

Work in the 21st Century

How Do I Log on?

THE CHANGING CONTEXT OF MANAGING PEOPLE

Series Editor: Emma Parry

Work in the 21st Century

How Do I Log on?

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Abbreviations

AI	artificial intelligence
BAG	born again global (firm)
BPO	business process outsourcing
CIO	Chief Information Officer
CPU	central processing unit
DDM	data driven management
DraaS	Disaster recovery as a service
EPIC	Entrepreneurship Program for Innovation in the Caribbean
FDI	foreign direct investment
GEM	Global Entrepreneurship Monitor
GFC	global financial crisis
GVLMS	global virtual labor markets
HBB	home-based business
HIT	human intelligence task
HR	human resource
HRM	human resource management
ICT	information and communication technology
IaaS	Infrastructure as a service (IaaS)
KPO	knowledge process outsourcing
KPIs	key performance indicators
IP	internet protocol
IP rights	intellectual property rights
IR	industrial relations
LAPD	Los Angeles Police Department
LPT	Labor process theory
M&A	merger and acquisition
MNE	multinational enterprise

NEIS	New Enterprise Incentive Scheme
NGS	next generation sequencing
NSA	National Security Agency
NWW	new ways of working
OECD	Organisation for Economic Cooperation and Development
OEL	offshore employee leasing
OH&S	occupational health and safety
PaaS	Platform as a service
PAPT	Patient Admission Prediction Tool
PEO	Professional Employer Organisation
R&D	research and development
SITIA	Queensland Government Department of Science, Information Technology, Innovation and the Arts (SITIA)
SLA	service level agreement
SME	small- and medium-sized enterprise
SaaS	Software as a service (SaaS)
UBI	universal basic income
WEF	World Economic Forum
WINC	Women Innovators Network in the Caribbean
WFC	work/family conflict

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Foreword

It is with great pleasure that I introduce to you the second book in our series on *The Changing Context of Managing People*. In this text, Ross, Ressia, and Sander provide us with a fascinating analysis of how the changing context, primarily the technological context, both drives and facilitates changes in the way that we work. This notion of an interplay between technological change and the nature of work is central to the purpose of this book series – to examine the implications of the changing external context on the way that we work, and thus the implications for how we manage work and the people who undertake it.

Few would argue with the fact that technological advancements, such as those discussed in this book, have revolutionized the way that we work. As the authors of this text state “the world of work is not going to *be* disrupted, it *is* disrupted, with more disturbance to come.” Changes such as the increased capacity for the storage and production of data, and the ability to connect to others regardless of time and place has certainly had wide reaching effects on both individuals and workplaces. We see both positive effects – increased communication and collaboration, breaking down of global borders, and flexibility in relation to time and place of work – and negative effects such as an overload of information and the blurring of boundaries between work and non-work life.

This book discusses both the positive and negative implications of technological change. More importantly though perhaps, it also starts to paint the complex picture of how technological changes are intertwined with other changes in the workplace such as the increased emphasis on entrepreneurship and changes to workplace structures. As such, it makes an interesting contribution to both this series and to the conversation about the future of work more broadly, and helps us to forward the mission of this series to help those of us who undertake research,

teach, or work in human resource management keep up with the changing world of work and its impact on people management. I am therefore delighted to have been able to include it and to introduce it to you here.

Emma Parry
Series Editor

Introduction: Work in the 21st Century: How do I Log on?

How do we log on to work in the 21st century? This question underpins the dilemma faced by governments, organisations, and individuals as they struggle to adapt to the profound changes occurring to workplaces in an era of technologically advanced globally competitive labor markets. This includes shifts towards intermittent precarious type work and self-employment (Standing, 2011), rapid increases in the scope and breadth of information and communication technology (ICT)-supported work activities, the rise of the “gig” economy and the emergence of disruptive technologies that are redefining the relationship between workers and machines. Skilled migration programs add a further dimension to the global labor market mix.

Given that work is a ubiquitous part of human life, with most of us spending a considerable part of our life either at work and/or engaged in work-related activities (Svendsen, 2016), better understanding these emerging labor market changes and work practices could be considered an almost universal need. The blurring of work and private life, brought about in part by the rapid adoption of smart phones and tablets, also means that work-related activities are increasingly occurring outside of traditional workplaces and/or office hours.

Further, while the nature of work has always been subject to change, the concomitant impacts of globalization, financial, and labor market deregulation and rapid technological advances have rapidly accelerated the pace of such change (Duncan et al., 2016; WEF, 2016). Organizations typically use such advances to reduce labor costs and improve process efficiencies. These strategies may then significantly impact on labor markets and, perhaps more importantly, upon the employees who may become the casualties of workplace changes. Workers then need to consider strategies that will better support their employability and incomes within

changing labor market contexts. This may require a greater emphasis on self-employment and entrepreneurial opportunities, as alternatives to traditional employer/employee relationships.

The need for increased public discussion on these issues was reinforced by the findings of a World Economic Forum survey of Chief Human Resource Officers (CHROs) across almost 400 multinational enterprises (MNEs), which found the main perceived economic and technical drivers of workplace and labor market transformations to be changing work environments, flexible working arrangements, telework, Cloud technologies, advances in computing power and big data (WEF, 2016, pp. 6–7); all topics examined by this book (see also Ross & Blumenstein, 2013, 2015; Ross & Ressia, 2015; Sander et al., 2014).

Changing workplace layouts, telework practices, and the rise of coworking centers, for example, reflect changes that are occurring to the physical work environment and its location. The adage, “work is a thing you do, not a place you go” is further evidenced by the emergence of the “the human Cloud,” which links firms to workers across the globe, allowing even relatively small firms to engage in offshored outsourcing strategies. Relatively cheap access to Cloud-based scalable services are concurrently fostering nimble entrepreneurship and global start-up cultures, while data analytics, artificial intelligence (AI), and automation question the very nature of work itself.

Governments, practitioners, workers, and academics then need to better understand how to harness the benefits and meet the challenges of these changing workplace contexts, as the world enters what has been termed the “fourth industrial revolution” (WEF, 2016). Governments, in this regard, must design effective policies and legislative frameworks to deal with rapid technological change and associated organizational strategies and work practices. They further need to consider the impacts of these changes across the wider population. Different worker cohorts, for example, may be positively or negatively affected by these changes depending on education and skills levels, socio-economic backgrounds, regional or country location, and gender.

Governments then need to develop policies that better support worker cohorts that are likely to be negatively affected by impending changes to labor markets and working conditions. Traditional legal distinctions between employed and self-employed workers, for example, may no longer provide sufficient protections for people working in the emerging “gig economy,”

with questions being raised about the longer-term impacts of algorithmic management systems, such as the Uber ride sharing App, on employment conditions for so-called “self-employed” workers (Duncan et al., 2016, p. 1; Davidov, in press). Predictions of large-scale technological unemployment resulting from the rise of AI and automation raise further questions about the ability of governments to meet these forecast challenges.

Firms similarly need to ensure that their strategies align with changing work practices and frameworks. Failure to do so potentially puts them at a disadvantage vis-a-vis their competitors (or in the case of governments, with competitor nations), including their ability to attract and retain talent. In contrast, a greater understanding of these issues allows organizations to better grasp the opportunities and overcome the challenges that these changes present.

Further, while technical efficiency remains important, new technologies merely provide the underlying infrastructure that may *facilitate* new strategies and practices (Ross, 2015). Simply going out and buying the latest overhyped technology may therefore do little for an organization (or may in fact have negative consequences). Rather, managers need to understand both the potential benefits and limitations of new technologies and how they may better support overall organizational objectives (Kodama, 2012; Ross & Blumenstein, 2013).

Academics also need to keep their research relevant if they are to continue to provide valued input into government and industry policy making processes, as the traditional industrial relations (IR) rhetoric that continues to haunt much of the employment relations literature becomes increasingly less applicable to larger sections of the workforce. The authors acknowledge that some IR researchers may be disappointed that the book does not contain a chapter on the role of trade unions in the changing world of work. This is not to undervalue the role of unions. Far from it, the authors fully understand and respect their role in labor markets. Rather, the book purposely set out to examine these issues outside of traditional management/union IR contexts, which are often steeped in 20th century frameworks that may not be well-suited to examining these emerging issues. Paradoxically, we are entering an era where research into employment relations and the changing world of work is more important than it has ever been. This book therefore seeks to broaden academic debate and further consider how existing tools and knowledge can be further developed to better analyze the

underlying institutions and frameworks that are facilitating profound changes in the way in which people and organizations work.

What then do 21st century workplaces look like and what factors support these workplace changes? In examining these issues this book does not aim to be simply another speculative “future of work” book per se. Rather, it seeks to identify and examine *institutions*, *frameworks*, and *technologies* that are emerging to support new work practices, an area that has been underexamined to date (Ross & Blumenstein, 2013). Much of the book therefore examines workplace and labor market changes that have already begun. Throughout the text, the authors analyze issues and develop frameworks that are underpinned by empirical evidence. This then provides a basis upon which to consider the future potential implications of these changes.

This approach aims to provide practical information and knowledge for policy makers, managers, and workers trying to better understand the processes underpinning changing work environments, while further developing academic perspectives and theoretical debate on the institutions and technologies supporting the changing nature of work and workplaces in the 21st century. The book further aims to provide a reference for students and the broader public who are looking to better understand the changing nature of the world of work.

Coverage and Structure of the Book

The book is divided into the following three sections that aim to identify, examine, and better coordinate emerging workplace and labor market issues into a cohesive interlinked text.

SECTION 1: THE CHANGING WORK ENVIRONMENT

Section 1 examines the impact of changing physical work environments on work practices. Chapter 1 begins the section by examining how the spacial design of physical workplaces may impact on worker productivity and well-being. It further shows that despite increasing shifts towards telework and mobile workforces (as outlined in Chapters 2 and 3), organizations are still investing significant amounts of time and capital into developing centralized workplaces. Two factors help to explain this changed

outlook. First, the physical work environment is now linked to organizational performance and innovation (Davis, Leach, & Clegg, 2011). Second, the tangible workspace remains the second largest organizational overhead after payroll (McCoy, 2005), which has led to workplace strategies that aim to reduce these costs. These key factors have underpinned the significant changes that have occurred to physical work environments over the past 10 years (Davis et al., 2011; Elsbach & Pratt, 2007). They have further led to a plethora of consultants now operating in this space (no pun intended!). The chapter draws together emerging theories in these areas and analyzes how different workplace layouts and designs may influence employee productivity, job satisfaction, and well-being.

Chapter 2 further discusses changes to the work environment through an examination of potential benefits, opportunities, and challenges related to the adoption and greater use of ICT-supported workplace collaborative technologies across organizations and associated shifts towards mobile and teleworking practices. The chapter outlines how these changes require managers and workers to develop the skills and mind-set required to effectively operate in virtual environments, as technological proximity increasingly supersedes geographical proximity across organisations and workplaces (Melissaratos & Slabbert, 2010, pp. 204–217; West, 2016; Wrike, 2012). Work then increasingly becomes “a thing you do, rather than a specific location that you go to” (Melissaratos & Slabbert, 2010, pp. 204–217; West, 2016; Wrike, 2012).

The chapter outlines how trust may be a major barrier to the effective implementation of mobile and teleworking arrangements. The technologies being introduced also tend to heighten managements’ ability to track and monitor their employees’ activities, which in turn raises ethical and legal issues in relation to their introduction and use. The potential benefits of telework in terms of improved work/life balance and flexible work practices also need to be balanced against possible work intensification and employee burnout brought about by employees potentially being online 24/7.

Chapter 3 then discusses changes to the work environment in relation to a range of new and related work practices that have been dubbed “coworking.” Characterized by open-space work environments, coworking centers lie between working from home and working in traditional office environments. They provide excellent examples of how new workplace spatial designs

allied to ICT-supported workplace collaborative technologies (as outlined and discussed in Chapters 1 and 2), are supporting new work practices (Andrade, Ares, Suarez, & Giret, 2013; Ross & Blumenstein, 2013, 2015).

The chapter considers the drivers behind the rapid increase in the use of coworking spaces and attempts to better categorize the eclectic organizations that presently operate under this moniker, ranging from coffee shops and community spaces to professionally run coworking spaces and start-up incubators (the latter are linked to entrepreneurial behavior as discussed in Section 2). The chapter further contrasts and compares collaborative “coworking communities” with more individually oriented noncollaborative alternative office spaces.

SECTION 2: ENTREPRENEURSHIP: SELF-EMPLOYMENT IN GLOBALLY COMPETITIVE PRODUCT AND LABOR MARKETS

Section 2 of the book focuses on entrepreneurship and self-employment. As outlined in further detail in Section 3 below, researchers suggest that workers may be increasingly required to create their own businesses to counter the potential loss of traditional paid jobs due to increasingly competitive global labor markets and the rapid development and deployment of AI and automation (Hamilton, 2016, pp. 95–96; Koebler, 2014). Entrepreneurship has therefore been promoted as a vehicle to support continued economic development, rising living standards, and job creation in an era of increasingly competitive global product and labor markets (Audretsch, Keilbach, & Lehmann, 2006; Hussain, Sultan, & Ilyas, 2011; Parker, 2009; van Praag & Versloot, 2008).

Chapter 4 begins the section by examining how Cloud technologies facilitate the development of internationally orientated (born global) small- and medium-sized enterprise (SME) entrepreneurship. Three broad questions guide this discussion. First, how do Cloud technologies support and bolster entrepreneurship and innovation? Second, to what extent do Cloud technologies foster an international entrepreneurial orientation? Third, what is the capacity of Cloud technologies to “level the playing field” between SMEs and larger firms, including multinational enterprises (MNEs)?

In this regard, the rapid adoption of Cloud-based ICT services reflects a Schumpeterian creative destruction scenario that provide SMEs and start-up firms with greater access to global

markets and lowered opportunity costs. They further support collaboration and innovation in an increasingly interconnected world.

Chapter 5 then examines whether self-employment and entrepreneurial activities may be a vehicle to address labor market discrimination challenges that are often faced by women and migrant workers, which makes it more difficult for these groups to access employment opportunities in traditional labor markets. From a gendered perspective, female migrant workers may experience the double burden of being both migrant and female in the labor market, which has been described as the “double disadvantage” (Alcorso & Ho, 2006; Azmat, 2014; Boucher, 2006; Collins & Low, 2010; Kofman & Raghuram, 2006a; Meares, 2010; Pereira, 2012; Ressia, 2010). The chapter therefore examines the developing literature around the entrepreneurship of women and migrant groups, and how new technologies and government policy may support such activities (Collins & Low, 2010; de Vries, 2014), which in turn may benefit the wider community.

SECTION 3: GLOBAL VIRTUAL LABOR MARKETS AND THE RISE OF THE MACHINES

Section 3 examines the impact of emerging “disruptive” technologies on organizational strategies, work practices, and labor markets. These technologies include Cloud-based platforms, Big Data Analytics, AI, and Automation.

Chapter 6 builds on the Cloud computing concepts examined in Chapter 4, by examining how the *human Cloud* and *offshore employee leasing* (OEL) labor market models are changing the way that firms engage and manage workers, as firms increasingly leverage the skills on offer in global virtual labor markets (GVLMs). Human Cloud and OEL approaches further add an international dimension to the virtual teleworker models outlined in Chapter 2.

The chapter examines differing human-Cloud platform governance structures and employment relationships, along with the eclectic range of virtual labor market skills on offer. The chapter further examines the concurrent growth of Cloud-supported OEL models, such as “staff leasing” arrangements that allow firms to “co-manage” overseas-based workers in partnership with BPO firms (Ross, 2016). It also considers the social impacts of these changes, including shifts towards more precarious

employment and competition between workers in industrialized and developing countries.

Chapter 7 then examines the potentially far reaching impacts of data driven management (DDM), AI, and automation on organizational and workplace practices. These emerging disruptive technologies herald profound changes in how organizations organize, manage, and perform work, as they seek to reduce costs, improve their competitiveness, and develop new markets (OECD, 2015, p. 17). This includes the fusing of human and machine roles as the era of widespread and pervasive AI-supported automation begins.

The chapter examines how these technologies are being used to support new and changing work practices. This includes an examination of the role of data analytics in organizational decision making, including issues related to machine driven data management bureaucracy and control (Pedersen & Aagaard, 2015). The chapter further considers how machines and automation are impacting on workplaces and labor markets, as the boost in industrial productivity and output that is feeding the “rise of the machines” reduces the number of people needed to produce that output (Gillies 2015, p. 117). The nature of these rapidly changing technologies requires this chapter to postulate on future potential workplace and labor market changes to a greater extent than other chapters of the book.

CONCLUSIONS: EMERGING CHANGES AND FUTURE DIRECTIONS?

The conclusion contrasts, compares, and elicits common themes amongst the above chapters in relation to emerging institutions and frameworks. It considers the implications of this research and provides discussion in relation to the opposing questions, “What can technology do *for* you?,” versus “What can technology do *to* you?” (Gutek, 1983, in Korac-Kakabadse et al., 2001, p. 90). These questions in turn support interesting grounds for conjecture in relation to current and likely future work practices. The conclusion further provides recommendations for policy makers, practitioners, and workers in relation to better addressing the challenges of the 21st century workplace.

The authors therefore hope that you enjoy our journey into the changing world of work, which begins with an examination of the changing work environment in Section 1.

SECTION 1
The Changing Work Environment

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1

Spatial Design, Worker Productivity, and Well-Being

In a letter to Felice Bauer in 1912, philosopher Franz Kafka lamented, “time is short, my strength is limited, the office is a horror, the apartment is noisy, and if a pleasant, straightforward life is not possible then one must try to wriggle through by subtle manoeuvres.” Much attention has been focused recently on the current state of office design. Research by Kim and de Dear (2013) on the negative effects of open-plan offices, for example, suggests increasing numbers of modern workers may well empathize with Kafka’s sentiments. It seems that many modern workplaces may not be delivering claimed worker productivity and well-being benefits.

The ways in which we work are changing (Tannenbaum, Mathieu, Salas, & Cohen, 2012), with ubiquitous technology, changing demographics, the rise of the contingent workforce, and the distribution of work across an ever increasing range of environments. Some have proposed that the office will die out altogether, going so far as to suggest leisure is over as the office follows its employees everywhere thanks to the Cloud (Saval, 2014). Work is now often cited as being boundary-less, a result of technology that has enabled work to take place almost anywhere (Ituma & Simpson, 2010; Saval, 2014; Tremblay, 2003). The realm of the workplace now extends far beyond the traditional office, to the home, coworking spaces, incubators, meet-up groups, and all manner of versions of Oldenburg’s (1989) the

“third place” such as coffee shops, and other spaces in the public realm (see Chapters 2 and 3).

Despite these predictions, the popularity of the office, that is, the physical environment where work is conducted, remains extremely relevant, with interest in this phenomenon evident across both industry and academia. Scholars have noted that face-to-face contact remains central to the coordination of the economy, despite the increase in technology (Waber, Magnolfi, & Lindsay, 2014). Billions of dollars are also spent annually on office design and implementation (Bland, 2015). Apple, for example, built a 60-hectare campus that holds 12,000 people, based on Steve Job’s experiences of the success of the workplace at Pixar in driving collaboration and innovation. Alphabet Inc. (formerly Google) has similarly built a US\$1-billion headquarter in the United Kingdom (Goldhill, 2013). These investments in centralized physical infrastructure are operating in parallel with the much documented collapse in the boundaries of work (Ituma & Simpson, 2010; Saval, 2014; Tremblay, 2003).

Despite the increased focus on the physical work environment, estimates from the American Institute of Stress and the European Agency for Safety and Health at Work indicate that stress results in the absence of 1 million workers every day in the United States, while employee productivity continues to decline (Bureau of Labor Statistics, 2016). It is clear that organizational scholars and practitioners need to better understand how the physical work environment affects employee productivity and well-being if they are to achieve their aims of building positive work environments.

It is not merely organizations that are interested in creating environments that support productivity and well-being (Brand, 2008; De Croon, Sluiter, Kuijer, & Frings-Dresen, 2005), with cities and governments now undertaking initiatives to create physical environments that support not only productivity, but help brand the city, drive innovation, and increase the livability of a city or region (Florida, 2008) (see also the discussion in Chapter 3). The entire city is therefore viewed as a potential platform for work. The pressure on the physical environment where work occurs to support and deliver positive outcomes is greater than ever.

In this chapter, we review existing findings on the influence of different types of workplace spatial design on employee productivity and well-being. We begin by examining the current context of spatial design within the physical work environment,

with a particular focus on changes within the past decade. Next we summarize research on the effects of workplace spatial design on employee productivity and well-being. Finally, we outline the ways in which changes to the design of the physical work environment can best be harnessed to support employee productivity and well-being.

1.1. The Physical Work Environment and Spatial Design

The physical work environment in organizations includes the nature and arrangement of all the material objects and stimuli that people encounter in their organizational life (Davis, 1984; Davis, Leach, & Clegg, 2011; Elsbach & Pratt, 2007; Hedge, 1982; Sundstrom, Bell, Busby, & Asmus, 1996). As the physical work environment includes buildings, furnishings, equipment, and ambient conditions, such as lighting and air quality, it is thus distinct from other environments, such as the social environment (i.e., human social structures and norms), urban environments, community environments, and the purely natural environment (Elsbach & Pratt, 2007).

The physical work environment is a vitally important part of organizational life, one that conveys meaning through cues that influence beliefs about oneself, coworkers, and the organization (Bitner, 1992). These environmental influences are important, as we know that even subtle environmental cues can influence our self-concept and our behavior (Alter, 2013; Güsewell & Ruch, 2012). Scholars have repeatedly demonstrated that the physical work environment can evoke significant cognitive, affective, and relational responses among employees (Aries, Veitch, & Newsham, 2010; Dul & Ceylan, 2011; Knight & Baer, 2014; Zhong & House, 2012).

Many organizations are therefore experimenting with workplace design, as they explore ways of using the physical environment to support performance and innovation. (Morrow, McElroy, & Scheibe, 2012; Spinuzzi, 2012). As discussed in further detail below, this includes some organizations designing workplaces to resemble the layout of cities, with major avenues, a town square, and a variety of zones to motivate employees to move around the office and share information (Zax, 2013). Further, organizations are beginning to realize the need to balance

collaborative public spaces with more private areas that provide employees with a place to focus and concentrate (Ferro, 2015). Other organizations have also focused on making work a fun place, with the inclusion of gaming spaces and relaxation areas (Turner & Myerson, 1998).

Academic attention has mirrored this practical interest, with research examining many aspects of the physical work environment, including the effects of spatial layout (Backhouse & Drew, 1992; Brennan, Chugh, & Kline, 2002), building materials (McCoy & Evans, 2002), decorations (Bringslimark, Hartig, & Patil, 2009), windows (Aries et al., 2010), privacy (Sundstrom, Burt, & Kamp, 1980), noise (Sundstrom, Town, Rice, Osborn, & Brill, 1994), lighting (Zhong & House, 2012), and opportunities for personalization (Elsbach, 2004).

Unfortunately, despite this significant investment of money and time, some researchers argue that we currently know little more about how the physical work environment influences performance than nineteenth-century physicians knew about disease transference prior to epidemiology (Becker, 2014; Duffy, 2007). The mixed practical results, and the diversity of research studies reflect the fact that there is currently no common theoretical framework or measure for assessing reactions to the physical work environment. There is a clear need therefore to develop a cohesive way to better understand the ways in which employees react to the physical environment at work. By understanding how employees react to the physical work environment, managers and organizations will be better able to address the cognitive, affective, and relational needs of their employees. They will also be able to better understand how those reactions influence collaboration and employee engagement.

Research suggests that despite increasing numbers of large organizations posting images of attractive and happy workplaces, many of today's workplaces are not well-designed (Kim & de Dear, 2013). Poor workplace design leads to increased conflict and stress, which reduces performance and leads to employees resigning. The physical work environment is also impacted by financial constraints, including the need to cut costs. The workspace is the second largest overhead for most organizations and can influence productivity by up to 20%. Critical drivers behind changing workplace spatial designs therefore include pressures to reduce real estate costs and efforts to increase employee collaboration and engagement.

1.1.1. THE OPEN-PLAN WORKPLACE

Looking back at changes in office design over the past 30 years, it is easy to see why some employees feel as if they have been subjects in a giant ongoing experiment. For decades this has included shifts from private offices to open-plan workplaces (Davis et al., 2011). As outlined below, more recently this has included shifts towards no permanent desks for employees at all (Davis et al., 2011). While these workplace designs may have reduced real estate costs, the potential negative impacts of these changes, such as the introduction of open-plan offices, on employees have now been well-documented (Davis et al., 2011; Kim & de Dear, 2013).

Research, for example, suggests that employees are far less productive in open-plan office designs due to noise and increased worker distractions, which makes it more difficult for employees to concentrate (Kim & de Dear, 2013). The reduction in privacy also prevents workers from holding private conversations. When people cannot focus, they are less effective at learning, building relationships, and at collaborating. Being able to concentrate is also a vital precursor to cognition in the workplace. A global study of 5,500 office workers by the commercial real estate company CBRE (2014) showed that the ability to think and concentrate was important across all generational worker cohorts, including millennials, gen X, and baby boomers.

A report by Gensler (2013) on US knowledge workers also found that attempting to combine collaborative workplace strategies with organizational cost cutting, including the introduction of open space offices, often did not work well. Workers reported that getting work done was difficult, with over half of the surveyed employees stating that they found it hard to concentrate in open-plan offices. While the Gensler report did not dismiss open-plan workplaces out of hand, it did recommend a “balanced” workplace environment that allowed for both individual- and collaborative-focused work (Gensler, 2013, p. 11).

Given this evidence, it is perhaps unsurprising that a recent study by Oxford Economics found that the potential negative impacts of open-plan office designs were far greater than most executives realized. The negative impacts outlined in the report included decreases in employee productivity and peace of mind, similar to the issues outlined above. Although there appeared to be a growing realization of these negative effects, the results

showed that few companies had effective strategies in place to resolve these problems.

1.1.2. ACTIVITY-BASED WORKING: FREE ADDRESSING/HOT DESKING

Open-plan offices are also linked to large-scale shifts towards activity-based working, where employees do not have a permanent desk. This strategy often goes under the terms “free addressing” or “hot desking.” The concept arose in part as a response to the increasingly mobile and virtual nature of work (see also the discussions in Chapters 2 and 3). Designing workplaces where employees have no fixed desks also lets firms fit up to 20% more people into a building, which allows organizations to save on accommodation costs (Appel-Meulenbroek, Groenen, & Janssen, 2011), a primary driver of workplace design change as discussed above.

Not surprisingly, research on free addressing has identified issues and limitations similar to those found in open offices, including growing concerns in relation to staff well-being and productivity. This includes employees complaining about interruptions, noise distractions, and not having enough space in which to work (Kim, Candido, Thomas, & de Dear, 2016). The clean desk policy required by free addressing/hot desking also means that workers need to remove all of their work and belongings at the end of each day. Aside from the added burden of this chore, studies have shown that messy desks can increase creative thinking and lead to serendipitous discoveries (Vohs, Redden, & Rahinel, 2013)!

1.1.3. THE SEGMENTED OFFICE?

In response to these issues, organizations have been experimenting with ways to better design and segment workplaces to overcome these problems. Articles on new office design are peppered with concepts such as *caves*, *campfires*, *town squares*, and *city zones* (Zax, 2013). The segmented office is based on the idea that different spaces are needed to support different tasks and different personalities. Sleep pods, library spaces, mobile-free zones, and cafes are becoming standard features of new office designs (Sander, forthcoming).

Employees are encouraged to move between the different areas based on what they are doing at that time. Tasks such as

taking a phone call, holding a meeting, doing work that requires individual focus and quiet, or work that needs collaboration with others, are all allocated separate areas. While some employees see this as a positive move (Sander, forthcoming), the changes often do not go far enough to allow concentrated, productive work. Many employees report that having to find a space to work each morning is tiring, while others resent having to move around to do different tasks (Sander, forthcoming). The practicality of moving to different spaces while carrying laptops, power cords, and other documents and materials needed to complete work can be tiresome at best and impractical at worst. Employees report the inability to find coworkers when needed in free addressing environments due to the lack of a permanent location. In addition, some employees opt out of IT-based location identification systems in order not to be interrupted (Sander, forthcoming).

Sander (forthcoming) found that the number of phone booths and meeting rooms in these workplace designs was also often limited. Employees reported that finding private places to converse in such situations was challenging and it was common to be told to “book a room” or “go to a coffee shop.” This resulted in wasted time and frustration trying to find somewhere to meet and/or take a call. Furthermore, the need to conduct confidential conversations, such as an urgent family phone call, often has to be dealt with immediately.

Because workplace designs are often the result of a trade off with costs, Sander found that the overall office size in Australia was often relatively small, reflecting relatively high real estate cost considerations. As a result, offices being designed to embrace the segmented idea sometimes ended up with having gyms, rowing machines, and cafe space within meters of the open-plan desk area. This of course then created extra noise and staff distractions.

1.1.4. THIRD PLACES/PUBLIC REALM

Since Ray Oldenburg officially coined the term “third place” in 1989, our drive to find accessible, social, technologically enabled, and welcoming places to work within the urban environment continues unabated. A ground-breaking project in New York City in 2009 was one of the first to formally experiment with ways to activate multiple urban public spaces as worksites (Forlano, 2009). The project called Breakout! aimed to draw on the platforms of mobile technology and location-aware social

networks to support cross-organizational and interdisciplinary collaborations. Despite the technology underpinning the project, its key aim was to increase serendipitous face-to-face connection. The experiment further highlighted the challenges of working outdoors, with issues such as access to power in public spaces and unsuitable furniture limiting outcomes.

Fast forward to 2015, and an increasing number of urban planners and furniture designers are making the outdoor workspace a design priority. The time when we will be able to work effectively in the actual outdoors may not be too far off. Designers such as Jonathan Olivares and Buzzispace, for example, have created prototype outdoor working solutions that include a range of ergonomic, sheltered, powered, and customizable furniture arrangements.

A pop-up tree office in London is the latest expression of a growing movement to take work out of the office into the landscape of the city. Designed as an installation for a London Festival of Architecture, the tree-house coworking space was equipped with power and Wi-Fi and was available to hire for several months. The project was part of the Park Hack project led by Hackney Council. Profits from the space will be reinvested into parks and green spaces in the area (Metcalf, 2015). The tree office workspace continues the appetite for the pop-up urbanism movement. The pop-ups are temporary installations and cover a broad spectrum including art, retail, food, and craft. They are intended to highlight alternative perspectives, gather feedback in real time, and test potential urban design improvements. The trend to get out of the office is not new, however, projects such as the tree-house workspace highlight a renewed focus on making working outdoors practical.

The benefits of working in natural environments are supported by evidence of the benefits of nature on our thinking and well-being. A recent study on the use of plants in offices found a 15% increase in productivity when plants were added to lean office spaces (Nieuwenhuis, Knight, Postmes, & Haslam, 2014). Employees also reported improvements in air quality, satisfaction, and concentration. Far removed from the days of the half-dead dusty fern adorning a forgotten corner of the office, organizations are embracing the trend toward increased use of and connection with nature-like environments. The Selgas-Cano office in Madrid, for example, is built nestled into the ground. Google's proposed new biodome in Mountain View and the

Ecole Polytechnique at the Paris-Saclay University are also designed to embed the office space with nature.

1.2. Collaboration

Collaboration has been identified as a vital precursor to the production of creative ideas, problem solving, and improved social capital. The desire to facilitate increased worker collaboration has therefore been a key driver of workplace change. At Apple's new campus in California, the design is intended to get employees to collaborate in key interaction areas, such as the restaurant. If an employee's desk is at the wrong end of the building, however, walking to the restaurant will mean undertaking an 800-meter trip!

Proponents of open-plan workplaces, suggest that they lead to increased interaction which in turn creates increased collaboration. A study of 42,000 employees, however, showed there was little solid evidence that open-plan layouts improved interaction (Kim & de Dear, 2013). Increased awareness through being able to see others therefore does not necessarily translate clearly to collaboration. Research outlined in Chapter 3 suggests that the open-plan workplaces often found in coworking centers do not in themselves always create collaborative activities. Rather the centers often require an office "champion" or manager to proactively foster and promote collaborative activity amongst the coworkers (Ross & Ressia, 2015).

The perception that collaboration adds value and improves team productivity may be overstated. Research has shown that 20–35% of value-added collaborations across firms often only come from 3 to 5% of an organizations employees (Cross, Rebele, & Grant, 2016). A longitudinal survey of US knowledge workers, conducted between 2008 and 2013, also showed that the time that they spent on collaborative activities with other workers had decreased by 20%, while time that they spent on individually focused work requiring deep thought had increased by 13% (Gensler, 2013). Despite these problems, as outlined above, both the processes and places where work is occurring are allowing increasingly less room for employees to undertake individually focused work and reflection.

Collaborative pressures may also place increasing pressure on employees to assist others and go beyond their normal scope of duties due to the phenomenon of *escalating citizenship* (Cross et al., 2016). Putting up your hand to take on more and more is

also seen as an essential prerequisite for career advancement. Alarmingly though, given the nature of collaborative support, this extra work can often go unnoticed (and/or only benefit someone else), leaving employees feeling burnt out and disillusioned. Escalating citizenship can therefore cause increased employee fatigue and reduced job satisfaction.

The push for collaboration may therefore end up being too much of a good thing, as staff increasingly demand quiet spaces to work where they can focus and concentrate. To address this situation, organizations need to reconsider how to balance focused and collaborative work both from a process and space design perspective. Knowing which employees are bearing the brunt of the collaborative burden is essential. Furthermore, the best solution to a problem may not always involve having a meeting, forming a committee, or putting a new project team together. A reappraisal of the role and benefits of collaborative work activities and the need for employees to also be able to better focus on individual work activities therefore impacts on how workplaces should be designed.

1.3. Enhancing Employee Well-Being and Productivity

Workplaces that are born out of design briefs full of corporate jargon, such as space optimization, utilization efficiency, or brand alignment tend to, unsurprisingly, leave us cold. To work effectively, employees need to be both physically and psychologically comfortable (Vischer, 1989). Usually, physical comfort is a central part of the design of workplaces, however, psychological comfort is often not. If people are not both psychologically and physically comfortable at work, they have less cognitive resources available to them, and are less productive, less creative, and more stressed.

The cost and time involved to make large-scale change to offices can seem overwhelming. Two areas showing promising results are the provision of stand-up desks and retreat spaces within the workplace. The idea of retreating to spaces that restore us is not new. The 16th-century philosopher Montaigne famously worked in a tower replete with vaulted ceilings, a library, and even a bedroom. Seinfeld's George Costanza stored a blanket, pillow, and alarm clock under his desk so that he could

take naps. Indeed, research shows that our need for prospect (or a view) and refuge remains biologically hardwired, and helps employees to restore attention and feel psychologically safe (Augustin, 2009).

Cain (2013) suggests that solitude is an essential ingredient in innovation. Cain has recently been involved in a project to create retreat spaces for introverts within the workplace. Refuge spaces allow employees to access a place where they can retreat from distraction to restore their mental and physical state. These types of spaces, as well as different furniture configurations, are becoming increasingly important for employees to undertake focused work.

Stand-up desks are now a more prevalent feature in offices following studies finding that workers spend up to 80,000 hours seated during their working life, leading to numerous health issues including diabetes, cardiovascular disease, and obesity (MacEwen, MacDonald, & Burr, 2015). New research by Knight and Baer (2014), however, has shown that the benefits of stand-up desks go far beyond health. In an empirical study of 54 teams engaged in a creative task, Knight and Baer (2014) found that the use of stand-up desks, rather than traditional, sedentary office furniture, increased excitement around creative processes and decreased the tendency for people to defend their turf, leading to better information sharing, ideas, and ultimately improved team performance.

A compilation by Currey (2013) on the work spaces and work habits of some of history's most prolific thinkers highlights the vast (and often amusing) differences in how we work. There is no one size fits all, so whether we like to sit, stand, lie down, or decorate our desks with our gnome collection, the ability to alter our workspace and take refuge from it is important to us all. Research is showing aspects of the evolution of our urban lives and the design of our work spaces present a significant challenge to our well-being and performance.

Other authors have suggested that we are designing environments that are making us crazy (Treasure, 2012). Higher levels of density in urban environments have been shown to result in decreased generosity, increased anxiety, and incidences of mental illness (Alter, 2013). Working and living in noisy environments may in fact be significantly reducing life expectancy.

Lefebvre (1991) wrote that space is a clue to the lives we lead, who we want to be, and what we might be. Some exciting new research by Bermudez, Krizaj, Lipschitz, Yurgelun-Todd,

and Nakamura (2015) has uncovered neuroscience insights that city planners, architects, and workspace designers can intentionally build into workplace spatial design. Bermudez's research has identified a scientific link between aspects of architecture and design, the correlation between beauty and experience, and outcomes such as well-being, mindfulness, and discovery.

The Henry Ford West Bloomfield Hospital in Detroit recently undertook a project to rethink the nature of both patient care, employee experience, and its role in the community. During the research, the extent of childhood obesity in the community where the hospital was located became evident. Today the environment in the hospital is so inviting and the food so good and affordable, that its restaurant is a destination of choice. The facility also has a greenhouse and test kitchens used by local children and schools to learn about growing vegetables and preparing different types of food. As a result, the hospital has shifted the paradigm from "place to go when you are sick" to "hospital as a community resource for staying well." In addition, they have innovated in a way that has meant they are not only surviving but thriving, as well as playing a much larger role in the community.

A project in Chile, where the intended residents were brought into the design process, is an encouraging example of a great solution to a problem where limited funds for social housing projects had previously only resulted in undesirable long-term outcomes (Wainwright, 2016). Such projects demonstrate ways we might move forward to create work spaces and urban environments that reverse the figure-ground. Such changes will result in important shifts in the way we design places. As Ilse Crawford, Head of the Man and Well-being Institute notes, design that starts with human experience, prioritizes well-being and enhances our humanity.

1.4. Conclusion

In this chapter we have reviewed changes in the design of the workplace, particularly in the past decade, and the ways in which this affects well-being and productivity. It is somewhat surprising to realize we actually have not worked out how to design offices that make a positive difference to performance for all types of individuals and types of work. We do know that subtle cues in our environment can cause us to be different versions of ourselves, more innovative, more outgoing, more collaborative for

example, but we have not understood exactly how the workplace needs to be designed to achieve this. Our analysis and discussion of emerging theories of workplace design sought to better understand how to design workplaces that not only allow employees to perform and feel better, but also fundamentally change the experience of what it means to be at work.

The research to date demonstrates that workplace designs need to not only accommodate the type of work that needs to get done, but also the individual *needs* of the people who are completing the work. In addition, while we may indeed be able to work from anywhere, it appears that many of us still want to come to the office. Chapter 2 builds on the centralized office/decentralized worker dichotomy by examining teleworking and mobile workforce frameworks.