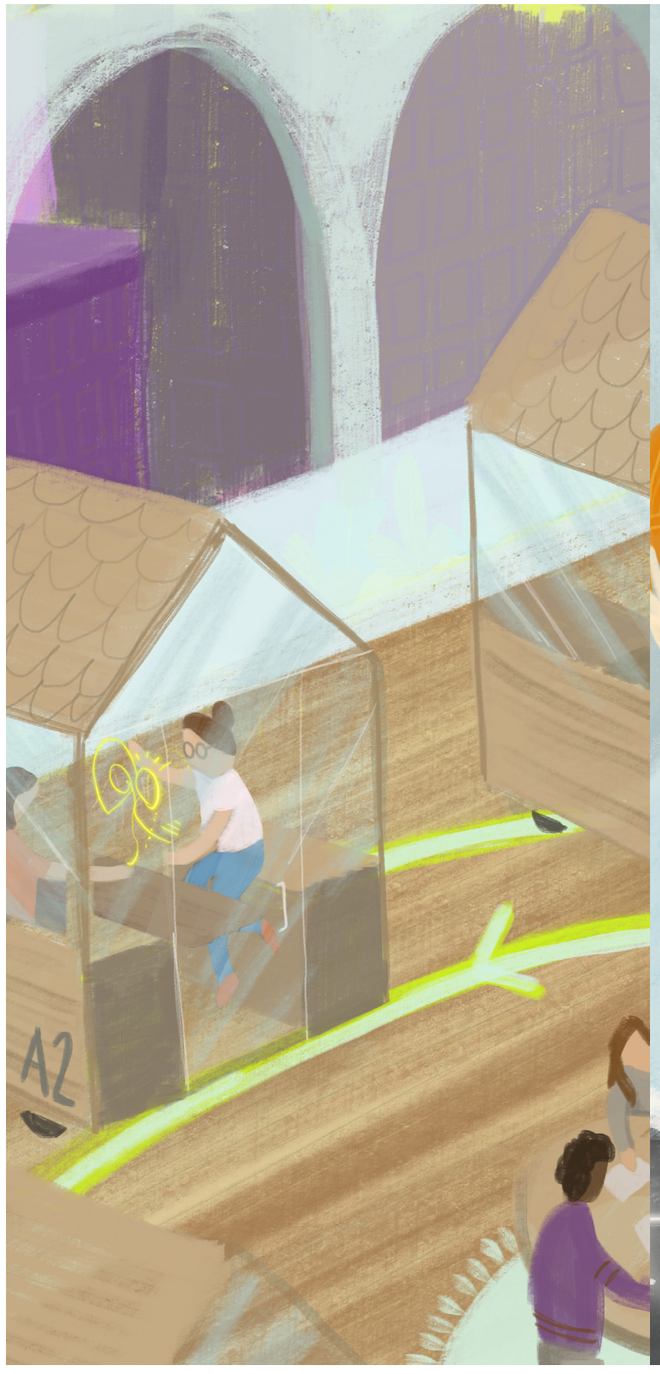
The discovery of alien life has kindled a renewed faith in humankind. The use of artificial intelligence is restricted in an effort to more fully harness humanity's core talents. Live-work communities are the norm and are curated to enhance social interactions and innovation.

DAILY EXPERIENCE

This scenario takes a look at a pair of coworkers participating in a remote working exchange program in Manila.

IMPLICATIONS OF THIS SCENARIO

- High performance coworking buildings, complete with services and purposeful knowledge sharing programs.
- Fear of technology restricts its use
- Subsidized technology to try and increase its use
- Wellness ratings are included on nearly everything next to services, products, and experiences.
- Upskilling and education platforms are the main ways education is disseminated.
- Live-work communities are branded as knowledge networks
- Four day workweeks



SCENARIO D

The great escape

TECH TRUST - INTERNAL MOTIVATION - WORK-LIFE SEPARATION

In this world your career is viewed as an opportunity to explore and develop your inner desires. Work is seen as a chance for adventure, and the workplace is less about the location or social network it can provide and more about the experience it can offer. The workplace has become a status symbol once again.

MACROCOSM

Cyborgs and virtual assistants are all the rage in this future. The workplace is all about self-expression and is often used as a way of bragging about the environments you were able to afford as a workplace. Coworking and elitist workplaces have popped up all over the world, under the sea, and even up in the sky.

DAILY EXPERIENCE

This scenario follows Lux as they work from a reservable urban workpod.

IMPLICATIONS OF THIS SCENARIO

- Transhumanism movements have created cyborgs and augmented humans able to redefine the limits of human productivity, efficiency, and creativity.
- Digital personal assistants may end up knowing our skills and competencies better than we do ourselves.
- Social competition could be used to increase work ethics.
- The workplace could become a bragging right.
- Gamified working styles can jeopardize our work-life balance.
- Prefabricated smart offices could be sprinkled across cities, rendering underused space efficient again.

7 4 Evaluation of scenarios

For this project, the point of building scenarios was not necessarily to select one of the scenarios as a ‘desired future,’ rather it was an exercise meant to broaden the way we think of what’s to come. By exploring possible worlds, we are forced to address our assumptions of the future. The lessons learned through building the scenarios include information that can help structure design principles for future telecommuting workspaces. In some cases the scenarios helped to brainstorm potential future business models (in rough states) that could potentially exist in the not so distant future (one such example is featured on PAGE 162).

In all of the scenarios there exist positives and negative aspects of the workplace for individuals. It might even be possible to create a future where aspects of all of the scenarios are present. The four scenarios may co-exist since the three uncertainties are all linked to personal preferences. Where society could generally distrust technology, enclaves of individuals who value technology could exist as a countermovement within this world. Similarly, whether individuals are intrinsically or extrinsically motivated are two value sets that can, and should, be expected to co-exist. Finally, the question of work-life balance is one that is deeply personal, and as such, it is to be expected that several options would exist to cater to individual desires for work-life integration or separation.

FORESIGHT EXERCISE KEY TAKEAWAYS

5 most important insights captured in foresight exercises

1
Use of responsive and ambient intelligence in interior design.

2
Artificial intelligence and smart algorithms as facilitators of the more productive workplace.

3
The workspace as a service, that doesn’t require individuals to own or carry physical worktools, personalized bundles.

4
Prefabricated work environments and urban infill.

5
Workplaces as semiotic status symbols.

Image source: (Bugeaud, 2012)

INSIGHTS

What does all of this research mean for the future designs of the workplace?

WHAT THIS CHAPTER IS ABOUT

What are the insights that resulted from all of this research? Now is the time to begin to answer our original research question, “how might we better design workplace settings to best support the needs of current and future remote workers?”

8

CHAPTER HIGHLIGHTS

Perspective shifts
Human-centered design guidelines

INSIGHTS **This is what you've been waiting for. We began by taking a look at the past and present of workplaces. We then completed a foresight exercise to gain an understanding of potential future directions of workplace furnishings and environments. From a user-centered perspective we took a look at the present-day experience of remote working. Now it is time to take a step back from the research, take a macroscopic view of the data and synthesize key insights pertaining to important areas of opportunity linked with remote working and the future of the workplace.**

8 1 Perspective shifts

To begin, I'd like to cover how this research project informed 9 significant perspective shifts. These are things that I've learned from the process that have shifted, or forced me to reconsider, my view of the subject matter. These shifts have indirectly informed the research insights (guidelines and strategies) that will be presented in the following pages.

INSIGHT 1

Alternative workplace comfort should not be seen as a compromise for more autonomy

One of the key point that has come to light from this research is the discovery that many remote workers simply assume that their workplace environment is going to be subpar, perhaps a bit uncomfortable, but that ultimately that's part of the charm of working remotely. It's almost the trade-off they accept in order to gain autonomy and flexibility in their working style. However, even if comfort and proper ergonomics are viewed as a compromise, it is important to realize that we have the power to change that relationship. We have the power to demand that our remote working environments are just as performing and ergonomically adapted as traditional office spaces.

INSIGHT 2

Designing better alternative workplaces will allow us to do our *best* work

Next, the realization that space and furnishings really are important to us getting our best work done. As an expert mentioned to me, "working remotely is akin to being in school and needing to get your homework done. You just get it done however you can… you've never *not* gotten your homework done because you didn't have the correct desk. Rather, if you didn't get your homework done it was most likely due to problems with your work ethic. The same is true for remote workers." While, true that we have never "not gotten work done" because of our environments, we have perhaps not been able to do our best work because of our environments or tools.

INSIGHT 3

Providing individuals with custom-made working strategies to achieve their best work may be more efficient than providing them with custom-made workplace furnishings

It is not surprising that no "one-size-fits-all" approach can be used to design a perfect workplace for every single remote worker. In addition, tied in with the second insight, although furnishings are important to support our best work, developing strategies for improving a remote worker's ability to focus and strengthen their work ethic can have a much more positive impact on their experience of working remotely.

INSIGHT 4

Contract work can be seen as a manifestation of the knowledge economy

When working as a contract worker, a greater emphasis on the social network is required to find jobs, and in certain cases to find appropriate collaborators. Knowledge sharing and upskilling are crucial activities in the gig economy. By viewing this shift towards more contract work, we can also view it as a shift towards a more social workplace network driven by knowledge sharing.

INSIGHT 5

It is critical that we rethink the role of traditional office spaces

As employees move to remote working practices and employers seek out greater numbers of contract and remote workers to fulfil their project teams, the traditional office space will need to be rethought as a tool not for attracting or retaining talent, but rather for providing efficiencies to remote teams. As such office space could be repurposed as a weekly (perhaps mandatory?) gathering place for remote employees. It could also be reimagined as a resource centre for a remote workforce who may come and use it for its facilities.

"To an increasing degree, the office is a culture, not a place."

- Koray Malhan
(Moreno, 2018)

INSIGHT 6

Future workplace designs should inspire trust in technology, our environment, and in one another

With quantified workplaces threatening to become the norm, it is important that our work settings not only inspire trust, but actively help us control how we trust technology, either by allowing us more control over what data we share, or by building up a relationship with our technology (perhaps through emotional artificial intelligence advances).

INSIGHT 7

Work-life balance is not a scale to be placed in equilibrium, instead it is a personalized ratio fit for each individual's motivations and desires

When talking about work-life balance it is easy to assume that there is a "correct" balance to have, that perhaps everyone's lives should be perfectly balanced between 8 hours of work and 8 hours of "life". Work too much and you're a workaholic, work too little and you're perceived as lazy, live too much and you're seen as unfocused, live too little and society pushes you to rethink your values. What remote working challenges is that "life" can happen at the same time as "work". They do not have to be separate. Each person has the ability to craft their perfect ratio of work and life activities, and is equally free to have them coexist concurrently.

INSIGHT 8

Accountability to ourselves and our teams is going to be a critical underpinning for the future of remote work

In the digital age it is possible to hide your true intentions, avoid individuals, and hide emotions. Remote working also provides much of the same actions. How can our workspaces promote accountability? Accountability to ourselves, to ensure we stay on track and accomplish what we set out to do? Accountability to our clients and teammates, ensuring we truly are paying attention to each other (i.e. not multitasking when in a virtual call)?

INSIGHT 9

Remote working environments should grow old with their users

As the age of retirement continues to rise, our workplace environments should seek to either fit the needs of a more senior workforce, or ideally, should be adaptable enough to "grow old" with a worker. Taking a more inclusive design approach will facilitate intergenerational workplaces that will not encourage excessive material consumption. Workplaces may even develop heirloom-like qualities that could be passed down to younger generations of workers.

8 2 Human-centered design guidelines

Next, here's what I've distilled from the primary research. These are user generated findings that will inform the human-centered design of future of workplaces.

Through research, I heard four themes consistently present themselves. These four themes are what I believe individuals are asking for with regards to the design of their future workplace settings. This research project found that as individuals, we want our workplace settings of the future to be designed with efficiency, comfort, community, and inspiration in mind. These themes directly respond to the biggest concerns found in the primary research: troubles with productivity (ability to focus), ergonomic comfort, and social isolation.

These are the main areas of opportunity that this research has found needs to be addressed if we want to be successful in creating more meaningful workplace experiences. Although these themes may seem rather obvious, each theme can be thought of as a "capsule" to be unpacked to reveal multiple sub-themes. They act as preliminary value propositions that need to be satisfied or offered by future workplace settings.

Together these themes act as a set of human-centered design guidelines that have been incorporated into an example design brief that can be found in APPENDIX H.

Efficiency

PRODUCTIVITY
ADAPTABILITY
CONVENIENCE

Comfort

PHYSICAL, MENTAL, EMOTIONAL WELLBEING
SAFETY AND SECURITY

Community

SOCIAL CONNECTION
BELONGING

Inspiration

PERSONAL GROWTH
SELF-EXPRESSION

Efficiency

By efficiency I mean workplaces focused on productivity, adaptability, and convenience.

INSIGHTS INFORMING GUIDELINE

Designing better alternative workplaces will allow us to do our best work

Providing individuals with custom-made working strategies to achieve their best work may be more efficient than providing them with custom-made workplace furnishings

It is critical that we rethink the role of traditional office spaces

Designing efficient workplaces will ensure more enjoyable workplace experiences. Physical efficiencies include creating artefacts that fit a user's mental models, thus facilitating a positive user experience. This means designing for ease of use and designing for existing human behaviours by correctly identifying human factors at play.

Another aspect of designing for physical efficiency is designing workplaces that are flexible and adaptable to different working styles. Whether group work is needed, or individual focus work is required, the workplace of the future should be able to quickly and efficiently adapt to our demands. This means having workplace furnishings that can be adapted to a productive, performative, social, or infrastructural space. This evolution (of providing flexible and adaptable spaces for changing needs) of the workplace corresponds to the fifth E in the 5Es of Inspiring Environments proposed by Kursty Groves and Oliver Marlow (2016) that was seen earlier in CHAPTER 3.

"Workspace performance is a measure of the effectiveness of a workspace in meeting the occupant needs"
(KIM ET AL, 2008, P.1286)

In the primary research, a recurring theme of remote working was that of convenience. As such, the workplaces of the future should retain this as a central theme, aiming to provide the most convenient experience to the user - whether that be one of convenient workplace proximity (such as working from home, or a workplace that comes to you), or one of technological convenience (such as automatic software and hardware updates).

To round off the theme of workplace efficiency, is the idea that the workplace of the future should help us become more productive remote workers. Whether this is achieved through a virtual assistant or through physical interfaces remains to be seen, yet will endure as an integral theme of future workplace design.

Comfort

By comfort I mean workplaces focused on ergonomic, mental, and emotional well-being.

INSIGHTS INFORMING GUIDELINE

Alternative workplace comfort should not be seen as a compromise for more autonomy

Work-life balance is not a scale to be placed in equilibrium, instead it is a personalized ratio fit for each individual's motivations and desires

As the primary research has demonstrated, comfortable furnishings are the number one ask of remote workers when it comes to the design of their physical workplace environment. Designing more ergonomically comfortable alternative workplaces will help us achieve a more enjoyable future workplace experience.

The notion of comfort is not only limited to physical considerations. In effect, mental comfort and the ideas of safety can also be mitigated through considered workplace designs. Finally, mental and emotional well-being can also be addressed through future workplace considerations that encourage healthy behaviours and personal workplace rituals.

Community

By community I mean workplaces that build a sense of social connection and belonging.

INSIGHTS INFORMING GUIDELINE

Contract work can be seen as a manifestation of the knowledge economy

Future workplace designs should inspire trust in technology, our environment, and in one another

Accountability to ourselves and our teams is going to be a critical underpinning for the future of remote work

The biggest aspect of the inspiring workplace is that of a workplace that mitigates social isolation and harnesses the power of community to inspire the remote worker. As the primary research has shown, social isolation is the number one reason listed as a difficulty in working remotely as well as the top mentioned dislike of this working style.

Even though workplaces are predominantly physical in nature, as earlier chapters have outlined, their form and manner of use can deeply impact the way we interact with a space, and by extension, the way ideas and socializing can happen in a space as well. The design of future workplaces can use this knowledge to encourage workplaces that support respectful and desired social interactions.

Inspiration

By inspiring I mean workplaces that encourage personal growth and self-expression.

INSIGHTS INFORMING GUIDELINE

Designing better alternative workplaces will allow us to do our best work

Remote working environments should grow old with their users

By designing future workplaces that encourage self-actualization by encouraging remote workers to grow however they see fit (whether that be grow their social network, grow their skillset, or grow their project portfolio), the individuals of such workplaces will feel as though they are achieving concrete goals. This may lead them to feel more content with their workplaces and selves.

Remote workplaces that can encourage curiosity and self-discovery could in turn lead to a happier workforce as curiosity is a personality trait that in inversely linked to depression (Kaczmarek, Bączkowski, Enko, Baran, & Theuns, 2014). Additionally, the idea of creating future workplace settings that include elements of democratic design would permit users to express themselves through the physical (and virtual) manifestation of their workplace.

Finally, by creating workplaces that allow more self-expression in their design, the workplace of the future may become more of an heirloom or long-lasting device that can effectively document our complex and deeply personal career paths.

These guiding principles have been incorporated into an example design brief that can be found in APPENDIX H.

*Interestingly, these four themes bear some ressemblence to the Japanese way of thinking of space. In Japanese culture, space can be built as a relational space to deepen relationships (*wa*, akin to "community"), it can be built as a knowledge-mobilizing space to generate new knowledge (*ba*, similar to "efficiency"), as a location meant to help us better connect with the world around us (*tokoro*, "inspiration"), and finally as a negative space meant to allow for contemplative moments of quiet and integration (*ma*, similar to "comfort") (McGrath, 2018).*

DIRECTIONS AND STRATEGIES

How do we use this knowledge to shape a more desirable future workplace experience?

9

WHAT THIS CHAPTER IS ABOUT

This chapter looks at directions and strategies for designing the future of the workplace. It offers framing questions to prompt future thinking in the field and highlights a concept for a future workplace service.

CHAPTER HIGHLIGHTS

INNOVATION INTENTS
INITIATIVES
WORKKEEN EXAMPLE SOLUTION
CONCLUSION

9 1 Innovation intents

This section seeks to provide a guiding vision for the future of workplace design. In terms popularized by A.G. Lafley and Roger L. Martin who co-wrote *Playing to Win*, this chapter looks to answer the first two questions of the strategic choice cascade: what is our winning aspiration, and where will we play? (Lafley & Martin, 2013).

To answer the first question (what is our winning aspiration?), we need to craft a vision of a prefered future. At the end of key chapters, summaries of key takeaways were provided. Here, we collect these summaries in order to help shape a fifth theme: the desired future. This exercise has been adapted from a worksheet by Lum (2016, p.71). The original exercise consists of four thematic questions and was devised as a way of thinking about the desired future we wish to create. I have added a fifth category of questions: the critical pain points of the present experience (retrieved through the primary research) to be addressed and rectified through future design work. TABLE 4 shows how key themes from each section were roughly matched up to form an "equation" that generated one of the preferred future aspects, hereby called innovation intents.

From this exercise the research framed the five most critical characteristics of a better workplace future. These form the 5 innovation intents for future workplace design.

Goldilock settings

Responsive, personalizable and adaptable workplaces that provide choice and flexibility to the user.

The first innovation intent is that of so-called "Goldilock settings" that could render a workplace immediately "just right" for the user. This could be achieved through automation technology and pairable wearable devices. Several automotive brands already do this - adjusting seat and steering wheel positions based on each drivers' preferences. Think of the same thing, but for workplaces.

Shared worktools

Non-territorial and shared worktools. Furniture and products that are modular, fixable, discourage throw-away culture and encourages fix-it culture.

The second innovation intent is that of shared worktools. This satisfies our need for re-envisioning the traditional open-loop (wasteful) product manufacturing process. Service platforms could provide shared worktools, thereby lessening our traditional consumer behaviour.

Symbiosis of intelligences

Natural and artificial intelligence coexisting. Building of greater knowledge networks.

The third innovation intent is that of a symbiosis of intelligences. Indeed, the future workplace will most likely incorporate artificial intelligence as a personal assistant. How we choose to view this relationship will be critical in informing the success or demise of the future workplace. The next section entitled "new roles for the workplace" directly links to the use of algorithms and artificial intelligence to craft new roles for the workplace.

Custom work-life-style balances

Custom work-life ratios (equity of considerations and interpretations) and acceptance of different working styles and lifestyles.

The fourth innovation intent is that of a greater societal acceptance of working preferences. The traditional view of a “desired” work-life balance that each should strive to achieve will need to be rendered more malleable if we wish to foster future workplaces that are more inclusive of personal work ethics. In addition, personal working styles and lifestyles will need to be free of societal judgment.

Forward thinking

Efficient and resilient use of existing infrastructure and products to reduce material and energy inefficiencies.

The last innovation intent is that of being forward thinking. By thinking of our workplaces as a node in a larger urban system we can more efficiently design sustainable landscapes by way of infrastructure and products that reduce material and energy inefficiencies while maximizing social benefit.

Table 4 - Key takeaways from main chapters informing a preferred future.

HISTORICAL STRENGTHS AND SUCCESSES	IMPORTANT CHARACTERISTICS OF THE PRESENT	CRITICAL PAIN POINTS IN PRESENT EXPERIENCE	FORESIGHT EXERCISE KEY TAKEAWAYS		PREFERRED FUTURE
Continuous improvement of ergonomic needs being addressed through comfortable and aesthetically pleasing designs.	Workplace wellness and focus on biophilic design.	Ergonomic discomfort: furniture not ideal for body types.	Use of responsive and ambient intelligence in interior design.		**Goldilock settings:** Responsive, personalizable and adaptable workplaces that provide choice and flexibility to the user.
Imbuing artefacts with high levels of craftsmanship and/or personal history in order to provide them with heirloom qualities.	Coworking spaces and services as a way to build social networks.	Social isolation: desire for face-to-face communication, socialization.	The workspace as a service, that doesn't require individuals to own or carry physical worktools, personalized bundles.		**Shared worktools:** Non-territorial and shared worktools. Furniture and products that are modular, fixable, discourage throw-away culture and encourages fix-it culture.
The division of labour and the trust / relationship between employer and employee influences the interior design of office space and the types of furnishings.	The ability that artefacts and spaces have over our psychological considerations of self.	Ability to focus: distractions (physical, virtual, social).	Artificial intelligence and smart algorithms as facilitators of the more productive workplace.		**Symbiosis of intelligences:** Natural and artificial intelligence coexisting. Building of greater knowledge networks.
Industrial revolution, material innovation, and mass production efficiencies (making good design accessible to the masses).	Personalization and flexibility of the workspace environment as a method for providing more autonomy to workers.	Community building: wishing to feel part like a valuable member of a team/community.	Workplaces as semiotic status symbols.		**Acceptance of work-life-style balance:** Custom work-life ratios (equity of considerations and interpretations) and acceptance of different working styles and lifestyles.
Digitization of tools and tasks allowing for flexibility in workplace and time. (from spoken word, to written word, to digital word).	Semiotic considerations of artefacts and space.	Disorganization / lack of space: wanting more space (physical or virtual).	Prefabricated work environments and urban infill.		**Forward thinking:** Efficient and resilient use of existing infrastructure and products to reduce material and energy inefficiencies.

92 New roles for the workplace

How might we rethink the role of the workplace in our lives? How might this impact our relationship with work?

Related to the innovation intent of developing a symbiosis of intelligences are the following four potential rethinks of the social role the workplace could have in the lives of future individuals. As technology transforms our physical workplaces into acting, sentient beings, there is opportunity for our workplace to be considered a social robot. Don Norman, author of *The Design of Future Things* (2007), explains the concept of sentient devices as operating much like a horse and rider. The idea is that when an individual wants to be in control, the relationship can enter a "tight rein" mode, where the individual directs the other being. However, when the individual trusts the decisions of the other being (virtual or physical), the relationship can be one of "loose reins". Loose reins gives the power to the other sentient being. This flexible relationship informs the following suggestions.

"Our predecessors endeavored to make men into machines; we are endeavoring to make machines into men."

Charles Edward Jerningham
(Jerningham, 1909, p.25)

Workplaces as health and wellness guide

Imagine if our physical environment could become a health and wellness guide. For example, it could help us better understand the length and frequency of breaks needed. Through emotional intelligence, machine learning, and harvested personal data, this type of workplace would be able to suggest the adoption of healthy physical, mental, and social behaviours, ensuring that our best interests are always met.

Workplaces as coworker

Imagine if your workplace was assigned to you by a client or employer. The personality of each workplace could be programmed by the "owner". Additionally, if your workplace was viewed as a coworker, it could aid in keeping remote workers accountable to their tasks. This type of workplace could report back to your client, your employer, or your own management platform on your behalf, thereby rendering the reporting more automatic.

Workplaces as protector

Your future workplace could protect you from unwanted distractions and harm. With a mind of its own, it could learn to detect potential distractions (in the physical or digital environment) and automatically mute them. In addition, your workplace could be monitoring your surroundings and adjusting itself to better protect your belongings and your data. This could be achieved by automatically shifting partitions.

Workplace as life coach

With artificial intelligence having the potential to know you better than you know yourself, your future workplace assistant could help you grow as an individual. It could suggest new workplace locations based on your emotions it has detected. It could sense your desires and guide you through the completion of tasks (similar to a having a private tutor).

9 3 Questions guiding further research

With the innovation intents in mind, twenty questions guiding further research were drafted. They each act as opportunity areas link to one of the human-centered design guidelines outlined in the research (efficiency, comfort, inspiration, and community).

Each question includes an example concept sketch meant to incite further exploration. What is presented here are but first iterations and tentative directions for each framing question. In this way I hope to promopt future workplace designers and workplace strategists to think more broadly about the role of the workplace. These questions are designed as conceptual seeds or "jumping-off points" meant to be adopted and explored by others in a bid to encourage future explorations and research on the workplace.

THEMES

- Workplaces that enhance our productivity
- Workplaces that communicate to others on our behalf
- Workplaces that are adaptable to our needs
- Workplaces that are convenient
- Workplaces with proper ergonomic considerations
- Workplaces that safeguard equipment / privacy
- Workplaces that encourage healthy behaviours
- Workplaces that encourage self-growth
- Workplaces that build communities
- Workplaces that allow you to create an heirloom

"Dator's law states 'any useful statement about the future should appear to be ridiculous' "
(Hines & Bishop, 2006, p. 257)

20 QUESTIONS

1. What if our remote workplace could expand our digital space?
2. Imagine if our workplaces could help us get in the right mindset?
3. What if your workplace reflected your daily mood?
4. What if your workplace could sense your current emotional status?
5. What if your workplace setting could automatically configure itself to better suit your needs?
6. Imagine if your workplace could be infinitely customizable?
7. What if your coworking space could always be "just around the corner"?
8. What if you could have your perfect workplace right at home?
9. What if your workscape could help you stay organized?
10. Imagine if your worktools were always in top working form?
11. What if you did not have to bring anything with you to your remote workplace?
12. What if our workplaces were designed to allow different sitting styles?
13. What if we could "wear" a workplace that better supported our bodies?
14. What if our workplaces were designed to allow us to momentarily step away, without fear of theft?
15. What if our workplaces could better protect our privacy?
16. Imagine if our workplaces could help us live healthier lives?
17. What if our workplace could push us to be better?
18. What if our workplace could encourage us to try something different?
19. What if our workplace could help us connect with others?
20. What if the design of our workplaces could reduce unnecessary consumption?

1

EFFICIENCY

What if our remote workplace could expand our digital space?

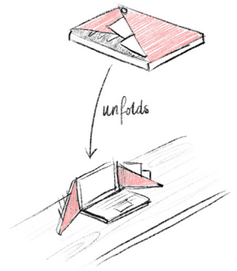
IMMEDIATE IMPLEMENTATION

Furnishings designed for shared semi-private workplaces (i.e. coworking locations) could be designed to include external monitors to plug into. That way workers would have a greater incentive to want to use the space as it provides an opportunity for additional virtual workspace.

2

EFFICIENCY

Imagine if our workplaces could help us get in the right mindset?



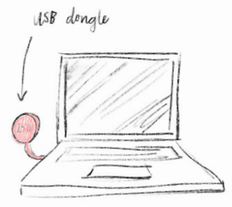
IMMEDIATE IMPLEMENTATION

Workplace settings could be designed to incorporate a small, yet meaningful, ritual in the preparation of a workday. An example might include the thoughtful unfolding of a worktool from a specific wrapping pattern, or the application of an essential oil to a worktool product.

3

EFFICIENCY & WELL-BEING

What if your workplace reflected your daily mood?



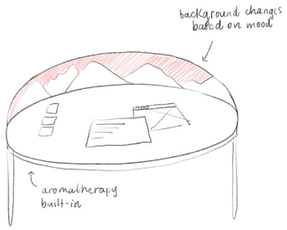
IMMEDIATE IMPLEMENTATION

Furnishings could be designed to alert others of our current working mode (i.e. focused, or open). This could be achieved through a colour changing panel built into a surface of a workstation. It could also be achieved through product design of a USB device that also gradually changes colours based on working style, acting as a visual countdown for the user, and a symbolic communicator to others.

4

EFFICIENCY & WELL-BEING

What if your workplace could sense your current emotional status?



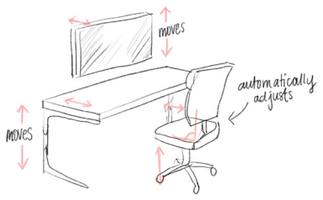
DEVELOPMENT NEEDED

With advances in emotional intelligence in machines and digital assistants, it may be possible that our workplaces could sense shifts in our emotional status and respond to them through small interventions (i.e. switching the background image of your desktop to one it knows will make you smile, dispensing a calming scent, dimming distractions, etc.)

5

EFFICIENCY & COMFORT

What if your workplace setting could automatically configure itself to better suit your needs?



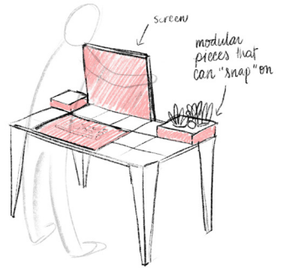
DEVELOPMENT NEEDED

Through the robotization of our furniture and environments, our workplace settings could become responsive to our preferences and needs, transforming every setting into the perfect “goldilocks” workplace that’s just right for us. Perfect ergonomics every single time, with our prefered digital set-up being remembered by the system and automatically pulled up for us.

6

EFFICIENCY & WELL-BEING

Imagine if your workplace could be infinitely customizable?



IMMEDIATE IMPLEMENTATION

Depending on the tasks for the day, imagine that your workplace was composed of a platform to which you could add modular attachments. These “attachments” would belong to a central library that you could borrow from for the day, allowing you to build yourself a perfect workstation for the day. The workscape attachments could be open-sourced as well, allowing everyone to custom make their own attachments.

7

EFFICIENCY

What if your coworking space could always be “just around the corner”?

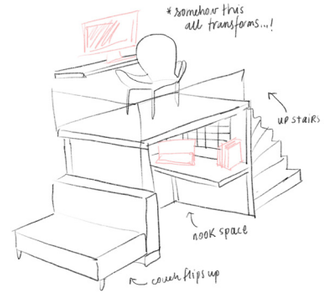
DEVELOPMENT NEEDED

In the primary research responses, participants indicated that one of their favourite things about working remotely is that they did not have to commute. Workspaces of the future could be designed to be an “on demand” service that could roll up to your home and either be a mobile office, or shuttle you to a workplace location (like a school bus for coworking spaces).

8

EFFICIENCY

What if you could have your perfect workplace right at home?



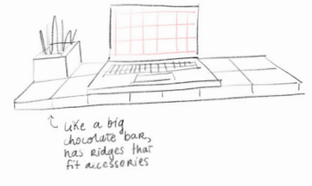
IMMEDIATE IMPLEMENTATION

Workplaces of the future could come standard with every residential unit of the future. Built-in multi-purpose furniture could provide functional office space that can be folded away when not in use.

9

EFFICIENCY

What if your workscape could help you stay organized?



IMMEDIATE IMPLEMENTATION

Our future workscapes should help us stay organized, both physically and digitally. By keeping things where they should be (i.e. pens and notebooks) and automatically grouping other things (i.e. digital windows).

10

EFFICIENCY

Imagine if your worktools were always in top working form?

DEVELOPMENT NEEDED

The future could be host to services that takes care of technical difficulties not only for remote workers, but also for coworking spaces and other locations wishing to accommodate remote workers (connectivity issues, technical hardware issues, software issues). Additionally these services could take care of the workplace for you, by offering you the latest high-performing models based on your subscription package.

11

EFFICIENCY

What if you did not have to bring anything with you to your remote workplace?

DEVELOPMENT NEEDED

It would be possible to develop a service model that provided its members with the hardware required to access the digital workspace. Think of a traditional employer providing the worktools to their workforce, or a library providing workstations, but now its a coworking studio doing the same for their members.

12

COMFORT & WELL-BEING

What if our workplaces were designed to allow different sitting styles?

IMMEDIATE IMPLEMENTATION

Who says we have to sit a particular way? What about if we want to perch a leg up, or perhaps sit cross-legged in our seat? Ergonomic office chairs could be designed with a wider seat and foot pegs to allow for such behaviours.

13

COMFORT & WELL-BEING

What if we could "wear" a workplace that better supported our bodies?

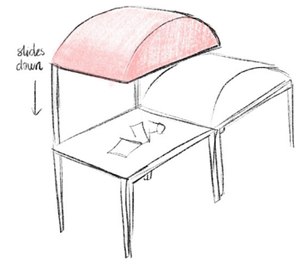
DEVELOPMENT NEEDED

When working remotely furniture designed for lounging that do not have the proper support built into them are often used as makeshift workplaces. Instead of turning our lounging furniture into office furniture, what would happen if the support we required was offered to us through the clothes we wore, through a brace, or some other device that could follow us everywhere and transform any area into a comfortable workplace. Almost like an exoskeleton for workers.

14

COMFORT

What if our workplaces were designed to allow us to momentarily step away, without fear of theft?



IMMEDIATE IMPLEMENTATION

Future furniture designers could develop a workplace systems for momentarily safeguarding equipment for short durations. For example this could include desks with lockable front panels (like an armoire), with a rollable front (like a roll-top secretaire), desks inspired by school desks (a box with a flippable top panel), or a "Tupperware" design that has a lid that could be placed atop the workplace.

15

EFFICIENCY

What if our workplaces could better protect our privacy?

IMMEDIATE IMPLEMENTATION

For some, privacy is highly valued. As such they wish to protect their screens from the view of others. Techniques such as incorporating built-in privacy screens into the hardware would be possible, alternatively, the design of the workplace could provide a privacy screen that hides the view of a desktop from wandering eyes. A frosted or moiré panel could be used to provide privacy yet not obstruct the sight lines of the remote worker.

16

WELL-BEING

Imagine if our workplaces could help us live healthier lives?

DEVELOPMENT NEEDED

Our workplaces could alert us when it is time to take a break, perhaps by sensing if we are distracted or if our productivity is plateauing.

On the other hand, our workplaces could incorporate an air purifier with an aromatizer that could help keep us focused and energized.

17

INSPIRING

What if our workplace could push us to be better?

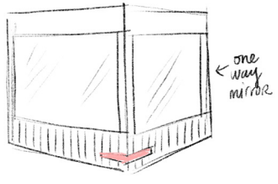
DEVELOPMENT NEEDED

Through the use of artificial intelligence, our workplaces could get to know us and could push us to accomplish just a little more each day. This could be achieved by increasing the time in-between breaks or by gamifying tasks.

18

INSPIRING

What if our workplace could encourage us to try something different?



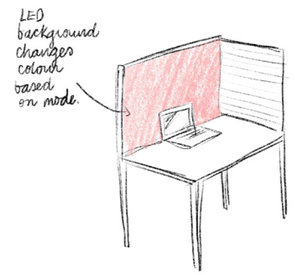
DEVELOPMENT NEEDED

Our workplaces could be part of a service that encourages us to try out different work places (either in your neighbourhood, in your city, or around the world). However, this concept does not have to be restricted to the physical workplace, it could also include a workplace service that encourages us to try out different working techniques for staying focused, allowing the individual to break-up the routine and learn new tricks for working remotely efficiently.

19

COMMUNITY

What if our workplace could help us connect with others?



IMMEDIATE IMPLEMENTATION

Our workplaces could potentially help us connect to others around us. Perhaps, if desired, an individual could post onto their workplace's surface a few key words relating to their work for others to read and engage. Another option lies in a type of service that could connect remote workers with other remote workers to facilitate working meetups (should a few remote workers be working on similar tasks and want to brainstorm together).

20

INSPIRING

What if the design of our workplaces could reduce unnecessary consumption?

DEVELOPMENT NEEDED

Workplaces and workplace products can benefit from the democratization and access to rapid prototyping technologies like laser etching, 3D printing and laser cutting to personalize their workplace tools to better reflect their personality. The addition of meaningful symbols, imagery, and quotes could decorate the worktools of the future. These tools could "last a lifetime" and could become heirlooms past down generations to generations.

9 4 Strategies and initiatives

Taking what I've learned and what I've heard, here's how it could all be stitched together in a series of strategic initiatives for the four types of spaces identified earlier in the research in FIGURE 2.

At the beginning of this project we outlined four types of remote locations by plotting them on a 2x2 matrix (FIGURE 2). The four categories of remote working locations identified were private space, public space, private-shared space, and public-shared space. Using the human-centered design guidelines and innovation intents just identified, we can begin to craft purposeful visions for each of these spaces. This offers a glimpse of what the future could look like, with initiatives that could be immediately implemented and some that require further development. FIGURE 22 represents the design guidelines in the center, surrounded by the innovation intents. In the outermost ring are the innovation initiatives (or opportunities). Each of these initiatives is linked to one of the four types of spaces listed in the following pages.

INITIATIVES (OPPORTUNITIES)

1 Design of home office furnishings with more domestic aesthetics.
2 Continuation of workplace organization systems.
3 Design of home office areas that can be hidden from view when not in use.
4 Design of transformable furnishings that subtly incorporate a ritual for helping define work and life modes.
5 Home offices that build community and appease feelings of social isolation.
6 Services for the sharing of worktools within the coworking community.
7 Work stations with extra monitors to expand digital space of workers.
8 Systems for controlling micro-climate (auditory and visual distractions, temperature, lighting).
9 Furnishings that enhance the security of personal items.
10 Tool/system for alerting others of current working mode.
11 Modular, "build-it-yourself" workstations and working environments.
12 Design of portable and lightweight privacy devices for use in cramped and crowded environments.
13 Use of more personal and fast wifi hotspots.
14 Design of better airplane environments, optimized for personal space (workstations).
15 Services for connecting isolated remote workers by networking them with others desiring contact.
16 Design of workstations that momentarily safeguard personal belongings.
17 Time sensitive wifi passwords printed on receipts with purchase of goods or services.
18 Development of portable personal privacy tools.
19 Devices with integrated ability to connect to the internet without a business's wifi network.
20 Free wifi connections throughout urban environments.
21 Rentable or reservable urban workstations.
22 Sponsored digital/physical workstations based on sponsoring business.

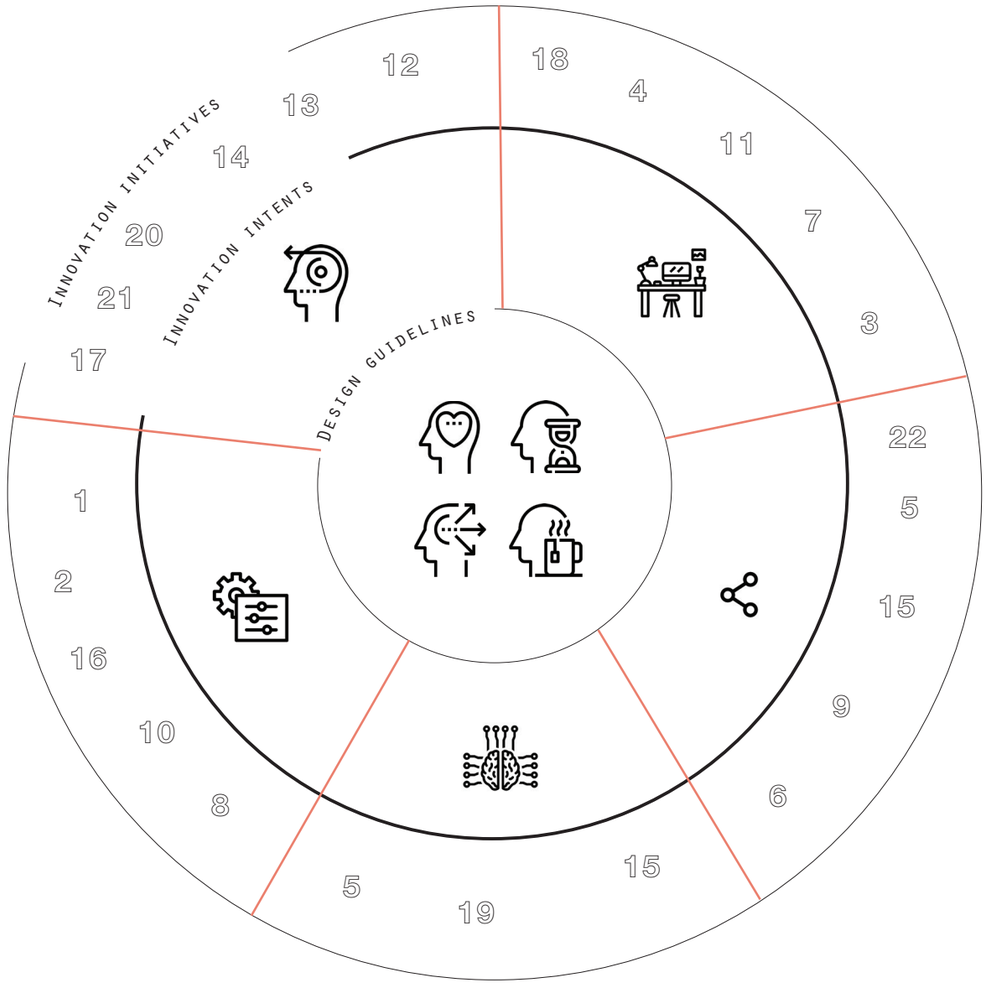


FIGURE 22 - GUIDELINES ANCHORING THE INNOVATION INTENTS THAT IN TURN SHAPE INNOVATION INITIATIVES.

Private space

i.e. Home, private studio, private office

The home space was favoured by many research participants as their favourite place from which to work because of the freedom, comfort, and accessibility to things of value to them (i.e. their dog, “free” food in the fridge, their personally curated environment). Future domestic workplace furnishings should be designed with ergonomic comfort in mind, yet could offer a more casual aesthetic to better integrate with the rest of the living environment. For example, a modern home worker’s office chair may instead be made of wood inspired by a Scandinavian-minimalist aesthetic.

The ideal home workplace is one that is perfectly suited to an individual’s personal definition of comfort. It should have a system to help with organization as visual clutter was mentioned as a difficulty with working from home. If possible, home offices should be able to be “hidden” to more easily separate work from the home setting, and thus support the individual in maintaining their desired work-life balance. This could be achieved through multi-functional furnishings that can easily transform space to best suit a task.

Finally, to help maintain a desired work-life balance and to symbolize the beginning and end of a workday, a small ritual could be incorporated into the design of the workplace. This may take the form of “unfolding” or setting-up a pre-organized workplace and “folding it up” or ceremoniously closing a home office at the end of the day. This small ritual could also be incorporated into the design of transformable furniture and/or environments.

Furthermore, because social isolation is a big concern for those working from home, future workplace tools to enhance connectivity and presence in the lives of others could be developed.

GUIDING VISION

Design of home offices that support proper ergonomic comfort and help a user maintain a desired work-life balance.

INITIATIVES FOR IMMEDIATE IMPLEMENTATION

1. Design of home office furnishings with more domestic aesthetics.
2. Continuation of workplace organization systems.
3. Design of home office areas that can be hidden from view when not in use.
4. Design of transformable furnishings that subtly incorporate a ritual for helping define work and life modes.

INITIATIVES FOR LATER IMPLEMENTATION

5. Home offices that build community and appease feelings of social isolation.

Private-shared space

i.e. Coworking space, shared office space

Private-shared spaces differ from public-shared spaces by being a members-only space. The private-shared space is best exemplified by the coworking space. For these environments, the ideal workplace setting should build off the strength of networked communities which includes social connectivity, knowledge sharing, and diversity.

Future coworking spaces could offer complementary services for the sharing of worktools. Additionally they could provide certain perks to their members such as workstations with additional screens that one could plug-into to expand their virtual workspace.

Private-shared workstations should still offer options for an individual to control auditory and visual distractions (also helping with visual security). It is in private-shared spaces that a system for alerting others of an individual's current working mode (i.e. focused: please do not disturb) would be the most useful. Options for securing personal property should remain a priority when designing shared spaces.

These types of spaces could benefit from a modular, "build-it-yourself' workstation approach whereby pieces to personalize your workstation would be readily available to best support that day's tasks.

GUIDING VISION

Shared spaces that leverage the network of individuals and tools to provide a more high-performing and inspired workspace.

INITIATIVES FOR IMMEDIATE IMPLEMENTATION

6 Services for the sharing of worktools within the coworking community.

7 Work stations with extra monitors to expand digital space of workers.

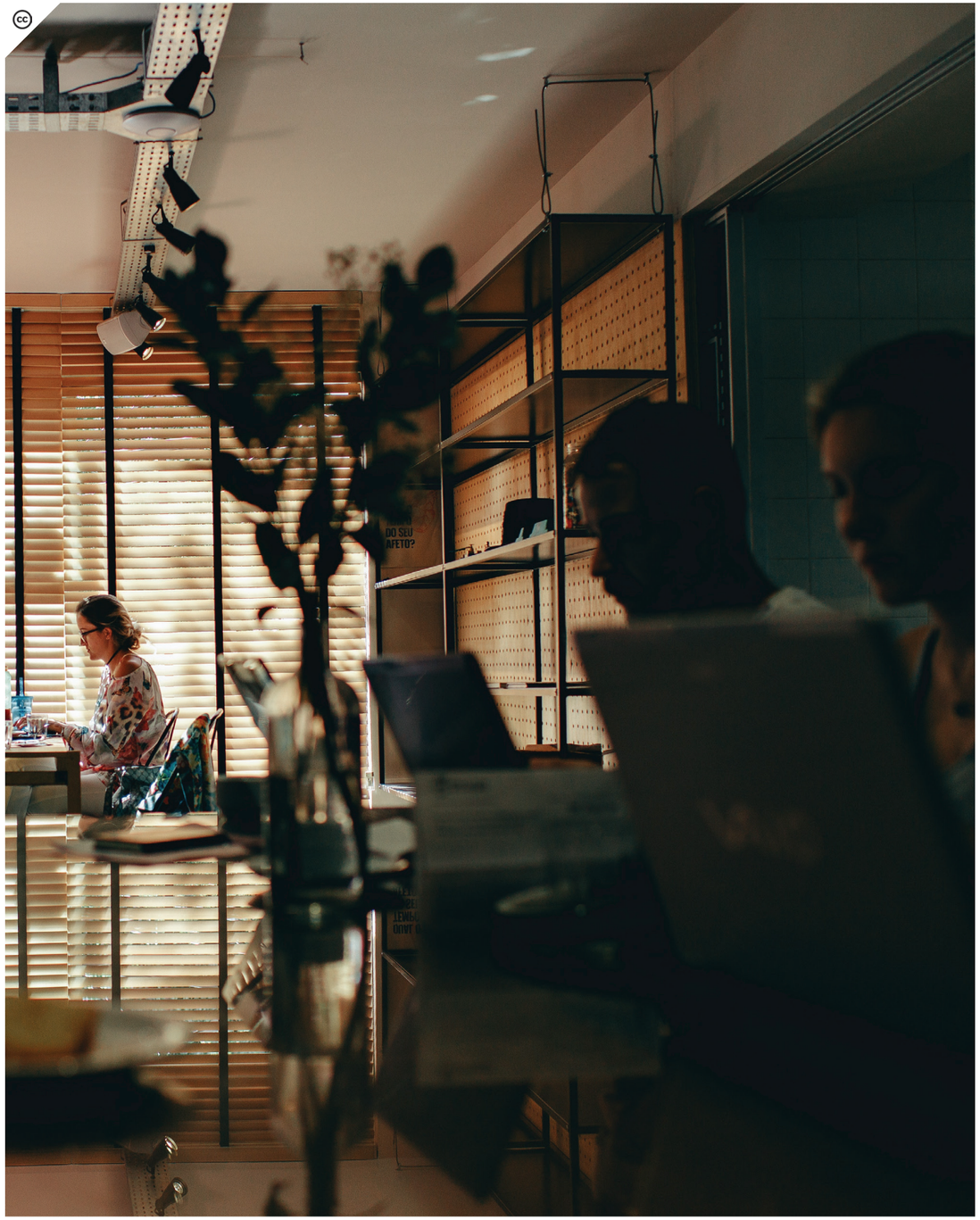
8 Systems for controlling micro-climate (auditory and visual distractions, temperature, lighting).

9 Furnishings that enhance the security of personal items.

INITIATIVES FOR LATER IMPLEMENTATION

10 Tool/system for alerting others of current working mode.

11 Modular, "build-it-yourself" workstations and working environments.



Public-shared space

i.e. Airplane, bus

With an expected increase in the number of business travel, designing more efficient public-shared spaces like airplane workstations could optimize work while traveling (Statista, 2018). Crucial to these spaces are enhanced privacy and security features to protect data from prying eyes, and to protect data while using a shared network (or publicly accessible internet connection).

Public-shared workplaces should be non-intrusive so as not to bother those around them. For example, personal work tools should be mindful of not having to subject neighbours to your bright computer screen while they are trying to sleep on a plane, or not having to string charging cables across other's space. Additionally, mobile workstations should be lightweight and compact to facilitate travel.

An alternate way of thinking of public-shared spaces could be to think of mobile offices that could act as a shuttle (like a school bus) to transport remote workers to a coworking hub for the day.

GUIDING VISION

Semi-private workplaces that are mindful of an individual's desire for privacy and fast, reliable connectivity, as well as is mindful of strangers' desires for an undisturbed environment.

INITIATIVES FOR IMMEDIATE IMPLEMENTATION

12 Design of portable and lightweight privacy devices for use in cramped and crowded environments.

13 Use of more personal and fast wifi hotspots.

INITIATIVES FOR LATER IMPLEMENTATION

14 Design of better airplane environments, optimized for personal space (workstations).

15 Services for connecting isolated remote workers by networking them with others desiring contact.

Public space

i.e. Park, cafés, libraries, etc.

Public workplaces are currently often improvised. The top concern for those operating from public spaces is the safety of equipment. Future furnishings for cafés could include chairs and/or tables that could temporarily safeguard your items if you have to momentarily step away.

Mobile worktools could be developed to help with auditory and visual distractions as well as provide an organized mobile workplace. Additionally, the ease of connection to the internet is another factor impacting the experience of working remotely from public spaces. Future workplaces could perhaps incorporate their own connectivity devices so as to not have to rely on a business's wifi.

The ideal public workplace would be one that optimizes underutilized space in order to render the urban ecosystem more high performing. By distributing a workforce across different neighbourhoods economic benefit can be spread more evenly across a city (as opposed to having a traditional business district).

GUIDING VISION

Public work settings that maximize personal comfort, safety, and connectivity while leveraging the entirety of urban environments.

INITIATIVES FOR IMMEDIATE IMPLEMENTATION

16 Design of workstations that momentarily safeguard personal belongings.

17 Time sensitive wifi passwords printed on receipts with purchase of goods or services.

18 Development of portable personal privacy tools.

19 Devices with integrated ability to connect to the internet without a business's wifi network.

20 Free wifi connections throughout urban environments.

INITIATIVES FOR LATER IMPLEMENTATION

21 Rentable or reservable urban workstations.

22 Sponsored digital/physical workstations based on sponsoring business.

9 5 WorkKEEN: Example workplace extension

In this very last section I present a high-level view of a concept I developed for a future workplace service that builds community, optimizes urban space, and facilitates economic transactions.

WorkKEEN is a service that offers unlockable workpod locations to its client-base. These workpods are prefabricated workplaces for individual and group work that can be reserved for selected amounts of time. The pods are placed in underused locations such as parks, parking garages, and office towers. They are typically arranged in clusters, with an amenity pod (containing washrooms and a snack bar). This allows community members to meet and mingle if desired, while being able to retreat to their individual workplace for focused work.

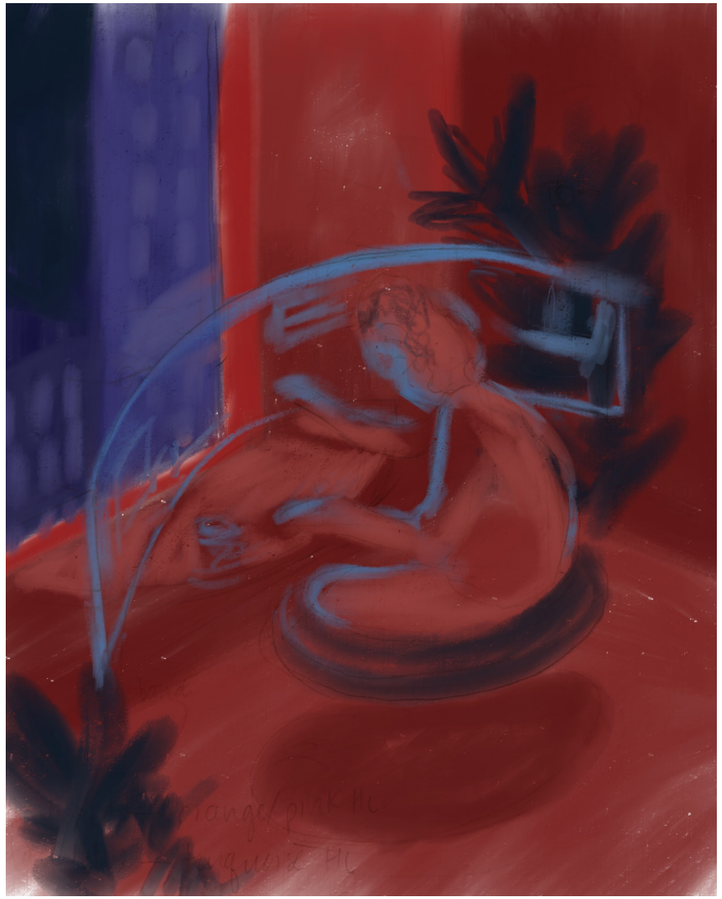
WorkKEEN is an example of a strategic design play that uses "hidden" strategic elements to inform a change in approach, adopting elements of a platform design to offer a community building platform to workers. In this sense, it is more than just a physical workplace. The WorkKEEN service is designed to be scalable, replicable, user-centered and personalizable providing a network of remote and gig workers for hire, and a network of unlockable pods for use across cities.
The idea for the service originally came when writing the fourth scenario. With further refinement, I realized that the WorkKEEN service addressed all of the identified guiding principles (efficiency, comfort, inspiration, and community).

The three ingredients of workplace settings (tools, furnishings, surroundings) have been carefully considered to optimize the relationship between user and productivity. The tools are kept up-to-date by the service and are used to expand the virtual workplace, ensuring that users never again have to worry about forgetting a critical tool at home. Additionally, the security of personal equipment is no longer an issue.

The surroundings (locations of the workpods) are selected to be inspiring in order to stimulate the mental workplace. Located in underutilized spaces, the workpod locations are strategically selected to maintain user safety. For example, the WorkKEEN service would not be located in dangerous, isolated, or deserted locations, but rather in smaller nooks and crannies of the urban fabric. Narrow spaces between buildings, empty floor spaces, and underutilized surface parking lots could all be repurposed into makeshift (co)working environments.

The furnishings are customizable to better support the physical demands of the space. Finally, the act of selecting a workpod location and its "virtual skin" constitutes a form of democratic design.

The overall service builds community with remote workers by providing a platform to connect with others working nearby. Because the pods are located in underutilized settings, urban



sustainability is supported and having to travel to different locations allows the user to satisfy their desire for novel experiences and/or exercise.

The service platform benefits companies as well since they can post their contracts to remote and gig workers using the WorkKEEN network. The fulfillment of these contracts in turn helps workers unlock different pod locations, providing a gamified workday experience.

This service proposal highlights how a simple physical workspace can be used not only as a comfortable personal working environment, but also help create communities, inspire users, and generate employment opportunities for contract workers.

KEY PARTNERS
Businesses with empty spaces, cities, coffee shops and restaurants able and willing to operate from a small food truck / mobile unit, ...

KEY RESOURCES
Prefabricated "goldilocks" workpods, prefabricated amenity pods, staff, cleaners, ...

KEY ACTIVITIES
Providing a network of workpods in urban environments, cleaning and maintenance of pods, updating of worktools, ...

VALUE PROPOSITION(S)
Gamified workplace platform, matching of gig workers with contracts, reward productive individuals with unlockable workpods, ...

CUSTOMER RELATIONSHIPS
Rating systems for pods, self-service, dedicated personal assistant, ...

CHANNELS
App, digital service, WorkKEEN ambassadors, ...

CUSTOMER SEGMENTS
Gig workers, freelancers, company teams, remote workers, ...

COST STRUCTURE
Maintenance and installation of pods, digital infrastructure, worktools, insurance, ...

REVENUE STREAMS
Businesses posting jobs to the WorkKEEN network, membership packages, ...

96 Conclusion & next steps

This research project set out to answer, “how might we better design workplace settings to best support the needs of current and future remote workers?” A mixed methods research approach was used to uncover existing frustrations with the alternative office space (remote working locations) as well as understand remote workers’ wishes and desires for future workplaces. These insights were complemented by a foresight exercise that took a look at the past, present, and potential futures of the personal workspace.

With so many changes affecting the future of work, this research project took a step at solidifying one aspect of it: that of personal desires for environmental settings. The research has demonstrated that four top areas of opportunity could be better addressed through the design of future workplace settings. These themes include rendering the workplace more efficient, more comfortable, more inspiring, and more social. The areas of opportunity provide framing questions to offer creators guidance and inspiration for future workplace design. When further framed by the Design Brief placed in APPENDIX H, the design of future workplaces has been funneled to tackle key issues identified by this research. Other outputs of this research include 4 new roles for the workplace of the future to help inspire future conversations, and 1 example service solution to showcase the possibilities of approaching workplace design as more than simple furnishings.

The next steps for this project are to better investigate the role that the built environment can have on community building and knowledge networks. In addition, future rounds of research could focus on more targeted research focusing on one of the four different types of workplace environments (private, shared-private, shared-public, and public) in order to uncover more specific insights and provide more targeted solutions. Finally, future research on the subject of remote work furnishings could explore generative sessions where participants are asked to prototype their workplace of the future.

This research project has demonstrated that by better understanding in what ways the changing demands of the workplace are affecting human needs and desires, a more humanistic and desirable solution can be developed. In addition, it has highlighted that the notion of the physical workplace is one that is not only limited to physical considerations. Instead this research has demonstrated that it has repercussions on intangible aspects of our mental wellbeing, on ecosystem sustainability, as well as on social networks and mental well-being. The social value of space is critical to designing workplaces that can help combat feelings of loneliness, all while perfectly adapting to our personal needs and desires.

In essence, the key takeaway from this project is that the way we shape our built environment can not only help us better complete our work tasks, but can (and should) also help us achieve our *best* work by allowing our best selves to flourish.

THOUGHTS / HOPES / FEARS ABOUT THE FUTURE OF THE WORKPLACE:

“I feel the future will be “ok!”. We are always improving and getting better as a society in being productive. I trust we are in good hands with strategic designers guiding us along the way.”

-WORKBOOK PARTICIPANT

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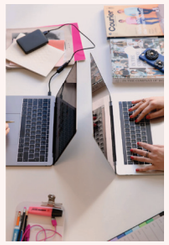

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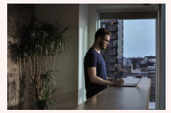

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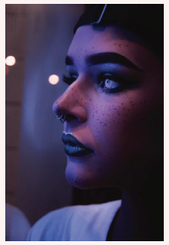

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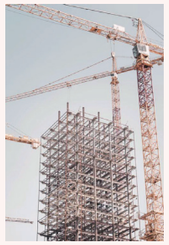

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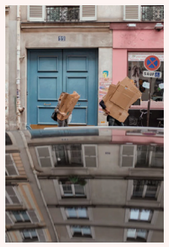

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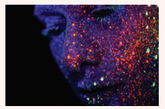

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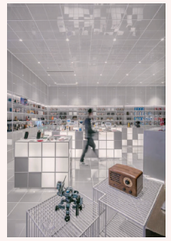

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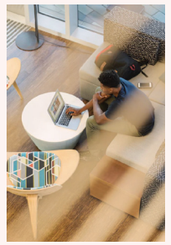

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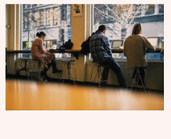

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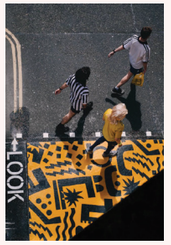

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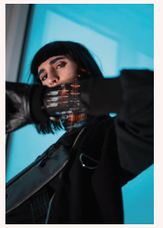

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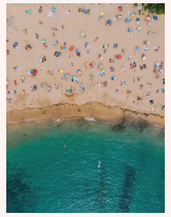

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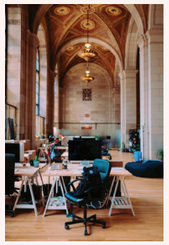

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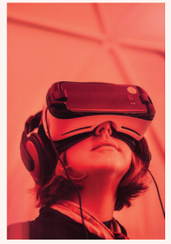

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APPENDI-CES

Appendix A:
Why remote work?

Appendix B:
Overview of workplace furnishings, surroundings, and tools

Appendix C:
Additional material related to project's framework and methodology

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Appendix E:
Digitization

Appendix F:
Themes informing workplace design

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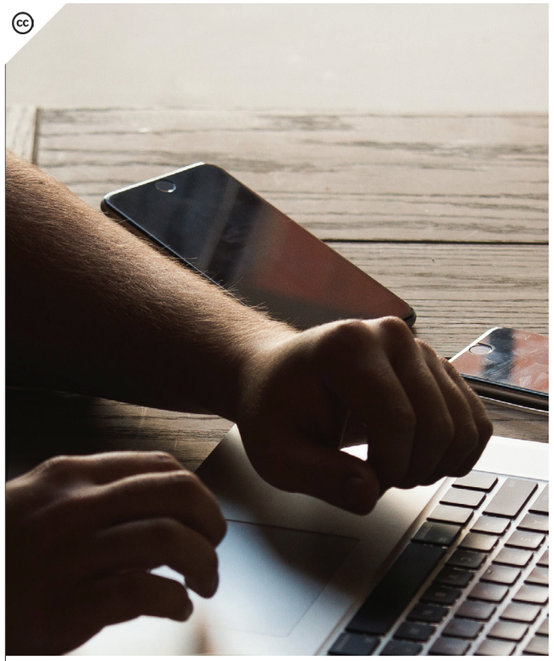
Design brief

APPENDIX A

Why remote work?

Why remote work?

Now that we have taken a brief overview of the history, development, and theory of the current workplace, let us explore why the alternative workplace has become a prevalent option in today's job market.



John Thackara describes our need to look at the world from a microscope and from a macroscope (2006, p.6). Macroscopes are useful for investigating complex systems and systemic change. The analogy of needing a micro- and a macroscope is similar to the way in which Patricia Lustig (2015) describes the need for a "worm view" and an "eagle view" in the practice of foresight. Whereas previous section took an eagle view, or a macroscopic view of the workplace theme, this appendix will take a more microscopic view of the theme in order to understand what is intrinsically driving this change.

Although we have already listed a few reasons in previous sections, let us now collect these reasons into two main categories: macro-drivers of change, and micro-drivers of change. The macro-drivers are forces shaping the larger system, in this case, the macro-drivers are mostly linked to the economy. Micro-drivers are those that affect the personal condition of individuals. In other words, it represents our personal values, motivations and desires. Of course there are many more drivers of change affecting the future of the workplace, however, only the most relevant ones have been listed in this appendix.

MACRO
The gig economy

Sharing economy

Economic considerations

Environmental impact

MICRO
Role of work

Desire for self-actualization

MACRO-LEVEL DRIVER

The gig economy.

Freelancers and contract work. That is the basic formula for the gig economy.

The term ‘gig economy’ is often used interchangeably with the term ‘sharing economy,’ although the two describe different facets of a diversifying economy. The gig economy, also called the freelance economy, refers to “workforce participation and income generation via ‘gigs,’ single projects or tasks for which a worker is hired” (Rinne, 2017). The sharing economy describes the “focus on the sharing of underutilised assets, monetised or not, in ways that improve efficiency, sustainability and community” (Rinne, 2017). The sharing economy is a term that should be used to describe our changing values of ownership, whereas the gig economy is a term that should be used to describe the shift towards freelance contracts.

A few decades ago, there were actually more self-employed workers in Canada than there currently are (Statistics Canada, 2017). This was due to the large number of agricultural workers that made up about 86% of the self-employed workforce (self-employed accounting for about 33% of all Canadian workers) (Statistics Canada, 2017). In 2016, the self-employment rate was around 16%, with most workers stemming from professional, scientific and technical services (16%); construction (15%); and health care and social assistance (11%), with agricultural workers only accounting for 6% of self-employment (Statistics Canada, 2017).

In 2016 in the United States there were 55 million freelancers which now make up 35% of the United States’ workforce (Upwork, 2017). For 63% of freelancers, being self-employed is a choice (Upwork, 2017). It is projected that at its current growth rate, the majority of the U.S. workforce will consist of freelancers by 2027 (Upwork, 2017).

Freelancers are better prepared for whatever direction the evolving industry may take. Upwork (2017) conducted a survey of 6,000 working adults and has found that 54% of the U.S. workforce said they are not confident the work they do will exist in 20 years time. Freelancers, on the other hand, are more prepared for a changing industry as 55% of self-employed individuals participated in skill-related education in the last six months (Upwork, 2017). Only 30% of traditional workers partook in these same activities (Upwork, 2017)[1].

The gig economy has many implications, including the creation of more flexwork contracts, of more remote workers, and of a more diversified knowledge economy.

1 - Further information on the Knowledge Economy can be found in the Trends Booklet.

MACRO-LEVEL DRIVER

The sharing economy.

Also referred to as collaborative consumption and peer-to-peer based sharing, the sharing economy is one based in the borrowing and lending of goods.

The sharing economy describes the “focus on the sharing of underutilised assets, monetised or not, in ways that improve efficiency, sustainability and community” (Rinne, 2017). Examples of the sharing economy are evident in co-living arrangements, and particularly pertinent to remote workers are coworking spaces. As an example, WeWork, the multi-billion dollar coworking service, now offers WeLive, which is essentially a dormitory for freelancers. This project picks up and builds off of trends in micro-living and co-living.

Further information about the sharing economy is outlined in the Trends Booklet. The main implications of the sharing economy are the creation of more shared living and working spaces, and the need for zoning rules and regulations to support co-living and coworking arrangements in new developments.

MACRO-LEVEL DRIVER

Additional system drivers.

Other driving forces for the uptake of remote working practices are its association with cost savings and its reduced environmental impact.

Remote working picked up in popularity in the United States due to the 1970’s oil embargo. During this period, companies and individuals recognized the cost savings associated with eliminating the commute to and from the office (Nilles, Carlson, Gray, & Hanneman, 1976). The associated reduction in emissions is another aspect of teleworking that renders it an attractive alternative to the traditional work setting (Nilles, Carlson, Gray, & Hanneman, 1976).

When teleworking strategies are combined with the concept of a virtual organization, companies, employees, and the self-employed can benefit from the associated cost savings. For example, between 1991 and 1997 AT&T managed to reduce their cash flow by $550 million by opting for smarter workplace strategies such as eliminating unused offices, consolidating other spaces, and reducing the related overhead costs (Apgar, 1998).

For employees who have a long commute, the option of working from home can be viewed as a more cost effective option since the employee does not have to pay for transportation, they save a few hours of their workday, and they may be able to claim their home office as a tax deduction.

MICRO-LEVEL DRIVER

Desire for self-actualization.

One of the dominant catalysts for the adoption of the remote working lifestyle is the promise of more autonomy and flexibility in designing one's own work-life balance.

Self-actualization, or self-fulfillment, is the highest need according to Abraham Maslow's Hierarchy of Need, a motivational theory proposed in 1943 (FIGURE 21). It is also a major driver pushing the development of remote working practices. Through self-fulfillment a remote worker can satisfy their desire for achievement, health, and happiness. Described in more depth in the TRENDS BOOKLET, our desire to pursue our own motivations and dreams has us leaving the beaten path in order to travel the world, design our own career paths, and work however and whenever we want. Positive design is a field of design interested in designing for subjective well-being (Desmet and Pohlmeyer, 2013). There are three main components to the positive design framework. They are pleasure, significance, and virtue. It could be argued that remote working satisfies all three of these components, allowing individuals to flourish. People who flourish are "developing as individuals, live their lives to their fullest potential, and act in the best interests of society" (Desmet and Pohlmeyer, 2013).

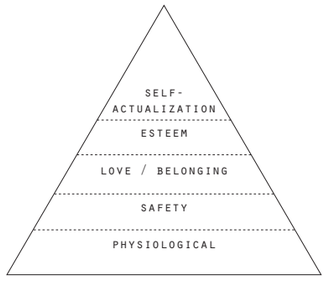


FIGURE 23 - MASLOW'S HIERARCHY OF NEEDS

Another interpretation of self-actualization is that of leaving your mark. Just as we expect each individual to have a voice and help shape their society through democratic action, we are now applying this same mentality to the design of our careers. Our desire to leave our mark is manifested in our desire to choose and craft our perfect workplace.

From Plato to Kant, philosophers have traced the relationship between the freedom to make self-determined choices and our feelings of self-worth and happiness (Dryden, n.d.). Added to the modern mix is our idea of authenticity. These growing desires are further discussed in TREND C.2.

What follows is a look at the rest of Maslow's Hierarchy of Needs pyramid from the point of view of remote workers.

Self-actualization
Achieving one's full potential

By feeling as though we have agency over our work locale and our working hours, we are provided with a sense of control and to a certain extent, a sense of self-actualization.

In addition, choosing to work from different locations can fulfill one's sense of curiosity and discovery. This is especially true of digital nomads who participate in programs that allow them to work around the world (ex: Remote Year).

Esteem
Prestige and feeling of accomplishment

Those who work remotely are often reported as experiencing heightened productivity (Di Martino & Wirth, 1990; Evans, n.d.; Gordon, 1988; Olson, 1988b; Pratt, 1984). This increase in output could be interpreted as providing a larger feeling of accomplishment than would be experienced in a traditional office setting.

Those who find themselves working from noteworthy locations such as a beach may feel a sense of prestige and luxury not present for those working a desk job from a traditional office setting.

Love & belonging
Intimate relationships, friends

Our reasons for choosing to work from shared, or public locations could be linked to our desire to engage in society. It can be viewed as a way of combating social isolation that can occur if only working from home.

One of the benefits of coworking studios is the sense of community they can provide to members.

Safety
Security, safety

In terms of the remote working experience, personal safety needs are relatively unaffected. One exception would be digital nomads who choose to work from foreign countries. In those situations safety and security may be more threatened.

The data and equipment safety can be compromised in remote working situations. The manner in which they are jeopardized depends on the specific scenario, although we can count data security and the rise of cybercrime as affecting all remote workers, whether working from home, from a coworking space, or from a public location.

Theft of equipment can also pose a risk for those operating from shared, public, and foreign locations.

Physiological
Food, water, warmth, rest

We see interesting developments catering to physiological needs of remote workers such as NapYork, a facility offering a quiet, library-like working environment and small resting pods for workers needing a break. Choosing a comfortable workplace with appropriate ergonomics fulfills this level.

MICRO-LEVEL DRIVER

The role of work.

Why is it that a growing percentage of us prefer working from alternative workplaces? What role does remote work have in our lives?

For many, work provides structure to their daily routines. It provides a sense of purpose and meaning, especially if the field of employment is directly in line with the worker's choosing. In this sense work can be said to help supplement, if not craft, our identities (Pratt, Rockmann & Kaufmann, 2006). Another way work defines our lives is through the social interactions and social networks that it can bring. This link will be explored further down in the research.

However, a big reason individuals choose to perform work remotely is due to the flexibility and freedom the worker then has in structuring their own days according to their needs. Named the work-life balance, it speaks of the traditional differentiation between work roles and life roles, and the necessary, albeit subjective balance necessary between the two (Berg & Piszczek, 2013). When working from home, workers have the opportunity to take breaks to run some errands, or perhaps to exercise. This poses an interesting tension in differentiating oneself as being in a 'work role' or a 'home/life role,' especially if home tasks become interspersed among work-related tasks.

"I need fresh air, I work in the park. If I need human interaction, I work in a co-working space. If I have sick kids, I work from home."

(Heuston, 2015, location 545)

APPENDIX B

Overview of workplace furnishings, surroundings, and tools

WORKPLACE FURNISHINGS

FURNISHINGS THAT...	EXAMPLE
Promote access to nature	**Work OUT** By Gestalt Arkitektur This is a range of outdoor furniture meant to bring the office outside. Solar panels provided electricity for the devices. However, most digital devices are difficult to use in the bright sun due to glare, so although this is a nice idea its adoption was limited (Nola, 2016).
Promote access to nature	**Sunbolt workstations** By Sunbolt These are outdoor workstations that feature solar panels as solar shades, allowing individuals to work outdoors (Sunbolt, n.d.).
Facilitate home work	**Pegasus Home Desk** By ClassiCon This desk has a flap on its one end where a laptop can be stored and charged out of sight (ClassiCon, 2014).
Facilitate home work	**Nuro** By Ligne Roset Meant to be inconspicous when closed, this wall-mounted work surface provides a small are from which to work. Depending on it's installed height, it can be used as a standing or a sitting desk ('Ligne Roset', n.d.B).

FURNISHINGS THAT...	EXAMPLE
Facilitate home work	**Kenchikukagu foldable rooms** By Atelier OPA. These furnishings designed by Toshihiko Suzuki (Atelier OPA) can be folded into a more compact shape and wheeled away when not in use. A small kitchen, office, and bedroom were designed (Suzuki, 2008).
Facilitate home work	**Work OUT** By Gestalt Arkitektur This is a range of outdoor furniture meant to bring the office outside. Solar panels provided electricity for the devices. However, most digital devices are difficult to use in the bright sun due to glare, so although this is a nice idea its adoption was limited. (Nola, 2016)
Facilitate home work	**Forming the Border** By Juhui Cho This desk has front doors that can be shut when not in use. It also features a light and a built in shelf. The desk can even be used as a makeshift lamp since the walls are made of translucent plastic (Cho, 2013).
Facilitate home work	**Cube Duke** By Camif This small cube can expand into a makeshift office for those with very limited space. When not in use the cube can be shut and used as a side table (Camif, 2009).
Help you focus	**Pod PET Felt Privacy Chair** By Benjamin Hubert Labelled as a 'privacy chair', this pod chair has high sides to provide an acoustic and visual barrier to the broader world (DeVorm, n.d.).
Help you focus	**PARCS Toguna** By PearsonLloyd Manufactured by Bene These are upholstered semi-open space-within-space furnishings. They provide semi-private areas for meetings and collaborations (PearsonLloyd, n.d.).

FURNISHINGS THAT...	EXAMPLE
Help you focus	**V1 lounge chair** By Odesd2 This chair was designed to offer focus to the sitter. It frames one's personal space and provides a sense of safety ('Odesd2', n.d.).
Help you focus	**Rewrite** By Ligne Roset Designed by GamFratesi for Ligne Roset, the cocoon desk provides individuals a personal frame around their workstation that helps define privacy and can be customized to reflect the user's personal style.
Help you focus	**Fading desk** By Thijmen van der Steen. This desk was designed to help facilitate individuals to work from home by providing a soft screen to help blur out distractions.
Create private workstations	**Docklands** By Bene. Designed by PearsonLloyd for Bene, this award winning office system is a modern take on the cubicle, providing privacy in open-concept areas ('Bene', n.d.).
Create private workstations	**Ophelis docks** By Grosch & Meier Picking up the trend of modular furniture systems, the Ophelis Docks can be arranged in a multitude of ways to create more casual space, or more focused individual areas. These types of furniture systems also promote flexibility and adaptability in the workplace environment (Grosch & Meier, n.d.).
Create private workstations	**Boccaporto sofa** By Koleksiyon Designed to be a working unit and a comfortable seating area to be used in public and open-spaced areas. It provides a sense of privacy in otherwise crowded or busy environments ('Koleksiyon', n.d.B).

FURNISHINGS THAT...	EXAMPLE
Create private workstations	The AirBnB headquarters in Singapore features privacy booths against a wall (AirBnB, 2016).
Charge your gear	**TIMBA Table and Stool** By PearsonLloyd Client Bene These tables have power outlets in their center, covered up with a wooden board (PearsonLloyd, 2014).
Charge your gear	**Patch** By UM Project UM's Project Patch furniture collection doubles as a grid of mini power stations. It distributes solar energy throughout a space (UM Project, 2018).
Encourages socialization	**Wrap bench** By Julie Hong Designed by Julie Hong, the wrap bench is composed of two seating areas that face each other, with a space between them to be filled with a selection of options such as a table, cushions, or a book rack (Hong, 2016).
Encourages socialization	**Hat rack, love seat, high table** By PearsonLloyd Teknion and Pearson Llyod's Hat Rack, Love Seat, and High Table. All three pieces are expressions of a future workplace where remote workers are the dominant form of employee. This has been one of the most purposeful exploration of remote working furniture to date (Designboom, 2015).
Help you stay organized	**Homework** By Tomas Kral Product Design Studio This desk has a wrap-around shelf where items can be placed, helping individuals customize their personal environment and maintain a clean, organized desk (Tomas Kral Product Design Studio, 2013).

FURNISHINGS THAT...	EXAMPLE
Help you stay organized	**Workforce** By Rachelle Bugeaud The Workforce desk is an exploration in modular efficiency. It is a grooved tabletop with a series of modular accessories (with half spheres on their underside) that permits a user to quickly alter their workplace. This high level of customization renders this table your ideal work buddy by keeping your desk organized and clutter-free (Bugeaud, 2011).
Are versatile / adaptable	**BuzziPicnic Table** By Alain Gilles This picnic table typology was used in this design because of its association with the pleasurable moments in life. It has flaps and grooves running down its center that reveals power sources and makeshift stands for tablets and dividers (Gilles, 2014).
Are versatile / adaptable	**Ubi work tools** By Herman Miller This is a furniture system composed of some thoughtfully designed pieces that can be added to one's workplace. Each worker can organize, personalize, and thus work more effectively (Herman Miller, n.d.A.).
Are versatile / adaptable	**Friction table** By Heatherwick Studio This table designed by Heatherwick Studio, is built in a latticed structure out of paper and resin. It can be expanded from a smaller table, all the way to the size of a dining table (Morby, 2017).
Are versatile / adaptable	**Nomad® Benching** By Nienkämper Nienkämper's Nomad® Benching is an adaptive and responsive workplace system designed to be quickly reconfigurable as the needs of the office are spontaneously manifested ('Nienkämper', n.d.B).
Are versatile / adaptable	**Expansion cityline** By Teknion Teknion's Expansion Cityline is inspired by the way a city is built around a network of traffic movement. This furniture system aims to facilitate the movement of communication paths in order to render a workplace more efficient (Teknion, n.d.A).

FURNISHINGS THAT...	EXAMPLE
Are versatile / adaptable	**Flip Top Desk** From the Thesis collection By Teknion This table's surface can flip up and double as a whiteboard when needed (Teknion, n.d.B).
Supports your body	**Sayl Chair** By Yves Béhar This chair was inspired by the Golden Gate Bridge. It has a flexible yet supportive back that challenges the traditional typology of the ergonomic office chair (Herman Miller, n.d.B).
Supports your body	**Grafeiphobia** By Geoffrey Pascal These alternative supportive devices were based off of NASA's Neutral Body Posture research. They redistribute body weight to make it less stressful on the lower back (Messina, 2018a).
Push the boundaries	**Orwell** By Goula Figuera Orwell by Goula Figuera is a hybrid between a sofa, a bed, and a cabin. The sofa can be transformed into a private cabin, or perhaps a private sleeping area ('Goula Figuera,' 2012).
Push the boundaries	**The Cocoon 1** By Micasa Lab This is essentially a transparent sphere with reconfigurable cushions that allows you to build yourself a lounging space, a workspace, or whatever other type of space you may want in your own private bubble (Tran, 2012).
Push the boundaries	**The BuzziJungle** By BuzziSpace This is a type of jungle gym for the office. It has different lounging and sitting options for the worker that just wants to work from somewhere different for the day (Put, n.d.).
Push the boundaries	**CozyDesk** This is a "desk" that allows one to use their laptop from a reclining position. It can also double as a standing desk.

FURNISHINGS THAT...	EXAMPLE
Push the boundaries	**CozyDesk** This is a "desk" that allows one to use their laptop from a reclining position. It can also double as a standing desk.
Encourages mobility	**Manta** By Koleksiyon Designed by Studio Kairos, Koleksiyon's Manta desk folds up like an artist's easel. This allows individuals to carry it with them wherever they go (Koleksiyon, n.d.A.).
Encourages mobility	**Tebur** By Nmbellow Studio This table is designed with mobility in mind. It has four removable legs that can easily be screwed into the table. Picking up on trends in micro-living and digital nomadism, this desk seeks to make life easier when moving day comes around ('Nmbello Studio', 2016).
Encourages mobility	**Urban nomad desk & urban nomad desk revisited** By Isabel Quiroga Inspired by a wheelbarrow, this mobile office space allows its user to wheel it around to a new milieu whenever the mood arises (Quiroga, 2012).

WORKPLACE SURROUNDINGS

SURROUNDINGS THAT...	EXAMPLE
Promote access to nature	**Office with a Patio** By Office Shogo Onodera This office space uses an interior 'inner courtyard' to encourage interactions and creativity amongst the users of the space. It also allows access to nature within an indoor setting (Messina, 2018b).
Promote access to nature	**Evolable Asia's office space** By 07Beach This is Evolable Asia's park-within-an-office. Featuring real grass and real plants, the landscaping allows employees to take their shoes off and enjoy a bit of the outdoors, indoors (Maroncelli, 2018).
Promote access to nature	**Second Home** By SelgasCano Second Home, based out of Lisbon, Portugal, is home to 1,100 plants and 250 workers. The plants help control noise, create natural boundaries between workers, and purify the air (Cavanagh, 2017).
Promote access to nature	**DevolutioN Park** by DevolutioN DevolutioN Park by architectural firm DevolutioN was a temporary demonstration in Xiamen, China of the possibilities of repurposing a highrise apartment into a semi-public park. The interior space of an appartment building has been transformed into an indoor park complete with rolling hills, grass, and real plants growing from the floors (Azure, 2018).
Promote access to nature	**Slack's office space** By Odos Architects In London, Slack's office space emphasises biophilic design principles by incorporating these little window seats that allow employees to be surrounded by daylight, without leaving the workplace (Angelopoulou, 2017).
Promote access to nature	**Office in the woods** By SelgasCano Architects This famous semi-buried office workplace is located in a forest near Madrid, Spain. The office workers receive plenty of natural light as well as beautiful views of the changing seasons (Turner, 2009).

SURROUNDINGS THAT...	EXAMPLE
Promote access to nature	**Outdoor office** By L.L. Bean L.L. Bean, Jack Morton agency, and coworking company Industrious collaborated on this outdoor office concept. Made from a shipping container, this office is more of a marketing project, and so is traveling from location to location. This, however, opens up new possibilities for office spaces that can be "packed-up" for the night and opened-up during the day (Beltrone, 2018).
Create space within space	AirBnB's Portland office features a break-out area where teams can collaborate. It ressembles a small A frame glass-framed house within a larger open-concept room (McNamara, 2016).
Create space within space	**Oblivion** By Koray Malhan These funnel shaped work pods have a lot of shelving built into them. They provide little sheltered areas where workers can concentrate (Koleksiyon, n.d.B.).
Create space within space	**Gazebo meeting pod** By Nienkämper Nienkämper is an award winning Canadian design company focused on furnishings for the office space. Interestingly, their interpretation of furniture has extend to the design of work-pods. This Gazebo ressembles a small framed house with half walls made of a plant-like material ('Nienkämper', n.d.A).
Create space within space	**The Growroom** By Space10 This open-source sphere can be downloaded and built by anyone willing to put in the labour. The Growroom is a type of vertical garden, but one could imagine setting up a light and a work surface within one of these spheres (Space10, 2017).
Reuses underutilized space	**Minima Moralia** By Boano Prišmontas Minima Moralia, a pop-up studio offering creatives and alternative workplace. The brainchild of architects Tomaso Boano and Jonas Prišmontas. Presented at the London Festival of Architecture in 2016. It is a small cubicle like building with see-through walls that can be placed in a backyard or on a rooftop to provide space for creatives to create (Boano Prišmontas, 2016).

SURROUNDINGS THAT...	EXAMPLE
Reuses underutilized space	**StationF** Station F occupies an abandoned train depot (34,000 sq.m). It has coworking spaces, coliving spaces, restaurants, cafés as well as maker spaces and event spaces (Quinn, 2018).
Reuses underutilized space	**The Shop** By Eskew+Dumez+Ripple The Shop in New Orleans is a coworking space specifically reserved for arts, technology, and culturally-based companies. Housed in a former warehouse, it demonstrates how coworking spaces can reinvent forgotten or abandoned spaces (Geekie, 2018).
Reuses underutilized space	**Crew Collective 360** By Henri Cleinge The Crew Collective 360 in Montréal offers coworkers a luxurious working space filled with chandeliers, vaulted ceilings, and marble floors. This is an example of how prized, listed architectural buildings can be reinvented to serve a new, more diverse, form of community (Oberti, 2017).
Push the boundaries	**1SQM house** Van Bo Le-Mentzel 1SQM house, designed by Van Bo Le-Mentzel. Is an open-source design for a tiny living space. It is a tiny little translucent space that can provide a small, personal space in a public area (Kurt, 2012).
Push the boundaries	IDEO had a project about the future of transportation, especially as it would play out in society and the way in which it might lead to new opportunities. Their idea is to move spaces as opposed to thinking about moving people. The office comes to you, instead of you having to go to the office. This removes the burden of commuting, and allows teams to work from new locations and discover the world (IDEO, n.d.).
Push the boundaries	**Go Today Shaire Salon** In Tokyo, a new type of coworking space is born: one that mixes a coworking studio with a hair salon. Called the Go Today Shaire Salon, it is representative of Japan's prohibitive real estate pricing, and of the sharing economy. With two seemingly disparate industries coming together to share space (Kengaku, 2018).

SURROUNDINGS THAT...	EXAMPLE
Push the boundaries	**Cloud** By Monica Förster This is a portable room that can be inflated to create a working environment on the go (Offect, n.d.).
Push the boundaries	**The Transparent Bubble Tent** By BubbleTree Designed by Pierre Stéphane Dumas, these inflatable shelters that ressemble giant bubbles can be placed anywhere (BubbleTree, n.d.).
That are branded	**MINI Living** by MINI (Cooper) MINI Living is an under construction complex that is built by mixing play, work, live, and public spaces together. It will be built in Shanghai by the car brand, MINI (Cooper) (Mini, n.d.).
That are branded	**Workbar** By Staples Staples, the office supply chain is transforming a few of its locations to include coworking spaces (Staples, 2018).
That are live/work hubs	**Deskopolitan** Deskopolitan in Paris is a coworking space that is opening a second location that will have a kindergarten, aparthotels, workspaces, restaurants, and a fitness center (Quinn, 2018).

WORKPLACE TOOLS

TOOLS THAT...	EXAMPLE
Help you focus	**Focus** This app is a type of widget you can add to your web browser. It will block you from visiting all websites (other than those on your allow list). It uses the pomodoro technique, which encourages you to focus for 25 minutes at a time, with structured breaks in between work blocks.
Help you focus	**Forest** This app encourages an individual to stay focused on the task at hand by ignoring their phones by leaving the app running. While their phone is undisturbed, a digital tree is grown. A user then builds their own digital forest. In addition Forest plants real trees when users spend digital coins earned.
Help you focus	**HazeOver** This is an app branded as a “distraction dimmer” that visually dims all windows that are not currently in use, allowing a user to more easily focus on a task at hand.
Help you focus	**Noisli 2.0** This app lets users select from various ambient noise playlists. These playlists can be played on a timer to help an individual better manage their time.
Help you focus	**Brain.fm** This is a website that uses artificial intelligence to produce music to help an individual focus.
Help you focus	**Noizio** Once again, another ambient noise creating app. This one allows a user to customize their own sound mixes based on personal preferences. The ‘music’ to choose from are more natural in theme, including campfire noises, rain, and a thunderstorm.
Help you focus	**Hocus Focus** This app will hide any window application that is unused within a certain time span. It helps a user keep a clean, clutter free digital workplace.

TOOLS THAT...	EXAMPLE
Help you focus	**Freedom** This is an app that allows an individual to block the internet on all their devices during periods of focus - from their phone, to their laptop, and their tablet.
Keep you private	**3M Privacy Filters** This product helps maintain privacy of your digital screens by preventing visual hacking.
Keep you private / mobile	**No.1 The object** Design by piKs design, and made for La Fonction, this is a mobile workstation that provides a private workplace that folds up into an easy to carry briefcase.
Keep you organized	**Magnet** Magnet is a window organizer for your digital space. It automatically snaps your windows to a grid, ensuring everything remains visible when needed.
Help you manage your tasks	**Todoist** The Todoist app is a to-do list that syncs across all of your devices, helping individuals stay on track.
Help you manage your tasks	**OmniFocus 3** This app is similar to Todoist in the sense that it allows you to create lists of action items for various projects.
Synchronize teams	**Redbooth** Redbooth is a project management and communication platform for helping teams accomplish projects more efficiently.
Synchronize teams	**Trello** Used to keep track of tasks in teams. Helps in team collaboration and coordination.
Synchronize teams	**Asana** This tool is for project management and helps teams to keep everyone focused.
Keep track of hours	**Togl** Togl is a useful product for helping remote workers keep track of their billable hours.

TOOLS THAT...	EXAMPLE
Facilitate team conversations	**Slack** This is a useful app for teams to communicate and to help create work flows amongst team members. It has a variety of integration features too.
Facilitate team conversations	**Skype / Go To meeting / Zoom / Facetime / GoogleHangouts** All of these digital tools can be used to facilitate teleconferencing and screensharing amongst teams.
Facilitate team conversations	**Twist** Similar to Slack, Twist promises to deliver a communication platform for teams, albeit one that is 'calmer' and less stressful when it comes to notifications.
Facilitate team conversations	**Voxer** Branded as a walkie-talkie app for teams, Voxer allows push-to-talk communication with your team members.
Expand the digital space	**Luna display** This app transforms an iPad Pro into a secondary monitor, providing a mobile and expandable set-up for those on the road.
Expand the digital space	**Astropad** This app turns your iPad Pro into a secondary paired monitor, allowing you to draw with ease in programs like Photoshop.
Expand the digital space	**Slide-n-Joy** The Slide-n-Joy is a start-up company that offers a product that can attach to a laptop in order to provide it with two more screens.
Allow you to find workspaces	**Flexday** Through a membership, Flexday is an app that allows individuals to find a convenient restaurant that has been turned into a co-working space. This app is Toronto-centric.
Allow you to find workspaces	**Spacious** This is a service that, similar to Flexday, transforms unused hospitality space into co-working spaces. Currently only offered in New York and San Francisco.
Allow you to find workspaces	**WorkEatPlay / Kettle Space / Two Space** Once again, very similar to other services, these platform transforms underutilized restaurant space into workspaces for remote workers.
Allow you to find workspaces	**Ellyot** Somewhat similar to the services that allow you to book restaurant space, Ellyot allows an individual to reserve workspaces in locations such as art galleries and hotels.

APPENDIX C

Additional material related to project's framework and methodology

XX Development of a project methodology

The methodology for this project is a hybridization inspired by Richard Lum's (2016) '4 Steps to the Future' framework and the Design Council's Double Diamond design process model (UK Design Council, 2005) (Figure 22).

Both frameworks share a similar overarching methodology, where both begin with exploring the research field as broadly as possible, the second step involves pulling insights from the findings in order to better frame a 'vision' or a solution. The third step is that of developing a solution or vision, and the final stage is that of delivering the 'solution'. Where they differ is that the Four Steps to the Future inserts three lenses into the first phase: that of the past, present, and future.

Here I present my interpretation of Lum's framework, to better match the scaffold of the Double Diamond model (Figure 23).

Finally, Figure 24 highlights this project's methodology as a hybridization of both models.

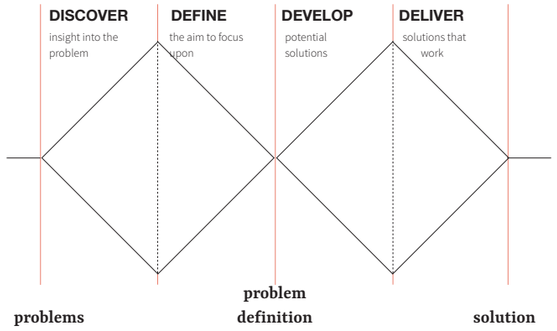


Figure 24 - The Design Council's Double Diamond design process. Adapted from (UK Design Council, 2005).

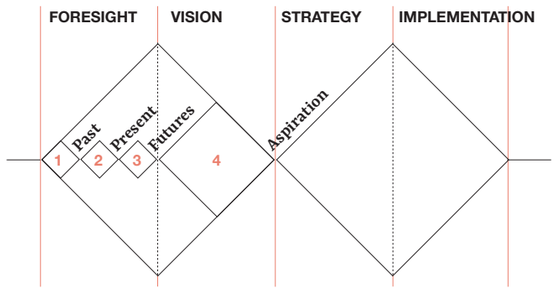


Figure 25 - An interpretation of Richard K. Lum's The Four Steps to The Future Process, adapted from Lum (2016).

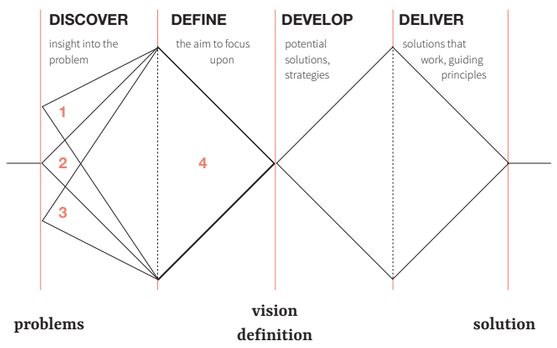


Figure 26 - This project's methodology, as a hybridization of the Double Diamond model and the Four Steps to the Future framework.

TYPES OF KNOWLEDGE COLLECTED

As Sanders and Stappers outline in their book *Convivial Toolbox* (2012), what people say differs from what they do, which equally differs from what they make. As researchers it is our task to uncover unstated desires and needs. One of the best ways to understand participant's unstated thoughts and desires is by using a participative research methods. Figure 25 depicts a useful diagram found in the Sanders and Stappers book. It highlights the different types of methods that can be used to uncover different levels of knowledge. For this project, the majority of the research uncovered resides at the surface level, with the knowledge received from participants being mostly explicit and observative. Future research on the subject of remote work furnishings could explore generative sessions where participants are asked to prototype their workplace of the future.

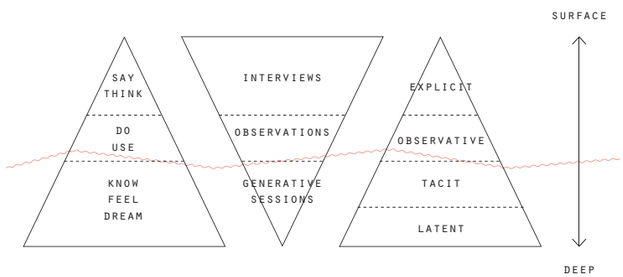


Figure 27 - Correlation of research methods and level of knowledge obtained. Figure adapted from Sanders & Stappers (2012).

APPENDIX D

History of the workplace

X X History of the workplace

Working from home is not a new concept. In fact, most of us worked from home back in the medieval times. So, how is it that the modern office space came to be and where is it now going? In order to trace the history of the workplace, the history of the office was researched. This was done since the office has played the role of the traditional workplace for most of our human history.

ANCIENT HISTORY

The first office space may have appeared alongside the first administrative positions, perhaps in Akkad, the capital city of the world's first empire located in the Indus valley, as rooms where records could be stored and taxes tabulated.

Thinking forward through the past.

MIDDLE AGES

EARLY MIDDLE AGES
(Europe, 5-11c.)

Moving forward not only a few centuries but a few millennia, we can find the beginnings of a recognizable office space in the scriptoriums of monasteries, where rows of desks provided work stations for the copying of religious scripts. Kings and queens had rooms in their strongholds and castles that served to strategize for wars. These rooms could be considered private studies, and so in a tangential way could be considered a type of personal office space. However, the recognizable office space is still many centuries away.

Figure 28 - The Centripetal Spring Armchair designed in 1851, was the early ancestor of the modern office chair. Although this model is much more decorative, it has much of the same functionality as a modern office chairs, with casters and adjustable seat position. Image source: 'High Museum of Art', n.d.a

At the same time, in the Middle East, the Islamic Golden Age is growing. Characterized by an interest in the advancement of arts and science, numerous scholars and scientists took up the use of paper (a Chinese invention) long before it became mainstream in Europe.

HIGH MIDDLE AGES
(Europe, 11-14c.)

As more kingdoms populate Europe, more administrative centers are established. The Hanseatic league advances trade networks in the Holy Roman Empire, which further develops business. Desks are used to sort and keep track of paperwork. It is assumed that scholars, musicians, playwrights and poets also had access to private studies or at least a desk or table from which they could work.

LATE MIDDLE AGES
(Europe 14-15c)

Trade continues to diversify, with insurance companies, new forms of accounting, and new types of partnerships being developed. Powerful trading families like the Medicis in Italy assert their influence over the patronage of the arts. In Italy, chairs are viewed as symbols of wealth and furniture is often designed in a grotesque style - with figures and sculptural forms decorating to excess (Miller, 2005).

RENAISSANCE (14-17c.)

Known as a period of cultural and intellectual awakening, the Renaissance movement encouraged individuals to become more involved in cultural productions such as writing, painting, and music. Libraries are open to the public during this time, and so knowledge is freely available to all.

INDUSTRIAL REVOLUTION
(18-19c.)

It is not until 1726 that the first true office is built to handle the large amount of paperwork generated by the Royal Navy in London. Before the 19th century, offices were small places where a few dozen clerks could be found working. Work was done through person-to-person communication and written word. As work became more complex, office bureaucracies developed to manage the workforce. The ensuing division of labour defined the workplace of the next few centuries.

Following progresses in the Industrial Revolution, the advent of the elevator and of steel construction marked a profound turning point in the design of office buildings, and by consequence, of office spaces as taller buildings now became possible. The most desirable office space no longer resided at street level, but was rather located on the upper floors of skyscrapers. Another big change came with the invention of the telephone and the typewriter which contributed to changing the workplace from one of spoken word collaboration, to one of written word collaboration.

Figure 29 - Rolltop desk, ca. 1776-79. ('The metropolitan museum of art', n.d.g.)

"history shaped not only our technology, politics and society, but also our thoughts, fears and dreams."
(Harari 2016, location 1033)

By the 1860s commercial offices spread across the United States of America and Europe, with the design of the space conforming to 'Taylorism,' a scientific approach inspired by industrial efficiency that aimed to optimize spaces and employees by essentially treating the office space as a factory. Standardized desk formations and layouts were commonplace in this time frame, with employees expected to even standardize the placement of

erasers and staplers to encourage efficiency. High-ranking employees received private offices, mid-level managers received cubicles, and lower-tiered workers received a desk in an open space.

20TH CENTURY

Taylorism's approach and disregard for the social aspect of the office sparked architect Frank Lloyd Wright to design the Larkin Administration Building in 1906. What set this project apart was its radical "open-concept" layout, designed with ample space between employees, and an

Figure 30 - Desks of this period (1891) typically featured panels that could be closed and locked to secure the contents of a workplace. Image credit: ('The Metropolitan Museum of Art', N.D.J.)

upper level containing the offices of the managers[1]. By 1919, there was a rise in interest in workers' health and welfare, especially concerning reductions in fatigue as a way of improving comfort rather than profits (Forty, 1992).

1940s

Wright continues to redefine the office space, with a new project in 1939 (the Johnson Wax building) that provides a sense of pride for employees who in turn display an increase in workplace productivity. Additionally, it is at this time that corporations begin to assert their individual brand image through interior styling. The 1940s is credited with the rise of ergonomics and human factors as a field of study.

1950s

By the 1950s the trend in office design has moved to providing a cozier, more home-like environment as the postwar desires for comfort drive the introduction of lounging furniture into the office space. Another driver for this change was the discovery that Taylorism inspired offices were unproductive environments that were depressing and demoralizing for employees. Prior to the 1950s, home decorators had been big advocates of keeping the home and work environments very distinct from one another in order for the home environment to provide respite for the working man. This tendency of keeping work separate from home becomes more blurred as more and more individuals begin constructing home offices and as more women enter the workforce.

1960s

The next decade brings further change as the service economy begins to take shape alongside the use of computers, and the Burolandschaft movement takes hold. This movement looked at office spaces from a more humanistic perspective, by taking an early human-centered approach

Figure 31 - Desk and chair for S.C. Johnson & Sons building designed by Frank Lloyd Wright, 1936-1939. Image credit: ('High Museum of Art', n.d.C.)

to the design of office layouts in order to optimize communication flows. It is also in the 1960s that the cubicle is invented and that Herman Miller introduces its take on a modular cubicle system (the Action Office Series). During this decade, designers begin to view ergonomics not only in terms of physiological considerations, but also in terms of cognitive considerations.

1970s

The 1970s are characterized by an interest in ergonomics as supplemented by human-centered approaches and ethnography. During this time, work is steadily becoming more intellectual in nature, and further characterized by collaboration.

1 Even though open concept spaces are currently being heavily criticized, our modern versions of open-concept offices is a far cry from Wright's considered approach.

1980+90s

By the 1980s, the original cubicle systems have been re-interpreted by companies looking to boost their spaces' efficiency. This led to the dreaded "cubicle farms" characterized by a grid of tall partitioned spaces and drab factory-feeling workspaces of the 80s and 90s. Coincidentally, it is also during this lamentable period in office design that workers begin to display more mobile behaviours with hot-desking beginning to be used in office spaces, and agile and activity based work becoming more popular.

2000s and onwards

As the technology continues to improve, workers have the ability to become more mobile. By the 2000s corporations recognize that the

Figure 32 - Side chair "synthesis 45" office furniture system by Ettore Sottsass, 1972. Image credit: ('The metropolitan museum of art', N.D.K.)

office space can act to attract and retain top talent. Pinball machines and bowling lanes start to be introduced in the interior design of office space. Think of the less traditional working environments of Google, Apple and Nike. These big corporations transform the workplace into a type of company town complete with recreational activities, wellness services, and restaurants. Whether these types of corporate campuses promote healthy work-life balances is questionable, with some labelling it an of architecture of submission (Saval, 2014). Companies also put a bigger emphasis on the design of healthy, wellness-centric environments. Designers and manufacturers jump on the bandwagon, offering sit-stand desks, treadmill desks, and all types of variations intended to get employees moving.

Nowadays organizational hierarchies are more fluid, and this change is reflected in the design of workplaces - with more shared workplaces and fewer corner offices for high-ranking executives. Coworking spaces begin to become more common and grow in popularity as alternative workplaces.

The evolution of the prioritization of the workspace from one focused on efficiency to one that prizes the human experience has been evidenced through the evolution of interior design and architectural styles. The current architectural style leans towards open-concept offices, yet as Edenius and Yakhlef (2007) point out, these spaces are often characterised by excessive noise, movement, and chaos that does not provide the appropriate

Figure 33 - Fading desk, by Thijmen van der Steen, 2012. Image credit: (Steen, 2012).

scenario in which to think and reflect. Companies such as Herman Miller are now offering product solutions to better define the open-concept office into efficient work settings. In essence, the pendulum is swinging back towards a style of modern, flexible cubicle space.

With the increase in digitization, employees can now work from anywhere. With shifts in what society values, side hobbies and second careers are encouraging individuals to participate in the gig economy, often resulting in work from home scenarios or impromptu

offices set-up in coffee shops. The traditional office design is being redesigned to offer more workplace flexibility. Additionally, a broader rethink of the role that office spaces play in our modern working styles is underway, from shiting to a place where work gets done, to a place where knowledge is shared and social networks are maintained.

Figure 34 - Rewrite produced by Ligne Roset. Image source: ('ligne roset', n.d.A.)

Increased interest in the future of the workplace begins to be manifested, with the Museum of Modern Art in New York City organizing the exhibit *Workspheres* in 2001, and exploration of the ways the personal workplace could be optimized to better respond to practical realities.

APPENDIX E

Digitization of tools and environments

XX Digitization of tools and environments

Continuing to explore the major shifts in the workplace, another unignorable shift is that towards the digitization of tasks. This shift is credited with facilitating the rise of remote working by providing a virtual link to the mobile office and with reducing the amount of work tools necessary to complete tasks (Malone & Rockart, 1991). A video by Harvard Innovation Labs (2015) shows how the personal workplace environment has become simplified through the digitization of tasks and the creation of digital tools. Starting with a cluttered desk from the 1980s, tools are gradually replaced by digital technology to reveal a lone laptop (filled with digital applications) sitting on a desk at the end of the video.

Because the majority of today's work is completed or recorded through digital mediums, remote workers, for the most part, only require laptops and an internet connection to be able to work freely from a variety of locations, both locally and globally (Ellison, 1999). Whereas the briefcase served as the mobile workstation of the past, now we see backpacks, messenger bags, and mobile lockers playing the same role. The tools used by remote workers are selected and curated by each individual and can include a mixture of personal items, and in some cases company-provided items. FIGURES 34 through 37 in APPENDIX G highlight the tools that participants of the primary research indicated they used while working remotely.

Workplace tools can be divided into tangible and intangible tools. Tangible tools include products such as the laptop, headphones, and furnishings. In general, physical remote working tools are typically lighter and smaller than their static office versions. Intangible tools are those that live in the virtual workplace. They include software such as the operating system, apps and digital services such as e-mail, messaging systems, and videoconferencing programs.

A selection of the tools, both tangible (physical) and intangible (digital), used by remote workers are featured in APPENDIX B. Tools also have the ability to help employees create a mental workspace in which to focus (Colbert, Yee, & George, 2016). Music programs like Spotify can create an ambience favourable to productivity, and many messaging systems such as Slack allow an individual to restrict notifications, further helping the employee focus on a given task. This indicates that tools can be used to modify and craft one's own physical and mental environment to their liking, emphasizing that the workplace is not only a physical location, but an intangible mental and virtual space as well.

APPENDIX F

Themes informing workplace design

X What themes are informing the design of current workplaces?

As the theory has shown us, spaces and objects can be vessels for values. Through symbolism, semiotic considerations, and psychological considerations, the way we design for the physical world embraces multiple angles and synthesizes them into distinct offerings. This chapter will further investigate the themes guiding current workplace design and some trends that are emerging specific to workplace tools, settings, and furnishings.

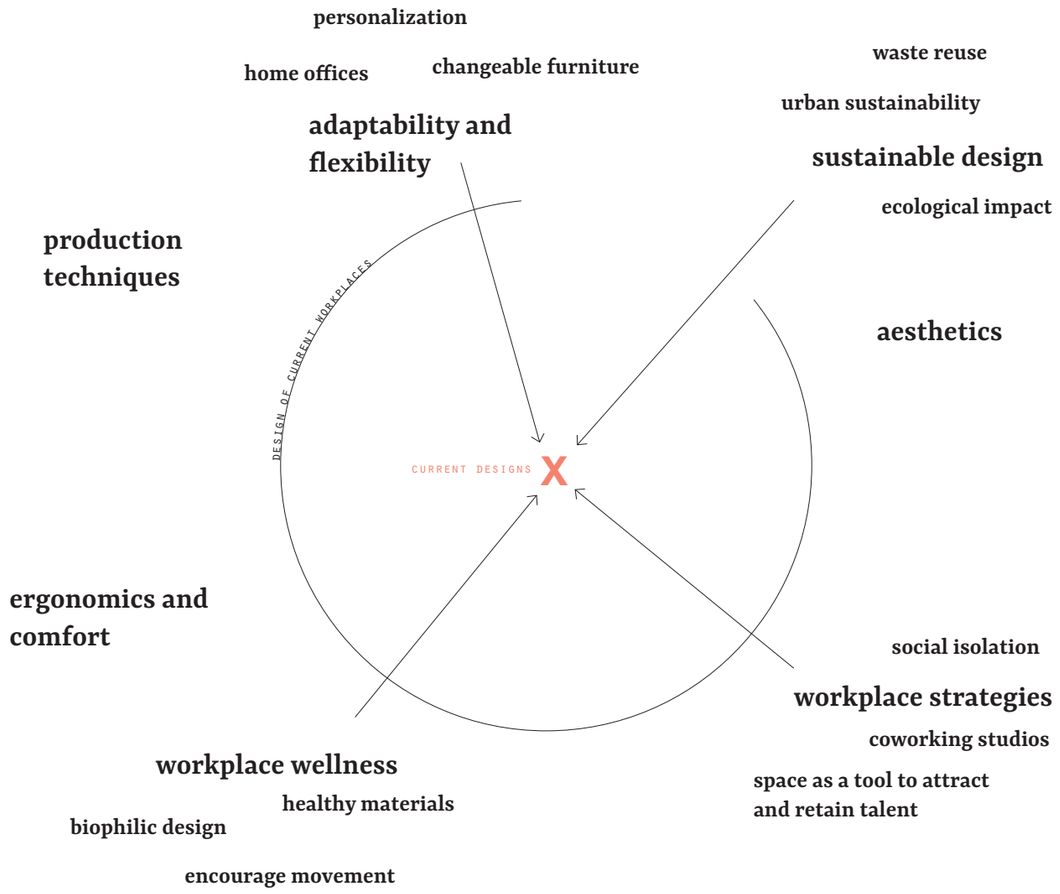


Figure 35 - Themes informing current design of physical workplaces.

XX Workplace wellness

In terms of employee productivity, the link between wellness and increased productivity is well documented, with a strong interest in workers' health and welfare becoming more important around 1919 (Forty, 1992) and continuing to the present day under the guise of wellness strategies (Buck Consultants, 2014). Nowadays workplace environments are being viewed as key contributors of the Sick Building Syndrome[1] (Wargocki, Wyon, Sundell, Clausen, & Fanger, 2000), with advocates maintaining that every employee deserves the right to work in an organic, sustainable environment. Companies are aiming to create more desirable, and healthier workplaces through low-VOC emitting material choices in furniture and interior finishes.

> **"Wellth is the new wealth"**
> (Goode, 2016)

Workplace wellness is now such a well established aspect of workplace design that in the United States most organizations pay a health premium on their insurance, for which they can receive a discount if they are able to demonstrate, for example through a WELL Building Standard certificate, that their buildings are healthier than the norm ('FX Magazine', 2018).

TThis is linked to growing interest in the wellness economy that is also recognizable through the increased use of standing desks and more ergonomic workspaces, spawning the expressions that "sitting is the new smoking" (Baddeley, Sornalingam, & Cooper, 2016)[2].

However, workplace wellness goes beyond physical wellness to include emotional wellness, and cognitive wellness. Just as we saw with user needs, Steelcase, the largest manufacturer of furniture for offices, hospitals, and classrooms in the world, has identified a variation of Maslow's hierarchy that they have named the Hierarchy of Office Needs (Figure 27) (Steelcase, n.d.). It has four stacked needs that identify the needs of great office spaces: basic technology, range of diverse spaces, organizational support, and wellbeing. They have placed physical, cognitive, and emotional wellbeing at the top of the pyramid, further reinforcing the importance of workplace wellness for today's working environments.

Our workplaces need to support us in terms of cognitive well being ("can I focus here?"), emotional wellbeing ("do I feel inspired and happy here?") and physical wellbeing ("am I comfortable here?"). This more holistic view of workplace wellness is increasingly informing the way physical space and artefacts are considered.

1 Sick Building Syndrome is a condition that was first identified in the 1970s and is typically characterized by headaches and respiratory problems that affects workers of office environments, and although no specific illness has been identified, it is thought that perhaps interior materials and furniture off-gassing VOCs, as well as poor ventilation systems could be to blame (Boslaugh, 2018).

2 Interestingly, researchers have looked at the advantages of standing and treadmill desks, and have found that standing desks were not significantly associated with improvements related to physiological outcomes yet found treadmill desks to be more promising (Torbeyns et al., 2014).

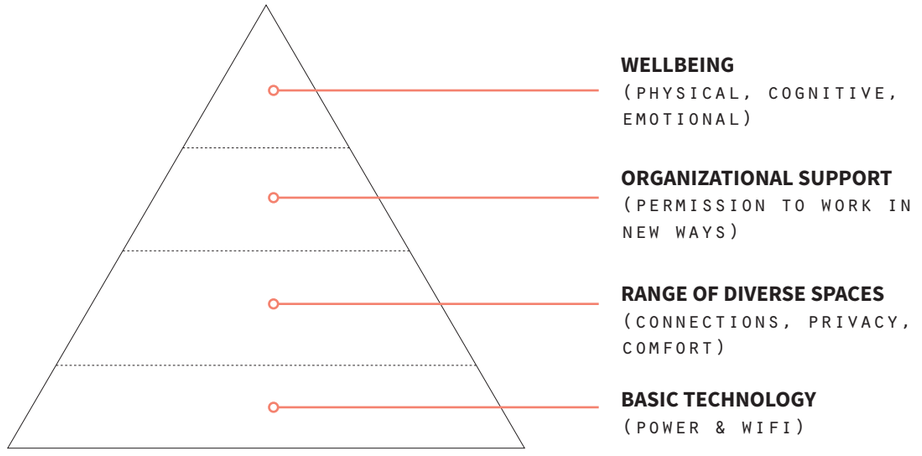


Figure 36 - Hierarchy of office needs, adapted from (Steelcase, n.d.)

BIOPHILIC DESIGN

One of the ways holistic workplace wellness is being addressed in the design of workplaces is through biophilia inspired environments. Biophilic design is a design practice that takes inspiration from nature, its natural processes and its patterns in order to provide more sustainable and enjoyable environments. One such tactic of biophilic design is the inclusion of more plants and natural materials in indoor environments to better provide a connection to the outdoors. The rise of biophilic design may be indicative of our desire for more natural environments as we find ourselves more and more immersed in digital environments.

Evidence suggests that people who are exposed to green spaces benefit from improved cognitive, physical, and psychological abilities (Stigsdotter et al., 2010; White, 2013). For this reason there is interest in bringing more greenery to our working environments. This trend in office greening may also come as a direct response to concerns such as Sick Building Syndrome (SBS) as plants can scrub the air of certain types of air pollutants.

“Good health is profoundly important to functioning and performance in the workplace. Design must be practiced within the context of both human and environmental health.”
(Teknion, 2015, p.20)

X Sustainable design

Not only is it important to consider the effects of wellness of a workplace environment from the point of view of a user of that space, it is equally important to consider the effects workplace environments have on the wellness of the environment.

A problem linked to empty office spaces is the risk of more wasted workplace furnishings. A truly sustainable workplace must provide the safety, health, comfort and satisfaction of its occupants 'while meeting the needs of the present without compromising the ability of future generations to meet their own needs' (Afacan, 2015; United Nations Brundtland Commission, 1987).

"10 million tonnes of furniture are discarded by businesses and consumers in EU member states each year, the majority of which is destined for either landfill or incineration."
(Forrest et. al, 2017, p.3)

We live in a society that would rather throw away something defective than fix it. In certain cases the furniture may not even be defective, as Marie Hebrok (2016) has shown in her research. What Hebrok (2016) demonstrated is that individuals will throw away perfectly good furniture simply because they desire something more stylish and modern, often referring to the discarded pieces as "junk". It is an interesting challenge for designers to create physical products that can survive the test of time.

ECOLOGICAL IMPACT

Processes for optimizing the sustainability of product designs are becoming more widely adopted. One such example is the cradle-to-cradle movement originally proposed by Michael Braungart and William McDonough (2002). This approach proposes a systemic viewpoint that highlights designed products as being part of a cyclical system. In essence, it suggests that all new products should be designed with the end-of-product in mind. The approach proposes to shift our mindset from cradle-to-grave to a cradle-to-cradle mentality. This type of mentality is one where materials and pieces used to create a product should be able to be reused to create a new product once the original item 'expires'.

There are many strategies for creating more eco-friendly products and environments. From upcycling materials to encouraging modular construction of products, from adopting a service model for products to designing an heirloom quality to products. An interesting challenge is moving beyond sustainability towards products and environments that have the ability to regenerate and/or replenish the ecosystem.

Design for Sustainable Behaviour (DfSB) is a relatively young research field that pulls from several fields such as psychology, anthropology, sociology, user centered design, and interaction design (Hebrok, 2016). It's main theory is based on the idea that behavioural control is set on a scale that is shared between a product and a user, with one extreme having the product being in complete control of a user's behaviour, and in the other, the user having complete control over a product's behaviour. As the external Trends Booklet will outline, several trends inform contemporary tactics for improving sustainability efforts.

URBAN SUSTAINABILITY

A few architects and designers are looking at ways to repurpose existing infrastructure, and design future infrastructure into more efficient work and living spaces. As an example, Fosbury Architecture are looking at ways that prefabricated units may transform vacant buildings into habitable environments, and abandoned or underused buildings such as factories and warehouses are increasingly being repurposed into coworking spaces. As for ways to increase the urban sustainability of workplaces, an example comes from architecture and design firm Gensler that has designed a parking garage of the future, where the floors are level rather than inclined, and meant to be transformed into amenity or living areas once the private car becomes obsolete (Overstreet, 2018).

Other services such as Flexday and TwoSpace repurpose restaurant spaces during their off-hours to turn them into members-only coworking spaces. This tactic reduces the need to build new office spaces.

XX Workplace as a tool to recruit and retain talent

Another workplace theme is that of recognizing that the workplace has become a tool that organizations can use to attract and retain talent. As the gig economy continues to grow, and employees are making career jumps faster and faster, companies have realized that the environment they offer their office workers can help provide incentives for workers to stay on with the organization.

Companies have found that by offering more amenities and services to its employees, workers will be less incentivized to leave the work campus. Think of Google's corporate headquarters, the Googleplex, complete with cafés, restaurants, a bicycle fleet, shuttle buses, a hairdresser, a gym, on-site dry cleaning services… the list is nearly endless. There are almost no reason to leave work, everything you "need" is there (other than your family). Another example of this tactic is apparent in Oosterdokseiland, a large urban project comprising Booking.com's new office space which will have a new building with a cinema, art, gallery, makers lab, bars, restaurants, and even a 'playground' for boxing and yoga (UN Studio, 2018). These projects demonstrates the tendency to blend leisure, office, and domesticity, essentially becoming lifestyle locations.

X Workplace adaptability and flexibility

Another workplace theme is that of adaptable (also called responsive, agile, personalizable) and flexible working environments.

This theme includes the design of furniture, interiors, and interior layouts. An example of responsive furniture includes a sit-stand desk that can accommodate both styles of work. An example of an adaptable interior includes one where the temperature and lighting can be controlled locally, thereby creating microclimates that convenes to each employee's preferences.

There is interest in this theme since this will be the first time in modern history that five generations of workers will be working together, and compared to 20 years ago, there is an increasing number of older office workers in developing countries, with the age at which individuals retire increasing globally (Meister & Willyerd, 2009; Afacan, 2015; Smith, 2008). A more diverse workforce means a more diverse user-profile. More variety in an office's users means more varied needs when it comes to work settings since comfort is influenced by personal conditions and preferences.

For example, because of reduced physical abilities which may include changes in posture, balance and joint movement as well as a reduction in muscular strength, an ageing workforce needs adaptable furniture that can provide better ergonomic support as well as better interior layouts that provide unhindered lines of sight and movement (Dainoff, 1990; Francis and Dressel, 1990; Kroemer and Kroemer, 2001; Marmaras and Papadopoulos, 2003; Afacan, 2015).

Another reason for including more responsive and adaptable furniture in the workspace includes being able to accommodate a style of work that is changing. Increasingly organizations are opting to providing spaces for teams of contract workers to come together and work on projects. This means that the office space is constantly having to adapt to teams of different size, and tackling a variety of projects. This is being manifested in the inclusion of employee lockers in the design of office space and the allocation of a rolling cabinet that can act as an employee's home base.

PERSONALIZATION

Personalization is the ability to modify your surroundings and your tools to better suit your personal preferences. In addition, it can be viewed as a way to express personal identity and cultural diversity to others.

Trends in personalization and customization are making people expect more of their own personality in the products, yet the traditional offices of today are all designed as if the employees are exactly identical. Research shows that when individuals have the ability to curate and design the layout of their own workspace, they are not only happier and healthier, but are also 32% more productive than those who do not have that control (Happify, n.d.). This may contribute to the desirability of work-from-home scenarios where a worker may fully style, and customize their personal workplace to their liking. It is therefore important to design for the agency of the customer in being able to customize their physical and virtual workplace.

Democratic design encapsulates this concept. It maintains that everyone should be able to inform their ideal workplace, and approaches the design of such environments from the standpoint of organisational and environmental psychology in order to understand how space is perceived and used by individuals. The Canadian furniture manufacturer Teknion is a key spokesperson for this field of design.

Figure 37 - Monade Capsule by Alice Bleton is a fibreglass pod that can be attached to a home's roof to provide access to the outdoors. Image source: (Bleton, 2017)

Another important spokesperson for democratic design is Koray Malhan, the brand and design director of Koleksiyon, a Turkish furniture company.

He explains that today's workplaces are designed with equality and flat hierarchies as core concepts. This is often represented by a uniformity of furnishings to reinforce the idea that everyone is equal to one another, an approach that fails to recognize the diversity of the workplace. Instead he proposes that the workplace be composed of a "topography of ways to work [that would] let the employees decide how to use the tools at their disposal" (Moreno, 2018).

ADAPTABLE / CHANGEABLE FURNITURE

When considered concurrently with trends in micro-living and small urban spaces, home furnishings are increasingly designed with multiple functions in order to increase space efficiency. These hybrid living spaces require high levels of adaptability from their interior furnishings. As such the industry is responding with collapsible furniture, hidden modules, and spaces that can transform from one use to another.

HOME OFFICES

It may seem rather obvious that architects and developers are including home offices in the layouts of their developments, yet the change we're seeing is in the level of definition and the expectation we have for the inclusion of these types of workplaces in new building constructions. Whereas beforehand the home office was an extra room in the house that could be converted into more usable space, what we are seeing now are more custom built and purpose built home offices. Anna Yudina's *Home Work* (2018) book provides a compilation of several home offices in a selection of themes including mobile home offices, horizontal or vertical stack offices, fold-out offices, pop-up or pocket stations, and integrated or detached stations.

Examples of a detached home office includes structures placed in backyards, or extensions attached to homes. Integrated home offices are those that can be found under a staircase or completely encapsulated as a unit (i.e. a stand-alone pod). As an example, Alice Bleton is a designer that has created the Monado Capsule (Figure 28). These capsules are workpod environments that can be attached to the exterior rooftops of buildings in order to allow residents to experience more of the outdoors. Additional example projects are listed in Appendix B.

X X Rise of coworking spaces

THE RISE OF COWORKING SPACES

A type of location where we may regularly find remote workers are coworking spaces. Around the world these types of spaces are gaining momentum. Coworking spaces are often membership based office spaces for remote workers, start-up teams, and increasingly, touchdown points for employees whose employers purchase memberships for them.

Worldwide alternative workplaces are viewed as a legitimate solution to office spaces, with awards for best coworking space being handed out alongside those for best small and large office space (Frame, 2018a). A key disruptor to the traditional workplace, their prominence is threatening the business of such industries as workplace strategy consultants, office furniture suppliers, and commercial real estate brokers.

A product of the sharing economy, coworking spaces includes businesses such as WeWork, a coworking company selling memberships for individuals to be part of a community, secure a workplace, and access their network of coworking studios around the globe. In 2017, WeWork was valued at $20 billion (Biggins, 2017). Other organizations like The League of Extraordinary Coworking Spaces, and companies like Outsite are promoting a network of superior workplace locations, often with co-living arrangements.

According to the 2018 Global Coworking Survey conducted by Deskmag, by the end of 2018 about 1.7 million people will be working around the world out of 19,000 coworking spaces (Foertsch, 2018). The average coworking spaces has around 80 members, although nearly a quarter of coworking spaces have member communities of over 150 (Foertsch, 2018).

The attractiveness of coworking spaces lies in their communal vibes and their ability to foster social connections. There exists many types of coworking spaces, from the “all-inclusive, fancy, high-end” coworking clubs to no frills, “just-a-desk-and-wifi” options. Restaurants and hotels are jumping in on this trend, utilizing their unused space as flexible coworking spaces during off hours. Even ‘traditional’ alternative workplaces like coffee shops are rethinking their spaces, with examples such as ‘The Trade Coffee & Coworking’ in Sacramento, California that is designed as half a coffee shop and half a coworking space. Other players like big box stores like Staples, malls, and defunct commercial real estate spaces (like old Toys-R-Us locations) are being transformed into coworking spaces (Thomas, 2018).

The trend is also pushing change in residential complexes. Some luxury buildings are now designing their amenity spaces as day-time coworking spaces for their residents (Velsey, 2017). On the opposite spectrum, a more grassroots movement is seeing individuals offering up their own living rooms as makeshift coworking spaces to networks of coworkers (Biri, 2018). This approach to communal live-work settings is motivating the development of coliving and coworking spaces such as WeLive, a subsidiary of WeWork, the global coworking giant.

Based on this expansive interest in coworking practices, it is evident that coworking spaces will continue to evolve beyond the business models we are familiar with today.

SUMMARY

As this chapter has shown, there are a number of larger themes affecting the design of modern day workplaces. Ranging from a focus on workplace wellness to advancing sustainability efforts, the ways designers are approaching the creation of new workplace surroundings, tools, and furnishings is evocative of the greater change we want to see in the world.

APPENDIX G

Research findings

XX Overview of participant demographics

As mentioned, the survey received 73 unique visits which resulted in 28 participants, however, 5 indicated that they were not remote workers and as such were unable to complete the rest of the survey. Therefore the number of participants for the online survey is 23. The age of participants for the survey was spread between 18-25 and 51-55 years of age, with at least one participant in each 5 year age range. As demonstrated by FIGURE 29, the largest demographic was that representing 31-35 year olds, with 11 participants. As for the workbook, the age ranges were less inclusive, with a large proportion of participants in the 26-30 age range. Only 8 of the 10 workbooks were received in time to be included in the research.

The survey participants were unevenly distributed between genders, with 75 percent of respondents identifying as female and only a quarter identifying as male. The workbook participants were more evenly distributed, with 56 percent identifying as female and 44 percent as male (FIGURE 30). About three quarters of all participants have been working remotely for over three years,

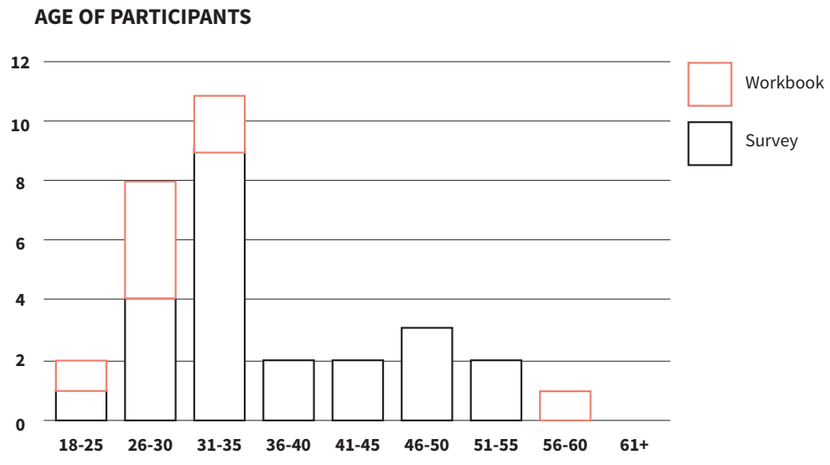


FIGURE 38 - STACKED COLUMN GRAPH DEPICTING AGE OF PARTICIPANTS OF BOTH PRIMARY RESEARCH ACTIVITIES.

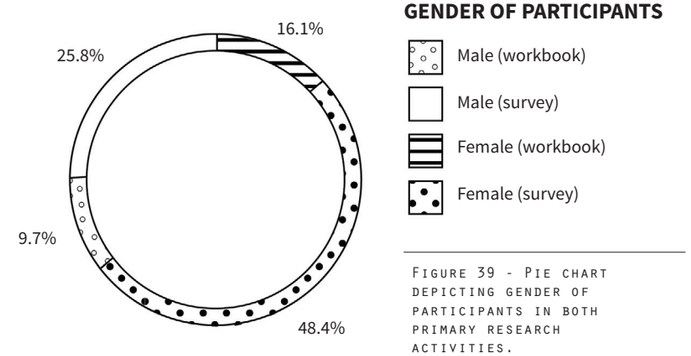


FIGURE 39 - PIE CHART DEPICTING GENDER OF PARTICIPANTS IN BOTH PRIMARY RESEARCH ACTIVITIES.

as such their expertise and familiarity with the practice is well established. The frequency with which they work remotely varies quite a bit. FIGURE 31 shows the spread of frequency of remote work of the survey participants. The most popular option were individuals who found themselves working remotely once or twice a week (39 percent of responses), and the least popular option were those who only worked remotely once or twice a month (9 percent). Some individuals even indicated that they worked remotely every single day of the week (22 percent), while others worked every single day of the workweek (5 days a week, 17 percent).

The largest proportion of remote worker participants worked on average between 3 and 8 hours a day. However, extreme differences in hours were seen. At least one indicated working less than an hour a day remotely, and 3 indicated working over 10 hours a day remotely (FIGURE 32).

Finally, when asked about the type of work they do remotely, as expected individuals indicated a wide range of activities. Ranging from visual communication design and design strategy to software engineering, grant application writing, project management, architecture, music production and administration. The task that was most recurring was that of research, with management and administrative tasks coming in second. FIGURE 33 highlights the main types of work complete remotely received from both survey and workbook participants.

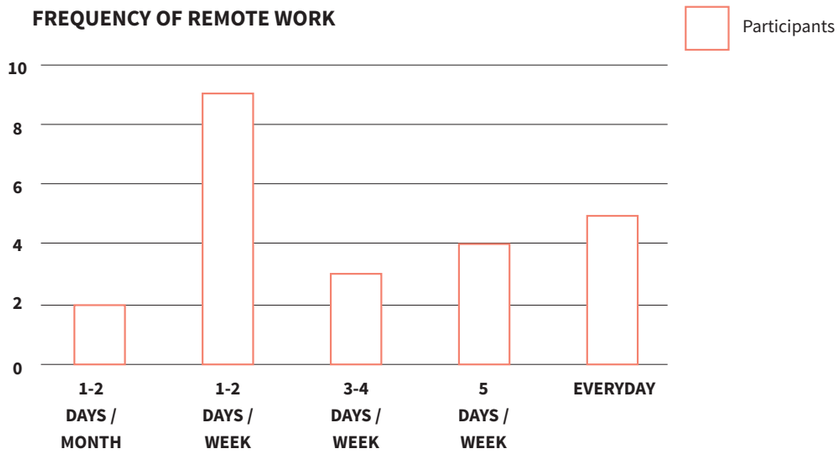


Figure 40 - Frequency of remote work.

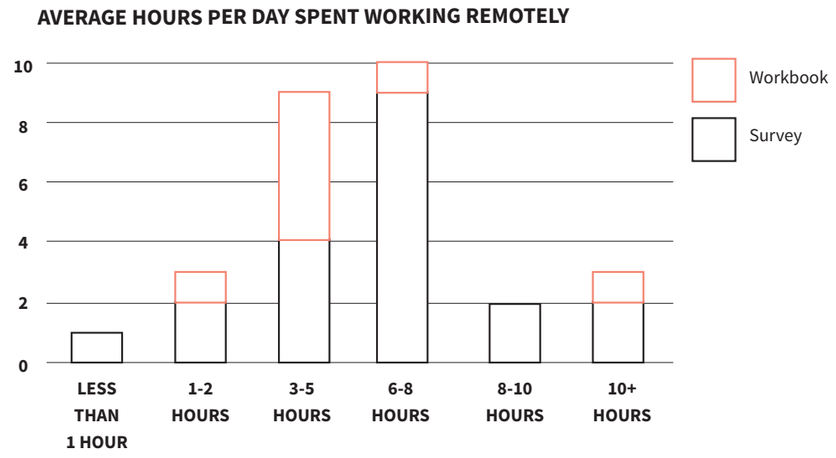


Figure 41 - Average hours per day spent working remotely.

XX Motivation for working remotely

Participants were asked to provide reasons for their decision to work remotely. Although the answers were each personal, several themes appeared. The number one theme was that of flexibility in being able to carve out their own working hours and of being able to work from wherever they want (with one participant mentioning the flexibility of being able to take care of their baby while working). Next highest mentioned reason was the fact that working remotely is associated with fewer distractions and/or with a heightened sense of productivity. Other notable themes included the lack of commute resulting in more time spent on work, that home was more comfortable, and that this lifestyle allowed them to work while traveling, which they loved to do.

However, a quarter of participants indicated that they work remotely not out of choice, but out of necessity, either because their boss and organization is located in a different city or because they do not have an office space (home business).

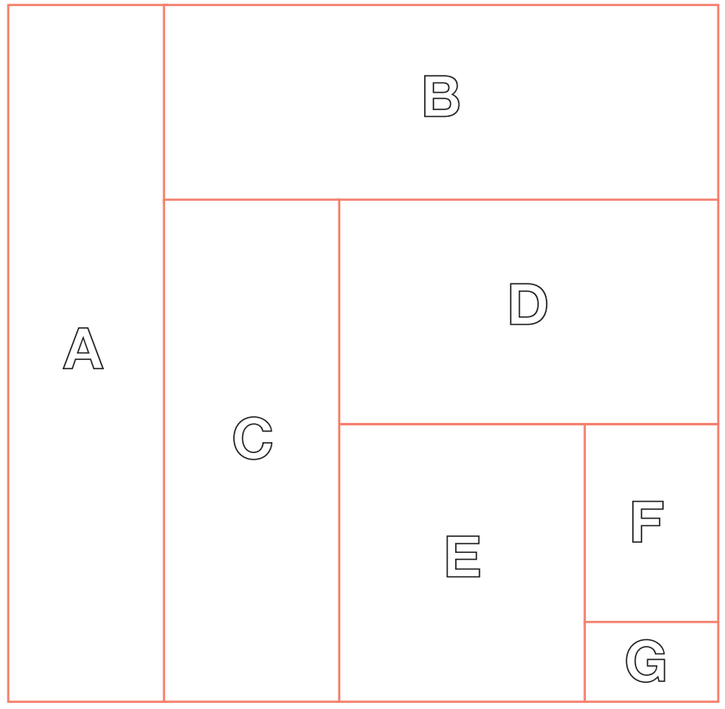
Their days are described as being less repetitive, with the ability to tailor their days to their personal working styles (i.e. running errands or taking a nap when feeling unproductive). These are our "hours of power," or peak moments of heightened productivity (Heuston, 2018). Other reasons included feeling more productive due to fewer distractions, no commute times, and several individuals actually indicated that they choose to work remotely to escape workplace drama, distractions, and negativity. In essence, the contemporary remote working experience is one that speaks of convenience for personal preferences.

When asked to list their difficulties with working remotely, productivity was the number one difficulty listed (alongside social isolation). Some reasons their productivity was impacted was by being distracted by household chores, by people watching, not having the correct white noise, temperature inconsistencies, and inefficient technological set-ups (i.e. screen too small). One participant described their relationship with remote work as having "higher highs and lower lows," meaning that when they were feeling productive they were super productive, but on the other hand when they were feeling unproductive they could become extremely unproductive, more so than they could be in a traditional office setting.

MY FAVOURITE THINGS ABOUT REMOTE WORKING:

"Cute things I'd never have at home. Communal working environment. I'm not interacting directly, but being surrounded by other people that are working. Having the chance to talk to someone while taking a break instead of sitting by myself."

-Survey participant



TYPE OF WORK COMPLETED REMOTELY

A Research
B Management
C Consulting (undefined)
D Creative / design
E Writing
F Meetings / networking
G Engineering / science

Figure 42 - Type of work completed remotely.

XX Workplace locations

Participants were asked to describe their usual workplace environment. Words such as lively, airy, and bright came up repeatedly. White noise or soft music was often described, and a few described scents such as scented candles, the sea, or coffee aromas.

About 65 percent of survey participants indicated that they usually work from home, with 17 percent indicating that they worked from a private office (unclear whether they meant a home office). The rest of participants each indicated a different type of workplace location. They were: coworking space, a studio/ classroom, a library, and on site (restaurants, etc.).

Of those who selected home as their usual workplace, about 43 percent described their usual workplace within their home as a home office, 25 percent as the living room and 25 percent as the kitchen table or dining room table, 7 percent identified a hallway nook or other makeshift space as their office. Other participants chose to describe their workplace using descriptors such as “very boring and dark”, “cozy and homey”, “bright and open”, “quiet”, “comfortable”, and “calm, warm, bright”. All but three participants found their usual workplace environment to be helpful in getting work done.

Next, participants of both workbooks and surveys were asked to define a trio of workplaces: the best, the worst, and the strangest. When asked for their best workplace experience, the answers included 6 participants indicating that home was best because it was private and had no distractions. 5 participants indicated traditional office space (1 specified it as an “actual design studio”) as being the best workplace location because it had the benefit of colleagues and better access to tools and gadgets. 5 chose coffee shops and 4 indicated libraries. The remainder of participants chose to describe more specific examples such as libraries, New York City, or an oceanside café in California that included views of nature, refreshing smells, and a relaxing atmosphere. One participant described their best workplace location as:

“I once stayed in a suite at the Swissotel in Quito, Ecuador for a very hectic business trip. It was larger than my apartment at the time and the staff catered to my every need (including bringing exercise equipment to my room). There was a solid sized desk, fast internet, peace and quiet.”

When describing the worst locations they’ve ever worked in, four listed coffee shops as the worst due to the noise, being cramped and crowded, and with tables the wrong height for typing. Three selected airports as the worst workplace location, and another two listing call centres as the worst place they’ve worked because it was loud, had no privacy, and had very strict management and performance metrics. Two selected home as the worst workplace because of the risk for distractions via chores, and two selected coworking spaces. Interestingly, a couple of the answers described the worst environment as somehow having a bad smell, and a number of participants listed uncomfortable, borrowed spaces such as on the floor of an airport gate, the floor of a painting studio, or in the passenger seat of a car. What is also interesting is that a few described environments that were considered bad workplaces because of the types of people in the environments. One listed a shared office space as the worst workplace, but specified that it depended with whom it was shared, and two listed a coworking/office space because of the coworkers there who might engage in bullying behaviour.

To complete the trio of workplace locations, the final question asked remote workers to describe the weirdest location they’ve ever worked in. The idea here was to get a sense of the extent of the workplace, to better understand what could be considered a workplace. Once again the answers were each unique, with 8 participants listing some mode of transportation as being the strangest (city bus, airplane, car). Two selected restaurants because they felt awkward trying to work from the space, as though the were not wanted in that space and could not look around at other customers. Another notable answer was a temporary office space that was located in a deserted industrial area and described as “very cold and the whole building and site was spookily quiet in the day time”.

Thoughts about remote working

Participants were asked whether they had a coworking membership. The majority (81 percent) answered no, and 9 percent answered that they use to have one. Another 9 percent answered that they do have a coworking membership. When prompted to provide a reason for their answer, nearly a quarter (23 percent) answered that their home office was good enough, another near quarter (23 percent) answered that they did not need one, either because they did not work remotely enough to justify the expense or they just did not see the need for one. A few mentioned that a coworking membership was too expensive for the value they provide, and yet others explained that they traveled too much to be able to justify a membership in a single location. Yet the most surprising answer from this question was that nearly a third (31 percent) of participants did not know what a coworking studio was.

For those who had cancelled their membership, they did so because they did not use the service as much as they had hoped and found better value in working from home and supplementing the experience with a few outings to coffee shops or libraries. Those who have a coworking membership seem to love it and did not have anything negative to say of their experience.

WORKPLACE TOOLS

To gain an understanding of the types of products remote workers brought with them to different locations, a series of multiple selection questions were asked pertaining to technology, accessories, and miscellaneous items brought to workplaces, and software used in these locations. The results are depicted in FIGURES 34 through 37.

TECHNOLOGY BROUGHT TO REMOTE WORKPLACE

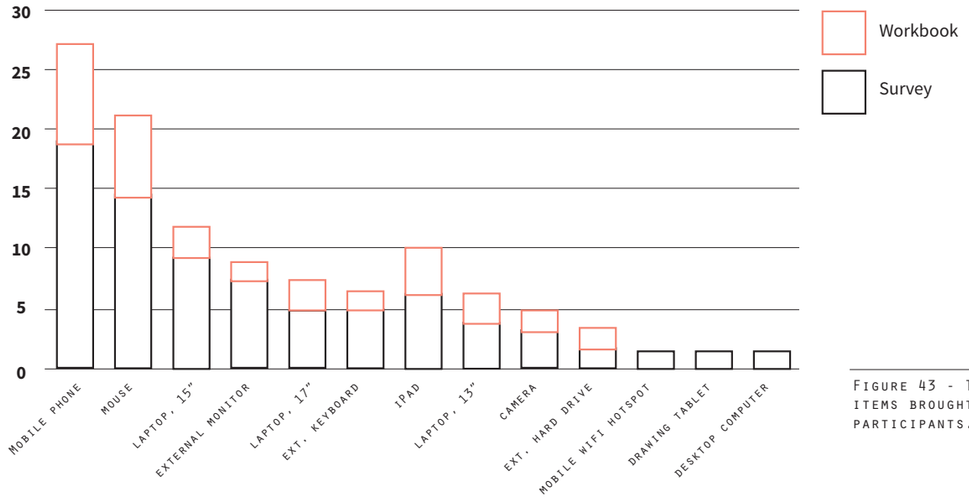


FIGURE 43 - TECHNOLOGY ITEMS BROUGHT WITH PARTICIPANTS.

ACCESSORIES BROUGHT TO REMOTE WORKPLACE

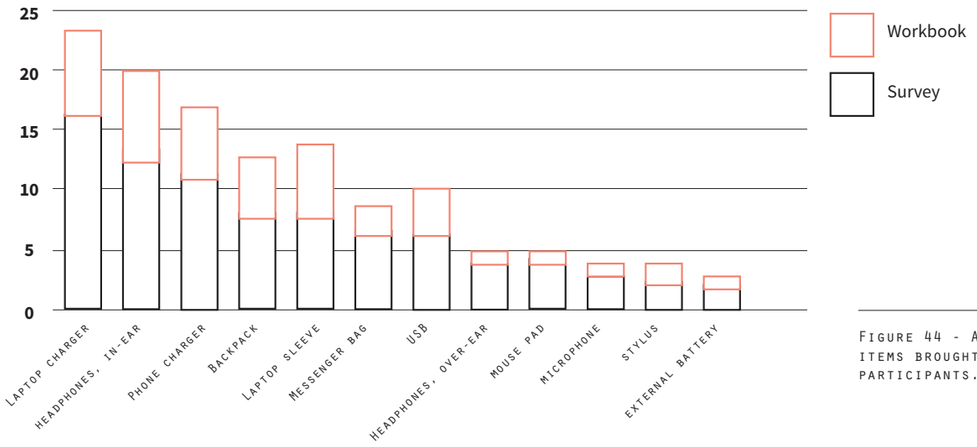


FIGURE 44 - ACCESSORY ITEMS BROUGHT WITH PARTICIPANTS.

MISCELLANEOUS ITEMS BROUGHT TO REMOTE WORKPLACE

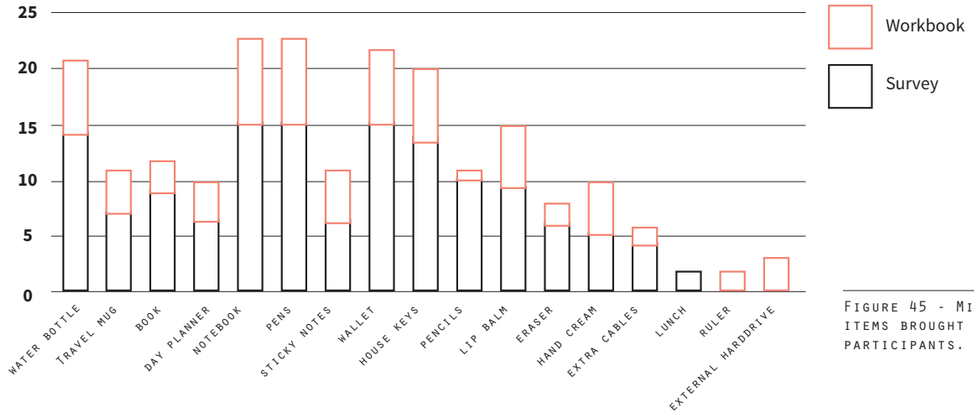


FIGURE 45 - MISCELLANEOUS ITEMS BROUGHT WITH PARTICIPANTS.

SOFTWARE USED WHILE WORKING REMOTELY

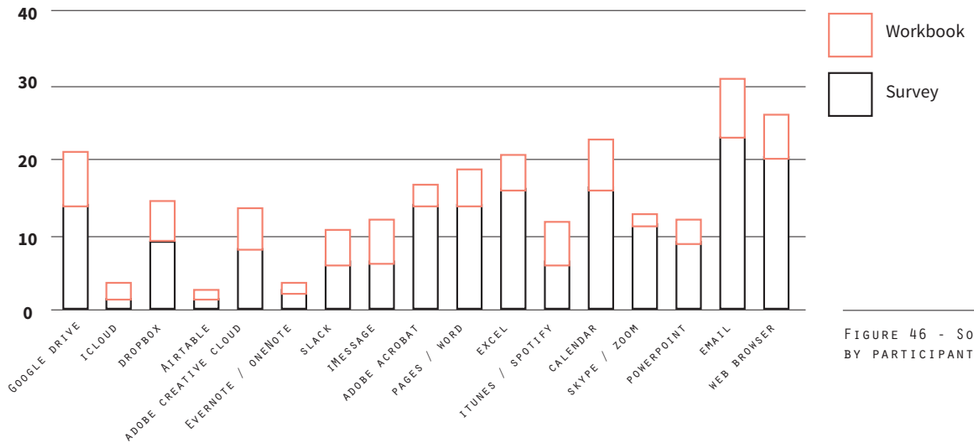


FIGURE 46 - SOFTWARE USED BY PARTICIPANTS.

XX Tips & tricks for working remotely

Participants were asked to list some of their tips and tricks they use to successfully complete remote work. This was done to gain an insight into their behaviours as a way to potentially inform future workplace services or designs. The tips and tricks have been grouped into rough themes and are displayed in TABLE 5. The variety of opinions was staggering, with some opting to list specific tools and digital applications they suggest, others referencing work habits, and others providing more general life advice. Probably the largest theme that can be pulled from the answers was that of maintaining strict schedules to help separate work and life (i.e. scheduling "me" time in your workday). Somewhat linked to the idea of schedule is that of checking email first since if can help set priorities for action.

Another loose theme is that of avoiding distractions, either by turning off notifications, letting clients know exact hours when you're available, or going somewhere where no one knows you. Working in different locations was listed as a tip although it is unclear how doing so would help one work more efficiently as a remote worker. Lastly, tips were given to facilitate the logistics of working remotely, including keeping several different chargers in different locations so as to reduce the amount of items carried and to avoid being without power.

XX Rituals

As a research I was interested in uncovering any type of ritual remote workers may perform prior to work to help get themselves in the right mind set. 44 percent answered that they did not have any rituals that they were aware of. Of the participants who were aware of their rituals, 44 percent identified the brewing of a beverage (either tea or coffee) as being key to their routine. 19 percent indicated that listening to music was key, and 13 percent indicated that getting dressed (even if working from home) was helpful for them to get ready for the workday. Other answers included treating oneself to nice stationary, and meditating or doing a workout before sitting down at the computer.

Tips & tricks for being a successful remote worker

BALANCE OF WORK AND LIFE
- Schedule yourself some "me" time in your day
- Try to keep work and personal time separate
- Try and balance the days I stay home versus the days I go to a coffee shop
- Set yourself rules for doing housework (i.e. only when on your break)

PRODUCTIVITY
- Save things to network drives or on the cloud (even if it's as simple as emailing it to myself)
- Set deadlines earlier than necessary just in case anything goes wrong
- Use Evernote to sync notes across devices
- Make an hourly calendar, cross off tasks as you complete them
- Make a schedule
- Use the Pomodoro method

FOCUS
- Set a timer for how long I need to concentrate on something for
- Be organized. Make lists of what is important that day and stick to it.
- Turn off your notifications
- Keep a schedule
- Go somewhere no one knows you to avoid getting pulled out of the zone
- Start with e-mail because it helps define tasks for the day
- If distracted or restless, switch locations (sometimes locations with no wifi helps you focus on work, provided you don't need internet access)

WORKPLACE CONSIDERATIONS
- Find a coffee shop with just the right level of white noise
- Have a TV show with a weak plot line playing as background noise / visual distraction
- Try working in different locations
- Find a space that inspires you
- Headphones, keep a tidy workplace, stay organized
- Go where it feels right that day
- Lights out

TEAM COLLABORATION
- Set clear expectations when working with others
- Do lots of skype messaging
- Develop trust with supervisor
- Communicate with clients with reports, also letting them know exactly when you're available

OTHER
- Get a second charger for your laptop: leave one at the office and the other at home to minimize deadweight and to save time plugging/unplugging/crawling under a desk. Also, one charger could stay in your bag, the other at home.
- Get dressed, even if you're staying home
- Pack light
- Keep a bag pre-packed with all your "on the road office supplies" (i.e. charger, pens, notebook)
- Go to the washroom before setting up in a public location
- Keep yourself hydrated!
- Eat prior to getting down to work

TABLE 5 - TIPS AND TRICKS FOR WORKING REMOTELY PROVIDED BY PARTICIPANTS.

FAVOURITE THING TO DO WHILE TAKING A BREAK

Both workbook and survey data compiled

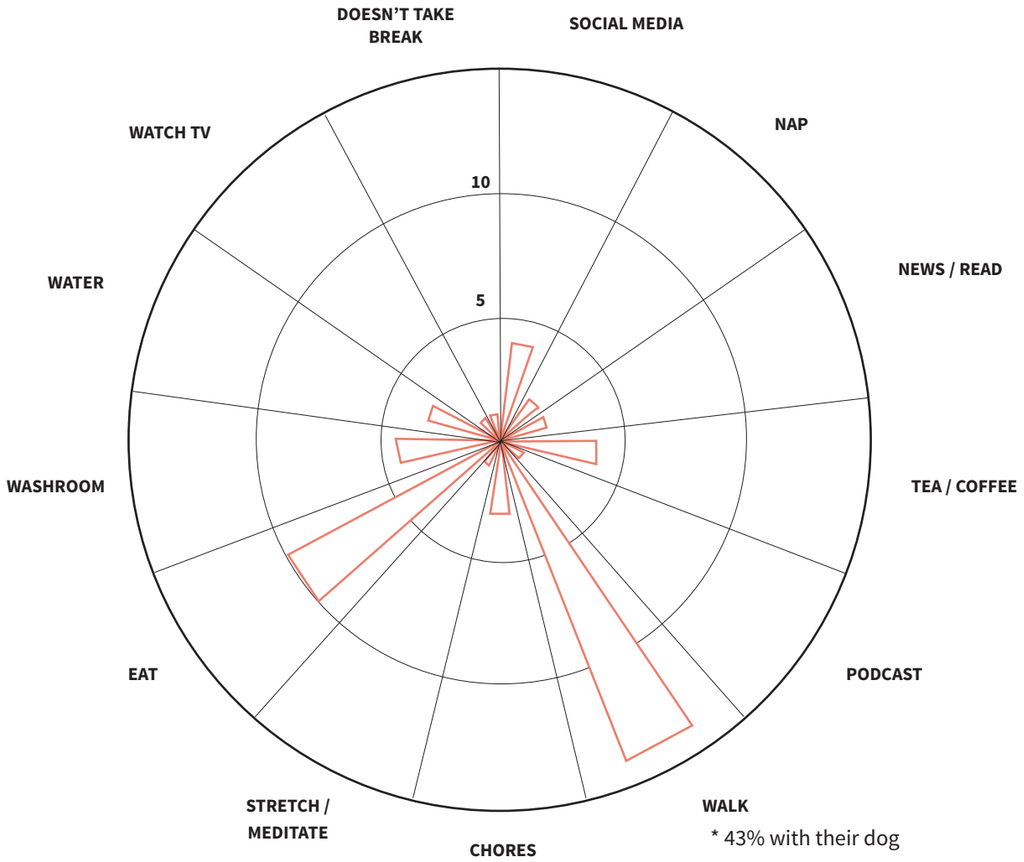
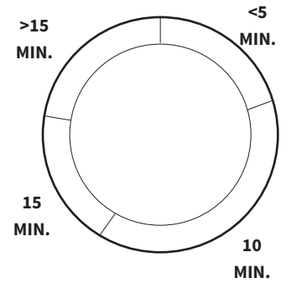


FIGURE 47 - FAVOURITE THING TO DO ON BREAK.

BREAKS

Only one participant indicated that they "never take breaks". All other participants indicated that they regularly took breaks ranging from less than five to over 15 minutes in length (FIGURE 39) shows the spread of answers). When taking breaks the two most popular activities were to eat or to take a walk, with other answers being listed in FIGURE 38.



AVERAGE LENGTH OF BRAKS

Both workbook and survey data compiled

FIGURE 48 - AVERAGE LENGTH OF BREAKS.

X Distractions

The next category of the survey and workbook dealt with sources of distraction encountered when working remotely. The workbook and the survey asked different questions to assess the sources of distraction while working remotely. The survey results revealed that the two biggest categories of distractions were related to auditory distractions such as loud or noisy ambiences and people talking (inability to avoid eavesdropping which hinders concentration), and the other category was social media. Visual distractions such as people watching was tied with phone calls as being equally distracting. Figure 40 visualizes these distractions found from the survey results. The workbook results can be found in the main body of this research project.

Other sources of distraction are more visual in nature and occur when individuals find themselves in a visually engaging environment such as a coffee shop on a busy street, where people watching takes priority. In busy environments, some workers may find themselves constantly scanning their environment to ensure the safety of their personal belongings, which also acts as a source of mental effort and distraction.

However, not all distractions are physical in nature. As we increasingly work from the virtual office, avoiding digital distractions can require just as much mental discipline as demanded by its physical counterparts. In fact, Carleton University completed research that showed that answering emails, 30% of which are non urgent, takes up to 11.7 hours a week (a third) of an employee's work hours (The Future Laboratory, 2018, p.9). Several participants mentioned emails were a source of distraction in their workday, especially if the emails were not work related ("one marketing email can send me on a spiral of distraction"). Several tools exist to help mute digital distractions, some of which are listed in APPENDIX B.

Another way remote workers can become distracted is by socializing too heavily. With social media available on our mobile devices, it is not difficult to be tempted to check-up on one of the networks. Indeed several participants indicated that compulsively checking social media was one of their difficulties in working remotely. Other participants listed focus-promoting apps as a tip to perform better work remotely. When workers are operating from a public or shared workspace, distractions by strangers are also a possibility, with one participant giving the tip to "go somewhere no one knows you."

Other than through the use of apps or physical products such as privacy screens, individuals have developed a number of behavioural strategies for dealing with distractions, whether physical or digital. For example, many workers use headphones to signal to others that they are in a type of "do not disturb" mindset, while others choose specific locations to minimize visual or auditory distractions.

SOURCES OF DISTRACTION
Survey data

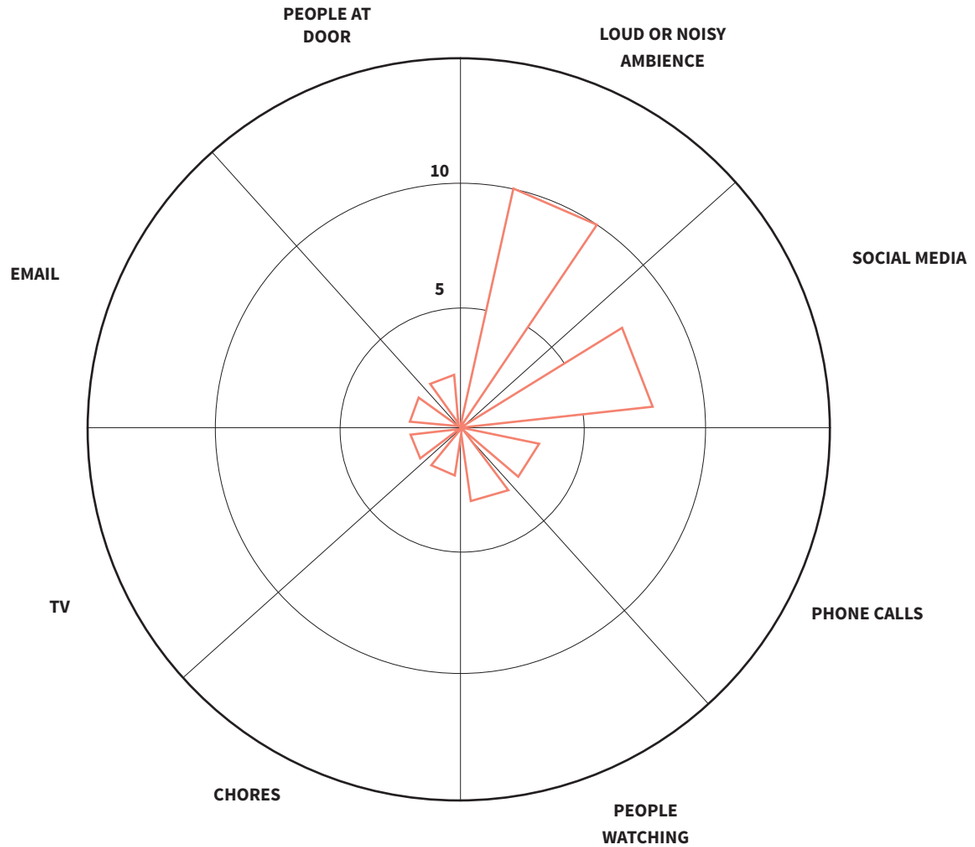


FIGURE 49 - SOURCES OF DISTRACTION.

X X Privacy and security

First, let's take a look at the problems related to data privacy. Data privacy is a big concern for those working on sensitive information (i.e. legal documents, patient documents, intellectual property documents) in non-secure environments because of the risk posed by visual spying. Named 'visual hackers,' these are individuals who may steal important information simply by looking over your shoulder. No doubt, not all 'visual hackers' are doing so with hopes of stealing information, sometimes people are simply curious to know what others are working on, nevertheless 3M has developed Privacy Filters to protect screens from sideway glances. In 2016, 3M partnered with Ponemon Institute to conduct a covert experiment with visual hackers and their findings were alarming. They found that 88 percent of their visual hacking trials were successful, meaning the hacker had obtained sensitive information (3M, 2016).

From the survey results, 61 percent of participants indicated that the privacy of their screen/work was not a concern. This lack of concern may be due to the fact that these workers do not feel as though their work is data-sensitive, or it may be because those who answered as such work from private locations such as their home. However, one workbook participant wrote that they explicitly chose corner spots in coffee shops so that others could not view their screen. Another wrote that they were not concerned for the privacy of their screen - other than perhaps feeling as though they were being shamed for procrastinating if they were to be on YouTube or Netflix instead.

The last aspect of security and privacy involves data and cyber security. The security of remote desktop applications and personal communication networks is a significant concern for organizations who rely on remote teams to complete projects. Between July and September of 2017, it is estimated that the average UK firm experienced an average of 55,314 attempts by hackers to access their data or take control of IT systems ("Cyber Criminals Increase Attacks On Remote Working technologies," 2017). Most of us do not realize how often our data is being threatened by malware, viruses, phishing schemes, and hackers. Because these threats are unseen and often go unnoticed, the sense of danger posed by cybercrime is misunderstood by the general public.

Likes and dislikes of remote working

In order to better understand the pros and cons of remote working from a remote worker's perspective, participants were asked to describe their favourite aspects of remote work and its furniture, and their least favourite aspect of remote work and its furniture.

The answers received to describe participant's favourite aspects of remote work and its furniture included the peace and quiet of not having coworkers to deal with, the lack of office politics, the flexibility and lack of fixed schedule, the ability to sleep in, the comfort of home, adjustable desks, the lack of commute, the freedom and autonomy they feel, the privacy they can maintain, the change of scenery, and feeling "hip when I do remote work like all the cool kids these days".

On the other hand, their least favourite things about remote working included the lack of a proper workspace, not having enough physical and virtual (screen) space, feeling disorganized, not being able to separate work from home, not having an ergonomic or comfortable set-up, and missing the social collaborations associated with office life. Other downsides to remote working was the lack of access to tools they might require and/or encountering technical difficulties such as losing internet connectivity or losing access to their virtual private network.

MY FAVOURITE THINGS ABOUT REMOTE WORKING:

"I can control the amount of activity around me by changing locations."

"Switching locations can help stimulate creativity"

-Workbook participants

MY LEAST FAVOURITE THINGS ABOUT REMOTE WORKING:

"Not having coworkers means my partner bears the brunt of my work stories/difficulties."

"Have to set up my workstation from scratch everyday."

"Sometimes too comfortable. If tired, easy to feel compelled to nap."

-Workbook participants

MY FAVOURITE THINGS ABOUT REMOTE WORKING:

"You have the ability to choose what furniture to use in an environment. If I feel like sitting on a couch, then I do. If I need a table, then I use that. The best environments have a range of furniture options to suit my needs. Because you're not always working in the same way or with the same tools. Sometimes you need a surface, other times you want to tuck a sketchbook in your lap and sit on something more comfortable."

-Survey participant

Workplace wishes

When asked whether they wished anything was different about their workplace products and/or furniture answers were once again pretty varied. When roughly categorized, the biggest wish for workplace furniture was better designed, more comfortable, or more flexible seating options (i.e. for a chair that allows you to sit cross-legged).

Next was the general wish for more comfortable and ergonomic furnishings. This overlaps with the demand for better seating. Afterwards there was equal interest in having more space to act as a workplace, with some wishing for more physical space, either as a separate room or as a bigger desk, and others wanting more virtual space in the sense of having more monitors.

Other comments were wishing for access to the outdoors (more light and a window), for a tidier workplace, a more modern workplace (no further clarification was included, assuming the participant meant modern in the sense of aesthetics although they may have meant a more high-tech workplace), and an adjustable workstation. Some remote workers have found that having a dedicated space in their home helps with their productivity. Furthermore, if the space has a door that can be closed while not working, it can help workers maintain a clearer work-life balance (Heuston, 2018).

The theme of food came up a few times as a wish for their workplace. Access to (healthier) food was listed as a reason people liked to work from home, with some indicated that they dislike when they do not bring themselves enough food when working from coworking studios or coffee shops. It is interesting because several start-ups are attempting to remedy the access to healthy food within shared workplaces. One such company is Bodega that looks to create an automated in-house miniature convenience store for coworkers.

X Thoughts, hopes, and fears

This closing question was provided as a chance for participants to voice their thoughts concerning the future of the workplace.

The fears were related to losing the option of working remotely or to being forced to work in non ideal locations (noisy, not ergonomic). Other fears included the fear of more isolation.

The hopes were linked to the growth in uptake of remote working practices and in the availability of remote workplaces. Other hopes were in more flexible and adaptable office spaces (not all open concept, but spaces that have options for quiet work or collaborative work), and hopes of better connectivity in remote locations. Hopes that companies would support it more, and may even offset the cost of purchasing home furnishings to support working from home.

Thoughts included that forcing employees to commute to offices and interact with one another was considered “inhumane”, that something similar to coworking spaces need to exist but for those who only require space maybe once a month, and that in the future we will probably go to offices less and less, although we will be able to maintain face-to-face interactions in other ways (through coworking spaces and virtual services).

THOUGHTS / HOPES / FEARS ABOUT THE FUTURE OF THE WORKPLACE:

“I’m interested to see what happens to the notion of a workspace if we are all recovering universal basic income in a future with A.I. and are free to pursue whatever we want. Will we all be coworking remotely? Will there be “themed” labs for like minded people and interests?”

-Survey participant

THOUGHTS / HOPES / FEARS ABOUT THE FUTURE OF THE WORKPLACE:

“I encourage more businesses to push for working remotely, so long as productivity can be tracked. Most people should try it, and see how it improves or detracts from their productivity, inspiration, comfort, and happiness.”

-Workbook participant

APPENDIX H

Design brief

A H Design brief

Employing a context-sensitive approach, design a workplace informed by natural ways of being, doing and thinking suitable for the present and future-state of remote working lifestyle.

The solution may take the form of a physical, digital, or experience based service design.

DESIGN REQUIREMENTS

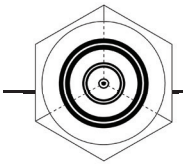
KEY FEATURES

1. Provide a link to the digital office while promoting the security of data
   a. Prevent visual hacking
   b. Prevent theft
2. Be flexible, adaptable, changeable
   a. Supports a range of alternative workplace locations (activity-based working)
   b. Suitable for micro-living

GOALS (KEY BENEFITS)

1. Support health and wellness
   a. Promote physical well-being through material choice,
   b. Promote comfort through proper ergonomic considerations
   c. Behavioural well-being by encouraging a proper work-life balance
4. Support democratic design and concepts of the ethical workplace
   a. allow for personalization and activism
5. Be a sustainable solution (be scalable for the long now)
   a. As much as possible, use environmentally friendly materials (low VOCs, renewable)
   b. Facilitate upkeep
6. Support mobile practices
   a. Be lightweight or reduce the amount of physical possessions needed to work remotely
7. Encourage productivity
   a. Encourage focus (limit distractions when desired)
8. Fit with natural ways of being and acting (humanistic and intuitive)
   a. Be convenient for the user
   b. Be user friendly

These design requirements need to be considered in parallel with mental, digital, and physical dimensions of workplaces and their fundamental human needs. Additional aspects of the design of remote workplaces include placemaking considerations, semiotic principles, and the respect for and/or design of behavioural rituals.



Thank you

rachellebugeaud.com