The accelerating disconnection of work from time and place: new questions for HR

Gartner, J.; Mäkelä, Kristiina; Sumelius, Jennie; Vuorenmaa, Hertta

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

The disconnection of work from time, place and employment:
Implications for HRM Research and Practice

Johannes Gartner [a]

Kristiina Mäkelä [b]

Jennie Sumelius [c]

Hertta Vuorenmaa [d]

a. Department of Management Studies, Aalto University School of Business, FIN-00076 Aalto, Finland. Email: johannes.gartner@aalto.fi

b Department of Management Studies, Aalto University School of Business, FIN-00076 Aalto, Finland. Email: kristiina.makela@aalto.fi

c Department of Management, University of Vaasa, Arkadiankatu 28 FIN-00101 Helsinki, Finland. Email: jennie.sumelius@uva.fi

d Department of Management Studies, Aalto University School of Business, FIN-00076 Aalto, Finland. Email: hertta.vuorenmaa@aalto.fi

Abstract

The nature of work is currently undergoing major change as a result of technological progress. Smart, mobile, virtual, and cloud technologies have the potential to substantially change the way in which people work in the future. Drawing on literature on HRM and the sociology of work, we discuss ongoing changes in the nature of white-collar expert work as three forms of disconnection – of work from time, place, and employment – and outline how these may impact HRM research and practice. We conclude by proposing an agenda with new questions that researchers and practitioners within the field of HRM need to take into account going forward.

Introduction

Societies and organizations everywhere are undergoing significant changes driven by developments in new technologies such as artificial intelligence, big data and cloud computing, internet of things, and mobile and virtual tools (Wajcman, 2014). There is widespread agreement amongst researchers that we are at the verge of a fourth industrial revolution (Barley & Bechky, 2017; Schwab, 2016). Previous industrial revolutions have been associated with major shifts in how people work, moving from agricultural and craft-based occupations to factory work in the first one, to assembly line work and scientific management in the second, and to knowledge work in the third industrial revolution (Bower & Christensen, 1995; Bodrožić & Adler, 2017).

It is likely that current disruptive technologies[1], particularly those related to smart, mobile, virtual, and cloud, will mean comparable major shifts. What we see happening right now is potentially much more than just the use of technology making work and organizations more effective or productive; the nature of work – that is, how people *do* their work – may be changing more profoundly (Dolan, Makarevich & Kawamura, 2015). If so, we will as a consequence need to re-evaluate current approaches to managing people in organizations, and HR's role in doing this (Colbert, Yee, & George 2016; Ryan & Wessel, 2015).

In this paper, we seek to widen the perspective of existing research on HRM and technology, which has largely concentrated on "creating value within and across organizations for targeted employees and management" in line with current HR roles and practices (Bondarouk & Ruël, 2009, 507). Traditional management models derived from relatively stable environments may, however, be less relevant in the future (Cappelli & Keller, 2013), and we

---

[1] By disruptive technologies we refer to innovations that have the potential to disrupt a main, existing process and endanger the existence of complete organisations, sometimes even industries if ignored or dealt with insufficiently (Bower & Christensen, 1995; Bodrožić & Adler, 2017). Previous exaamples include the steam engine and transistors in their time.

may need to shift our focus on understanding potential changes in the nature of work itself. Drawing primarily on literature on the sociology of work, which has a longer history of trying to predict the "future of work" (Parker, 1971; Morris, 1975; Handy, 1984; Grantham, 2000; Ross, 2009; Donkin, 2010) than the HRM literature has, we discuss ongoing changes in the nature of white-collar expert work as three forms of disconnection – that of work from time, place, and employment. Our thinking follows that of Ulrich & Dulebohn (2015), who call for an increasingly externally oriented perspective on HRM, focusing on how factors such as social and technological trends affect work in organizations, and how this in turn affects the role and tasks of HR.

We define work as paid professional activity. Whilst disruptive effects of technologies are often discussed from the perspective of blue-collar workers (Acemoglu & Restrepo; 2015, 2017), our focus is specifically on white-collar expert work, referring to the application of domain-specific knowledge, skills, and capabilities to complex and novel problems (Van Der Vegt, Bunderson & Oosterhof, 2006). In addition to new tools replacing some types of white-collar jobs, technological changes are also more broadly shifting the way in which white-collar expert work is being done. From the perspective of HR, the changing nature of white-collar expert work is arguably more important than the more commonly discussed disappearing blue-collar jobs, as it addresses the core target group of many central HRM processes and practices.

More specifically, we address the research question of "how white-collar expert work is changing due to technology, and what the implications of these changes are for HRM research and practice?". In what follows, we first provide an illustrative review of the intersection between technology and HR, drawing from sociology of work and recent HRM literature. From this analysis, we distinguish three overarching themes that relate to the changing nature of work, in that work is decreasingly bound to a specific time, place, or employment relationship in the way it has been until now. We use these three forms of

disconnection – of work from time, place, and employment – as organizing labels to discuss their implications for HRM research and practice, suggesting new questions which can serve as a roadmap going forward.

The changing nature of work

During the past 30 years, HRM has been strongly impacted by developments in information technology (Bondarouk, Parry & Furtmueller, 2016; Stone & Deadrick, 2015; Stone, Deadrick, Lukaszewksi & Johnson, 2015; Strohmeier, 2007), resulting in a distinct stream of literature that is commonly termed as electronic HRM or (e-HRM). Bondarouk & Ruël (2009) define e-HRM as "an umbrella term covering all possible integration mechanisms and contents between HRM and Information Technologies aiming at creating value within and across organizations for targeted employees and management" (p. 507). While this body of work has significantly increased our understanding of various technology, organization, and people-related factors affecting the adoption of e-HRM systems (see e.g., Panayotopoulou, Vakola, & Galanaki, 2007; Ruël, Bondarouk, & Looise, 2004; Reddick, 2009; Voermans & van Veldhoven, 2007), it has remained relatively silent about the more overarching role of technology in society overall, its increasing influence in many aspects of people's lives, and the implications of all this for work, and subsequently for HR.

We are interested in the HRM implications of the changing nature of white-collar expert work, and examine this through an illustrative literature review (Guest, 2017). By this we refer to a process of mapping literature in order to assist our own conceptualising and contextualizing of the relationship between technology and expert work. We focused on the intersection between technology and white collar expert work, and our aim was to identify key themes that were deemed particularly relevant for technology-driven individual-level changes in how

experts work, rather than to offer an exhaustive review of either technological change more generally or more macro-level societal and structural changes in labor.

Based on key ongoing debates in the sociology of work literature coupled with recent work within both research and practitioner-oriented HRM literatures (e.g. Dolan et al., 2015; Gratton, 2010; Guest, 2017; Oliveira de Lima & Moreira de Souza, 2017), as well as various recent EU reports (e.g. Eurofound and the International Labour Office, 2017), we distinguish three overarching themes associated with "new ways of working" (Brummelhuis, Bakker, Hetland, & Keulemans, 2012). We conceptualise these changes as three forms of disconnection – of work from time, place, and employment. The sociology of work literature holds various long standing debates on these themes, and despite variations in the degree of optimism regarding future work (Bergman & Karlsson, 2011), there is widespread agreement that technology is one of the main sources of change in how we work (Edgell, Gottfried, & Granter, 2016).

One long-standing debate revolves around time and, in particular, the allocation of it for work, family, and leisure, and the varying consequences of these allocations (Buttler, 2004; Bittman, 2016; Wajcman, 2014). Starting from Taylorism and Fordism, we have linked human effort and progress to work paced by the clock or the machine (Bittman, 2016; Baxter & Kroll-Smith, 2005; Wajcman, 2008, 2014), with perceptions of increasing time pressure and the speeding-up of time (Bittman, 2016; Robinson & Godbey 1997; Wajcman, 2008, 2014). Second, the issue of teleworking, telecommuting, or distance-working has been examined from various angles since the 1980s (Golden & Raghuram, 2010; Handy, 1984; Hamblin, 1995; Valenduc & Vendramin, 2001), and it is clear that distance has important consequences for consistency and perceived fairness of different arrangements (Ryan & Wessel, 2015). Furthermore, as work underpins social structures and individual identity building (Valenduc & Vendramin, 2016), the potential changes in social ties, structures and formations that result

from distant work have received considerable research attention (Ellem, 2015; Grantham, 2000; Heckscher, 2016).

Third, employment structures are among the most vibrantly discussed themes within sociology of work currently, and there is much recent scholarly work on changing employment arrangements, temporary work, skills, and the lack or need of regulating employment and protecting employees (De Stefano, 2016; Friedman, 2014; Stecy-Hildebrandt et al, 2018; Lambert and Herod, 2016). The rise of platform- and network-based business models is seen as a driver that potentially transitions work from traditional employment relationships to a more entrepreneurial, gig-based economy, where employee–organization relationships become contracts rather than longer-term employment (DeStefano, 2016; Stanford, 2017). These developments are debated, starting with the actual prevalence of gig work as of yet (Friedman, 2014), with others arguing that it has been long ongoing (Kalleberg, 2009; Finkin, 2016). Nevertheless, these developments are likely to change how white-collar experts do their work. We will now discuss these influences in more detail.

Disconnection of Work from Time

First, we suggest that the increasing disconnection of work from time is associated with two ongoing changes in how white-collar experts work: a gradual move away from the nine-five Monday-to-Friday working week towards a more individualized organization of time, and the consequent blurring of boundaries between work and life.

Technology enables work at any time. Although the disappearance of the traditional twentieth-century 35–40 hour and 9-to-5 working week is not a new phenomenon (e.g., Armstrong-Stassen, 1998), technological development is escalating the change. Mobile or virtual technologies are commonly associated with the disconnection of work from place (see below), but they are simultaneously, and importantly, also enabling a disconnection of work

from time. This is driven by two parallel factors. For one, increasing options for time-independent access and computing power, such as mobile, augmented and virtual tools, conversational user interfaces, and digital twins technologies (Bruynseels et al., 2018; Kurzweil, 2004; Raguseo et al., 2016) allow for work to be done at any time. For the other, global work and increasing connectivity creates a demand for fast response times, regardless of the time of day (Chung & Tijdens, 2013; Mazmanian, Orlikowski, & Yates, 2013). As a result, work during non-standard evening or weekend hours has significantly increased (Eurofound, 2017).

Concurrently, work and non-work domains are becoming increasingly intertwined (Colbert et al., 2016), which can be both positive and negative. On the positive side, technological development allows for a more holistic or "blended" multipurpose timetable in which the individual has more freedom to choose and alternate between "work" and "life" (Bittman, 2016, Colbert et al., 2016). Increased time flexibility reduces or avoids commuting time and facilitates the management of personal and family issues. Technology enables people to use work time for non-work related purposes such as personal e-mails, web-based personal tasks, and social-media interactions (Colbert et al., 2016; Lim & Chen, 2012; Reyt & Wiesenfeld, 2015; Ryan & Wessel, 2015). Although earlier research depicted this as a form of employee misbehaviour (Lim, 2002), more recent research sheds light on how technology facilitates the work-life balance of employees (Ivarsson & Larsson, 2011; König & De la Guardia, 2014; Ryan & Wessel, 2015). On the negative side, the growing norm of constant connectivity (Mazmanian, Orlikowski, & Yates, 2013) has led to new types of concerns, such as collaborative overload (Cross, Rebele, & Grant, 2016), work-family conflict (Butts, Becker, & Boswell, 2015; Mäkelä, Kinnunen, & Suutari, 2015), and stress and health issues (Butts et al., 2015).

All in all, these developments contribute to a shift in the notion of work-life balance, as traditional understandings of the separation of work and life change towards integration (Khallash & Kruse, 2012). As Chung & Tijdens (2013) suggest, the increased disconnection of work from time is not in itself good or bad; rather, the results largely depend on individual and organizational expectations and (time) management (Maylett & Wride, 2017). This creates an opening for progressive HRM work, to which we will return below.

Disconnection of Work from Place

Second, the disconnection of work from time is intimately linked with the disconnection of work from physical place, but we discuss them here separately for both analytical clarity and because the two dimensions are likely to have different consequences for HR. Already at the beginning of the 21st century, Grantham (2000) suggested that future work will be focused around people, rather than a physical workplace, and our review suggests that the disconnection of work from place is indeed manifested in a gradual move away from the company office to more diverse and individualized places, and in the decreasing importance of geographical location for deploying talent and expertise.

More sophisticated data processing power, and mobile and cloud-based technologies, such as virtual conferencing and communication solutions and collaborative tools, are the most central drivers of the move away from the office. When these more sophisticated technologies are combined with increased bandwidth and high-speed mobile communication protocols and standards, they mean that more demanding and data-intensive work and increasingly also collaborative work, can be carried out across distance than has been possible before. (Bernardino, Roglio & Del Corso, 2012; Laudon & Laudon, 2017)

As a consequence, work is moving not just home as in earlier generations' telework, but to more diverse and individualized places. Sometimes these arrangements are driven by

cost reduction strategies when firms close non-central offices or decentralize some operations, but they are also increasingly personal and idiosyncratic. On the one hand, there is an increased variety in the working locations (such as coffee shops and co-working spaces) that one and the same individual uses in a regular basis. On the other, a still small but growing number of remote and location-independent working arrangements has emerged, that are self-selected for various reasons including family ties, cost of living, weather, or personal interests (Khallash & Kruse, 2012). These places are increasingly not just an hour or two away, but can even be in a different country altogether. Yet another new band of digital workers, referred to as digital nomads, have developed a lifestyle of combined virtual work and personal travel, making them completely location-independent (Zhu, 2012; Makimoto & Manners, 1997).

As Ellem (2016) argues, the geographies of work have also become increasingly manyfold: talent and expertise are more dispersed geographically although the level of interrelatedness remains the same. Business operations are more globally distributed, and working in global virtual teams and other collaborative constellations has fast become the modus operandi of multinational organizations in particular (Deloitte, 2017; Nurmi & Hinds, 2016; Zander, Mockaitis & Butler, 2012). The disruptive impact of virtual conference systems has been anticipated for a long time, and increasingly sophisticated systems such as real-time translation tools are gaining ground (Standaert, Muylle, & Basu, 2016). When virtual and augmented reality systems improve, they will offer new human–computer interfaces for interaction (Alghamdi, Regenbrecht, Hoermann, Langlotz, & Aldridge, 2016), such as virtual participation through augmented reality devices.

For individuals, these developments mean that not only your closest collaborators, but also the expert input you need for your work, no longer necessarily resides near you. In some cases, people that work together will never meet in person at all. Rather, expertise networks are increasingly global, highly dispersed, and accessible through virtual means only (Treem &

Leonardi, 2016). Technology allows experts to share their (often tacit) knowledge and solve problems across distance much better than before (Maznevski, Davison, & Jonson, 2012), not just in formal teams but in ongoing virtual communication (Haas, Criscuolo, & George, 2015; Hinds, Liu & Lyon, 2011).

Remote working arrangements, virtual collaboration, and global expertise networks all enable and require working across distance and without daily face-to-face interaction with co-workers in the office. This creates a new situation for both employees and employers, and new questions for HR; we will return to these below.

Disconnection of Work from Employment

Third, core debates from the HRM perspective with regard to the disconnection of work from employment revolve around the changing nature of the employee-organization relationship (Coyle-Shapiro & Shore, 2007; Ryan & Wessel, 2015), with employees no longer being bound to their organizations in the same way they have been for a very long time. A considerable amount of research has focused on the future of careers (Arthur, 2014; Lyons, Schweitzer, & Ng, 2015; Rodrigues & Guest, 2010), and recent assessments of ongoing work trends (Dolan et al., 2015; Oliveira de Lima & Moreira de Souza, 2017) have emphasized a shift away from traditional hierarchical career ladders to more individualistic portfolios of meaningful projects, and increasing movement, or mobility, across organizational and also professional or occupational boundaries.

With regard to the former, portfolio careers have traditionally been associated with freelance professions, in which individual micro-entrepreneurs work on many shorter-term simultaneous or sequential projects. Such "packages of work arrangements for the plying and selling of an individual's skills in a variety of contexts" (Cohen & Mallon, 1999: 329) have been typical in fields such as art and design, but less common in other industries, often being

an alternative for those unable to secure traditional employment (Dolan et al., 2015). Technological development may be changing this dynamic. Emerging electronic platforms and network-based business models (e.g., DeStefano, 2016; Stanford, 2017) can provide viable opportunities for more professionals than today to sell their expertise through self-managed portfolios both locally and globally. This growth of self-employment among professionals is not only a result of changes in industry structures (European Commission, 2016), but also increasingly driven by lifestyle choices and dual-career family situations (Warr & Inceoglu, 2018). As portfolio arrangements provide opportunities for increased flexibility, freedom and control – coupled with a need for personal goals fulfillment, self-development, and psychologically meaningful work (Banai & Wes, 2004; Sullivan & Baruch, 2009) – they become attractive options.

While empirical research on the implications of a shift from permanent employment to portfolio employment remains fairly limited, there is evidence of self-employed professionals reporting higher levels of job engagement, well-being and job satisfaction than non-managerial organizational employees (Hytti, Kautonen, & Akola, 2013; Warr & Inceoglu, 2018). Self-employment can be associated with heightened job insecurity, with a negative effect on well-being (De Witte, Pienaar & De Cuyper, 2016), but previous comparative research suggests that perceptions of job insecurity, as well as workload and lack of benefits, are overall similar when comparing self- and organizationally employed (non-managerial) employees (Andersson, 2008; Prottas and Thompson, 2006).

Further, careers are increasingly associated with a higher number of transitions, both within and across organisations (Chudzikowski 2012; Lyons et al., 2015; Sullivan & Baruch, 2009) – and going forward, also across fields and professions or occupations (Dolan et al., 2015), as rapid technological development leads to a need for continuous education and the learning of new skills (Eurofound, 2017). Similar arguments have been put forth for some time

under the labels 'protean' (with a focus on individuals taking charge of their own careers; Hall, 1976, 2002), and 'boundaryless' (focusing on employment mobility; Arthur & Rousseau, 1996; Sullivan & Arthur, 2006) careers. While having received considerable research attention, the concept of boundaryless careers is a debated one and has also been criticised as "problematic" and lacking in terms of empirical evidence of its potential prevalence and benefits, or being merely an umbrella term for non-traditional career patterns (Rodrigues and Guest, 2010).

All in all, technological development will bring new models for individuals to capitalize on their expertise through a portfolio of different means, projects, and channels, and reduce boundaries with a more global talent market, increasing mobility, and a rising competition for "stars" (Morris, Snell, & Björkman, 2016; Stahl et al., 2012). Changing employment structures and new career forms bring with them an array of new a questions to solve for HR; we will turn to these next.

New Questions: An agenda for future research and practice in the HRM field

Above, we have described and discussed the three interlinked disconnections – of work from time, place, and employment – as organising labels for key technology-driven changes that are taking place in how white collar experts work. We now move on to consider what kinds of new questions these developments might bring for HR, outlining a non-exhaustive agenda for future research and practice in the field. In the text and the corresponding tables (see Tables I to III), we suggest a number of questions stemming from each form of disconnection – questions that academics and practitioners alike need to consider. Although these distinctions are useful for analytical purposes, we recognize that many of the consequences are multifaceted and interlinked, and that the limiting structure of a table does not always fully illustrate the complex nature of the topic at hand. The tables nevertheless serve as a map with which we make sense of this complex territory. Also, the disconnections and the consequent questions

we discuss here are not to be seen as black-and-white or static, but rather as a dynamic, processual direction that we see the HRM research and practice potentially taking, at different speeds and in varying ways.

Disconnection of Work from Time: New Questions

As discussed above, the disconnection of work from time is associated with a gradual move away from the traditional nine-to-five Monday-to-Friday working week and towards a more individualized organization of time, and the consequent blurring of boundaries between work and life. These developments allow employees to work when it suits them best and use their time more effectively between work and other aspects of their life, be that family responsibilities, personal preferences and interests, or less time used for commuting. On the other hand, the increased freedom also requires the individual to take more self-initiated responsibility of his or her own time management and results. These changes are not necessarily without challenges, and raise new questions related to the role the HR function, and to HRM practices and well-being issues.

First, the mindset of the HR function may need to be reconsidered. HRM research and practice has traditionally focused on the question of whether organizational units such as subsidiaries of a multinational corporation should have globally standardized versus locally responsive HRM policies, practices and service delivery (Rosenzweig & Nohria, 1994). In light of the ongoing changes, this may no longer be the most important distinction. Instead, firms may need to think about increasingly individualized and flexible arrangements. This leads to the key HRM question being not between global standardization and local responsiveness, but rather between standardization and individualization. How do firms design practices that can be tailored to individuals rather than groups or locations? Such a HR-as-a-service model may become a mass-adapted modular and stackable portfolio of different services that individuals

can have access to or choose from, and forgo the current global versus local dilemma altogether. The ethical complexity of managing such a system becomes central, as increasingy individualized needs will have to be balanced with transparency and fairness.

Second, when the boundaries between work and life become increasingly blurred, so do the boundaries of HR. For example, what can – and should – the HR function do to help employees maintain a productive and healthy work-life balance? Practical and ethical questions arise when considering where the boundaries of accountability and responsibility of the HR function should lie, and what aspects of well-being and work-life balance belong to the private rather than professional domain.

Relatedly, as Guest (2017) argues, future HRM may need to prioritize employee well-being to a much higher extent than today. Time-autonomy has been shown to have a positive impact on employee well-being, although the direct effects of this on work performance remains a controversial issue (Kattenbach et al., 2010). The balance between job demands and resources in general (Bakker & Demerouti, 2007), and job and family life in particular (Cynthia & Kalleberg 2001; Hochschild 1997; Jacobs & Gerson 2001), become important HRM questions, when there is a constant possibility (in the best case) or pressure (in the worst case) to work (Cleveland, Byrne & Cavanagh, 2015; DeFrank, Konopaske, & Ivancevich, 2000; Ulrich & Dulebohn, 2015). As repetitive and manual work is increasingly automated, employees increasingly focus on intellectually demanding communicative, creative or knowledge tasks (Green, 2012), and these put demands on well-being in a broader, more holistic sense that focuses on facilitating optimal performance rather than reducing sickness leaves (Bakker & Albrecht, 2018; Wang & Chern, 2008).

Finally, HRM is already fairly data-driven (Rasmussen & Ulrich, 2015; Stone & Deadrick, 2015), and with the disconnection of work from time, the field can expect an increase in HRM practices that are both real-time (in terms of data) and any-time (in terms of

accessibility), both for employers and employees. For example, performance management practices are already receiving critique for being overly static, heavy, and process-driven, and forerunner companies are experimenting with technology-aided real-time practices (Buckingham & Goddall, 2015; Goler, Gale, & Grant, 2016). Similarly, employee feedback systems such as employee satisfaction surveys can move into the real-time domain, providing instantly actionable input for leadership and HR. Any-time solutions currently include self-service employee portals (Urbach, Smolnik, & Riempp, 2011), and the services provided through HR-dashboards, bots and chats will likely increase significantly. New questions that will need to be asked by both researchers and practitioners of HRM in regard to this are outlined in Table I.

INSERT TABLE I ABOUT HERE

Disconnection of Work from Place: New Questions

The disconnection of work from place is manifested in a gradual move away from the company office to more diverse and individualized places, and in the decreasing importance of geographical location for deploying talent and expertise. Remote working arrangements, virtual collaboration, and global expertise networks all require working across distance and without daily face-to-face interaction with supervisors or co-workers in the office. This leads on to a number of new questions that HRM researchers and practitioners must address.

First, how can HRM maintain a sense of community and belonging for employees who are only partially or not at all co-located? Although the increased possibilities for global and virtual work obviously have many positive implications, including exposure to more learning and a wider opportunity to make an impact (Nurmi & Hinds, 2016), they can negatively influence the physical, emotional, and social working environment(s) of employees. Virtual and distance working is often associated with perceived psychological isolation from social

aspects of organization and networks (Wiesenfeld, Raghuram, & Garud, 2001), and previous research has shown that such lack of embeddedness carries risks in terms of decreased well-being and increased employee turnover (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001). HR practitioners will be faced with new questions to consider, such as whether there is a risk of corporate culture eroding as a result of a growing number of employees working remotely and separately from each other, or whether the need for a strong corporate HR, focused on cultural issues, will become even more important than now?

Second, what kinds of practices and digital tools will be needed for managing, steering, and motivating employees in remote working arrangements? The question of the potential need for external supervision and monitoring remains unresolved – is there such a need, and if so, how and to what extent can remote control be resolved? Will we move to predominatly output/results-based control, or will new behavioral control mechanisms emerge? It is increasingly possible to anticipate employee behaviors with predictive algorithms, or track employees using tracking systems with cameras, positioning systems, and detection sensors. Such systems already exist and flourish in different personal development applications such as fitness tracking apps, and achievement measurement systems are being developed based on behavioral psychology, points-based algorithms, customer and co-worker feedback, and gamification (Huotari & Hamari, 2012; Ruhi, 2015). Such approaches give rise to several questions concerning privacy and ethics: Who will decide and guard the ethics of such actions, and how does this all relate to individual rights to privacy? In their study about the psychological effects of remote working, Grant, Wallace, and Spurgeon (2013) emphasize a need for intense communication between management and remote workers to avoid them becoming "invisible workers", which can result in over- or underworking depending on the employee's character – but is it acceptable to monitor employees for example in their own homes?

Third, HRM needs to pay attention to building networks and social capital in- and outside the organization, both so that HR itself knows where talent and expertise is located, and so that people know about the expertise of others and can collaborate effectively (Borgatti & Cross, 2003). The disconnection of work from place has enabled a surge in opportunities to collaborate virtually (Bodrožić & Adler, 2017). Potential solutions may need to balance virtual with face-to-face (Zander, Mockaitis & Butler, 2012), in that virtual tools, such as videoconferencing, collaboration and communication platforms (for examples, see Van Ostrand et al., 2016) are combined with opportunities to meet in co-working spaces and organizational get-togethers or team meetings. Augmented and virtual reality tools and telepresence technologies may also have the potential to bridge the gap between virtual and face-to-face in important ways. New technologies can both help collaborative work but also contain a risk of more rather than less distracting or unnecessary communication, and may not be able to overcome boundaries of a more psychological nature, such as cultural diversity (Stahl, Maznevski, Voigt & Jonsen, 2010). The new questions arising from the disconnection of work from place are outlined in Table II.

INSERT TABLE II ABOUT HERE

Disconnection of Work from Employment: New Questions

The disconnection of work from employment has to do with a shift away from traditional hierarchical career ladders to more individualistic portfolios of meaningful projects, and an increasing movement across organizational and also professional or occupational boundaries. The implications of the growing array of different organization-individual arrangements are central issues facing HR.

First, why would increasingly mobile experts, the best of whom are in high demand, want to work for you? These "stars" will have more options than ever before, not only locally but increasingly also globally through new online platforms, networks, and digital marketplaces. If there is a move towards measuring success not by within-company hierarchical advancement, but by the achievement of personal goals, self-development, and psychologically meaningful work portfolios (Banai & Wes, 2004; Sullivan & Baruch, 2009), this means shifting competition for recruitment and employer branding. When technological development opens up global talent markets in new and more fields, attractive employee value propositions for the best may become increasingly individualized, with employment deals that include customized work content, flexible arrangements, personalized development opportunities, and/or work-life integration (Bittman, 2016; see also Hornung et al., 2010).

This demand is unlikely to take place evenly, and skill differentials are likely to grow. This creates greater organizational imbalances, and increases the inequality of labor markets. Companies will continue to fight for highly skilled experts, and such "talent" will likely enjoy various benefits such as high compensation and benefits, but how will HRM practices take into accunt an inceasing gap between the "talent" and "non-talent" (Björkman et al., 2013)? Amongst the immediate issues are various commitment and retention related questions with regard to both groups (Morris, Snell, & Björkman, 2016; Stahl et al., 2012), to which HR will have to find new answers and approaches. In terms of the talent, this means building commitment and loyalty, and retaining talent. Although the benefits of long-term work arrangements may prevail, the question is whether these will move from the employment domain to that of entrepreneurial and/or contractual work and what that would mean in practice in different organizational settings. If the talent increasingly work with multiple simultaneous assignments and employers, how do we ensure that confidential information is protected and safely shared on the one hand, and not spilled to outsiders on the other. Less skilled employees

on their part are more likely to be left outside traditional permanent employment: either contracted temporarily as needed with potentially fluctuating wages, removed altogether as a result of automatization and robotization, or moved to low-cost areas on a much broader basis than today, made possible by telepresence and augmented reality.

Finally, a new question currently entering the HRM domain is that of continuous learning. Technological development makes extant skills rapidly obsolete and necessitates the learning of new ones, which has put continuous education firmly on the agenda for most governments (Eurofound, 2017). This raises new questions: What is the role of HR in training new skills and capabilities? Should companies be responsible for continuous learning, or does the responsibility reside with the individual? And who should fund the training – companies, individuals or governments (Hytti & O'Gorman, 2004)? Table III outlines these and other new questions.

INSERT TABLE III ABOUT HERE

Conclusions

While the nature of work has always been characterized by change, current emerging technologies serve to accelerate it. New ways of working and organizing are emerging; these may take many shapes, some of which are discussed in this paper, while others are not yet foreseeable. For purposes of clarity we distinguish between three disconnections in this paper, and propose them as a way of conceptualising and thinking about the complex and ambiguous changes. In reality, however, the disconnections are interlinked, and their consequences are multifaceted and likely to happen in an uneven, simultaneous and messy manner. This poses challenges for HR practitioners and researchers going forward.

In terms of research, we argue for the increasing need to adopt multidisciplinary and multilevel research approaches in order to better capture the complexity of the issues at hand,

and to broaden existing discussions around technology and HR. HRM research and practice needs to more profoundly reconsider not only current practices, but also HR's role in managing people in organizations and foundations on which the current practice of HR (Björkman et al., 2014) is built. Finally, future research should also question whether existing categories, such as white versus blue-collar work, remain meaningful for capturing the increasingly complex realities of work (Barley & Kunda, 2001), or are new categories such as global versus local professions, due. Researchers should also focus on the ethics and sustainability questions that the three disconnections implicate.

In terms of practice, we see that each set of the new questions has implications for HR practitioners in terms of their own work and capabilities. Ethical questions alone pose a serious professional challenge, as current legal frameworks largely lag behind technological developments. Although challenging, the increased need for ethical considerations may offer a new way for HR to assert its relevance. The ongoing changes will also likely require multiple new competencies from HR professionals. In addition to, or in lieu of, the more traditional educational backgrounds of (organizational) psychology, business and management, and (adult) education, HR professionals will need to have increasingly strong data and statistical skills. Another issue concerns the skillsets required from HR professionals in order to manage the increasing virtuality of the workplace and its employees. Dealing with people-related issues virtually, including complicated and emotionally heavy issues such as downsizing, is a definite challenge. Individual-level issues such as under-performance or illness will also be further complicated by distance and virtual communication. Furthermore, previously non-existing forms of HR, such as digital marketplace HRM and new individualized self-service platforms and performance management systems, may serve to automate some of the activities currently executed by HR managers, decreasing the need for traditional HR staff. For the individual HR professional, the disconnection of work from employment in its more extreme forms can mean

being confronted with new types of demands, new types of HR jobs such as a talent or well-being coach or organizational culture agent, or no job at all. On the other hand, the potentially increased outsourcing of HRM tasks to employees can also free up time for HR professionals to focus on more strategic issues.

Naturally, this paper also has its limitations. First, we are aware of the blurriness of the topic at hand, and although our conceptualization of the disconnections and the associated tables serve to provide a frame and overview of potentially interesting emerging questions, there is no neat separation between topics given the considerable overlap between the various issues discussed. Second, work in this paper refers to paid professional activity, and we specifically examine changes that technology brings to white-collar, expert work. Blue-collar work, unpaid labor, unpaid domestic labor, the informal economy, and what is called the grey or black economy are outside the scope of this paper. Finally, there are other more macro-level changes driven by technological development, and by automation and robotization in particular, that will require dedicated analysis to be properly unpacked. The implications of all these changes – the disappearance of many types of jobs and the resulting creation of a "new precariat" – go well beyond HR. Although they have far-reaching consequences at all levels of analysis from psychological to societal and political, they are outside the scope of this paper.

To conclude, this paper is intended as a think piece, and thus many of the ideas we discuss are speculative and debatable. Rather than debating over whether the consequences of the ongoing changes in white-collar work are inherently positive or negative, we propose three disconnections as one way of conceptualizing some of the ongoing changes and the questions that open up for HR researchers and practitioners alike.

References

Acemoglu, D., & Restrepo, P. (2015). The race between man and machine: Implications of technology for growth, factor shares and employment. unpublished, December, 2015.

Acemoglu, D., & Restrepo, P. (2017). Robots and jobs: Evidence from US labor markets. NBER Working Paper No. 23285. March 2017.

Alghamdi, M., Regenbrecht, H., Hoermann, S., Langlotz, T., & Aldridge, C. (2016). Social presence and mode of video communication in a collaborative virtual environment. Analytic Strategic Management, 22(3), 361–376.

Andersson, P. (2008) Happiness and health: Well-being among the self-employed. Journal of Socio-Economics 37: 213–236.

Armstrong-Stassen, M. (1998). Alternative work arrangements: Meeting the challenges. Canadian Psychology/Psychologie Canadienne, 39(1-2), 108.

Arthur, M. (2014). The boundaryless career at 20: where do we stand, and where can we go?. Career Development International, 19(6), 627-640.

Arthur, M., & Rousseau, D. (1996). The boundaryless career: A new employment principle for a new organizational era. New York: Oxford University Press.

Bakker, A. B., & Albrecht, S. (2018). Work engagement: Current trends. Career

>Development International, 23(1), 4-11.

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art.

>Journal of Managerial Psychology, 22(3), 309–328.

Banai, M., & Wes, H. (2004). Boundaryless global careers: The international itinerants.

>International Studies of Management and Organization, 34(3), 96–130.

Barley, S.R. & Bechky, B.A. (2017). From the editor: The changing nature of work: Careers,

>identities, and work lives in the 21st century. Academy of Managemet Discoveries,

>3(2), 111-115.

Baxter, V., & Kroll-Smith, S. (2005). Normalizing the workplace nap: Blurring the

>boundaries between public and private space and time. Current Sociology, 53(1), 33–

>55.

Bergman, A., & Karlsson, J. C. (2011). Three observations on work in the future. Work,

>Employment and Society 25(3), 561–568.

Bernardino, A.F., Roglio, K.D.D. & Del Corso, J.M. (2012).Telecommuting and HRM: A

>case study of an information technology service provider. Journal of Information

>Systems and Technology Management : JISTEM, 9(2), 285-306.

Bittman, M. (2016). Working Time. In S. Edgell, G. Gottfried & E. Granter (Eds.).

>Handbook of the Sociology of Work and Employment. London: Sage.

Björkman, I., Ehrnrooth, M., Mäkelä, K., Smale, A. & Sumelius, J. (2013). Talent or Not?

>Employee Reactions to Talent Identification. Human Resource Management, 52(2),

>1–20.

Björkman, I., Ehrnrooth, M, Mäkelä, K., Smale, A. & Sumelius, J. (2014). From HRM

>practices to the practice of HRM: Setting a research agenda. Journal of Organizational

>Effectiveness: People and Performance, 1(2), 122-140.

Bodrožić, Z., & Adler, P. S. (2017). The evolution of management models: A neo-
Schumpeterian theory. Administrative Science Quarterly, 0001839217704811.

Bondarouk, T. V., & Ruël, H. J. M. (2009). Electronic Human Resource Management:
Challenges in the digital era. International Journal of Human Resource
Management, 20(3), 505–514.

Bondarouk, T., Parry, E., & Furtmueller, E. (2016). Electronic HRM: Four decades of
research on adoption and consequences. International Journal of Human Resource
Management, 28(1), 98–131.

Borgatti, S. P., & Cross, R. (2003). A Relational View of Information Seeking and Learning
in Social Networks. Management Science, 49(4), 432–445.

Bower, J. L., & Christensen, C. M. (1995). Disruptive technologies: catching the wave.

Brummelhuis, L. L., Bakker, A. B., Hetland, J., & Keulemans, L. (2012). Do new ways of
working foster work engagement?. *Psicothema*, *24*(1).

Bruynseels, K. R., Santoni de Sio, F., & van den Hoven, M. J. (2018). Digital Twins in
Health Care: Ethical implications of an emerging engineering paradigm. Frontiers in
Genetics, 9, 31.

Buckingham, M., & Goddall, A. (2015). Reinventing Performance Management. Harvard
Business Review, 93(4), 40–50.

Butts, M. M., Becker, W. J., & Boswell, W. R. (2015). Hot buttons and time sinks: The
effects of electronic communication during nonwork time on emotions and work-
nonwork conflict. Academy of Management Journal, 58(3), 763–788.

Cappelli, P., & Keller, J. R. (2013). Classifying work in the new economy. Academy of
Management Review, 38(4), 575-596.

Chudzikowski, K. (2012). Career transitions and career success in the 'new' career
era. Journal of Vocational Behavior, 81(2), 298-306.

Chung, H., & Tijdens, K. (2013). Working time flexibility components and working time regimes in europe: Using company- level data across 21 countries.International Journal of Human Resource Management, 24(7), 1418-1434.

Cleveland, J.N., Byrne, Z.S., & Cavanagh, T.M. (2015). The future of HR is RH: Respect for humanity at work. Human Resource Management Review, 25(2), 146–161.

Cohen, L., & Mallon, M. (1999). The transition from organisational employment to portfolio working: perceptions of 'boundarylessness'. Work, Employment and Society, 13(2), 329-352.

Colbert, A., Yee, N., & George, G. (2016). The digital workforce and the workplace of the future. Academy of Management Journal, 59(3), 731–739.

Coyle-Shapiro, J. A., & Shore, L. M. (2007). The employee–organization relationship: Where do we go from here? Human Resource Management Review, 17(2), 166–179.

Cross, R., Rebele, R., & Grant, A. (2016). Collaborative overload. Harvard Business Review, January-February: 75–79.

Cynthia, F. E., & Kalleberg, A. L. (2001). Time and the sociology of work: Issues and implications. Work and Occupations, 28(1), 5–16.

DeFrank, R. S., Konopaske, R., & Ivancevich, J. M. (2000). Executive travel stress: Perils of the road warrior. Academy of Management Executive, 14(2), 58–71.

De Witte, H., Pienaar, J., & De Cuyper, N. (2016). Review of 30 Years of Longitudinal Studies on the Association Between Job Insecurity and Health and Well‐Being: Is There Causal Evidence?. Australian Psychologist, 51(1), 18-31.

Deloitte. (2017). Global Human Capital Trends. Deloitte University Press.

De Stefano, V. (2016). The rise of the "just-in-time workforce" : on-demand work, crowdwork and labour protection in the "gig-economy"; International Labour Office,

Inclusive Labour Markets, Labour Relations and Working Conditions Branch. - Geneva: ILO, 2016 Conditions of work and employment series; No. 71.

Dolan, S. L., Makarevich, A., & Kawamura, K. M. (2015). Are You-And Your Company- Prepared For The Future Of Work In Tomorrowland?. European Business Review, 4- 12.

Donkin, R. (2010). The Future of Work. Basingstoke: Palgrave Macmillan.

Edgell, S., Gottfried, H., & Granter, E. (2016). The SAGE Handbook of the Sociology of Work and Employment. London: Sage.

Ellem, B. (2016). Geographies of the labour process: automation and the spatiality of mining, Work, employment and societ, 30(6), 932– 948.

Eurofound (2017), Aspects of non-standard employment in Europe, Publications Office of the European Union, Luxembourg.

Eurofound (2017), Sixth European Working Conditions Survey – Overview report (2017 update), Publications Office of the European Union, Luxembourg.

Eurofound and the International Labour Office (2017), Working anytime, anywhere: The effects on the world of work, Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva.

European Commission (2016) Employment and Social Developments in Europe 2015. Brussels: Directorate-General for Employment, Social Affairs and Inclusion. Available at: http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7859&furtherPubs =yes (accessed 8th of May 2018).

Finkin, M. (2016). Beclouded work in historical perspective. Comparative Labor Law & Policy Journal 37(3): 603–618.

Friedman, G. (2014). Workers without employers: shadow corporations and the rise of the

    gig economy. Review of Keynesian Economics, 2(2), 171–188.

Golden, T. D., & Raghuram, S. (2010). Teleworker knowledge sharing and the role of altered

    relational and technological interactions. Journal of Organizational Behavior, 31(8),

    1061-1085.

Goler, L., Gale, J., & Grant, A. (2016). Let's Not Kill Performance Evaluations Yet. Harvard

    Business Review, 94(11), 90–94.

Grant, C. A., Wallace, L. M., & Spurgeon, P. C. (2013). An exploration of the psychological

    factors affecting remote e-worker's job effectiveness, well-being and work-life

    balance. Employee Relations, 35(5), 527–546.

Grantham, C. (2000). The Future of Work: The Promise of the New Digital Work Society.

    New York: McGraw-Hill.

Gratton, L. (2010). The future of work. Business Strategy Review, 21(3), 16-23.

Green, F. (2012). Employee involvement, technology, and evolution in job skills: A task-

    based analysis. Industrial and Labor Relations Review, 65(1), 36-67.

Guest, D. (2017) Human resource management and employee well-being: towards a new

    analytical framework, 27(1), 22-38.

Haas, M. R., Criscuolo, P., & George, G. (2015). Which problems to solve? Online

    knowledge sharing and attention allocation in organizations. Academy of

    Management Journal, 58(3), 680–711.

Hall, D.T. (1976). Careers in Organizations. Goodyear Publishing Co.

Hamblin, H. (1995). Employees' perspectives on one dimension of labour flexibility:

    Working at a distance. Work, Employment and Society, 9(3), 473–498.

Handy, C. (1984). The Future of Work: What Jobs Will There Be? What Will Life Be Like?

    What Needs to Be Done? New York: Basil Blackwell.

Heckscher, C. (2016). From Bureaucracy to Networks. In S. Edgell, H. Gottfried & E.

> Granter (Eds.), The SAGE Handbook of the Sociology of Work and Employment.

> London: Sage.

Hinds, P., Liu, L., & Lyon, J. (2011). Putting the global in global work: An intercultural lens

> on the practice of cross-national collaboration. Academy of Management Annals, 5,

> 135–188.

Hochschild, A. (1997). The Time Bind: When Work Becomes Home and Home Becomes

> Work. New York: Metropolitan Press.

Hornung, S., Rousseau, D. M., Glaser, J., Angerer, P., & Weigl, M. (2010). Beyond top-

> down and bottom-up work redesign: Customizing job content through idiosyncratic

> deals. Journal of Organizational Behavior, 31(2), 187–215.

Huotari, K., & Hamari, J. (2012, October). Defining gamification: a service marketing

> perspective. In Proceeding of the 16th international academic MindTrek

> conference (pp. 17-22). ACM.

Hytti, U., Kautonen, T., & Akola, E. (2013). Determinants of job satisfaction for salaried and

> self-employed professionals in Finland. International Journal of Human Resource

> Management, 24(10), 2034-2053.

Hytti, U. & O'Gorman, C. (2004). What is "enterprise education"? An analysis of the

> objectives and methods of enterprise education programmes in four European

> countries. Education & Training, 46(1), 11-23.

Ivarsson, L., & Larsson, P. (2011). Personal internet usage at work: A source of recovery.

> Journal of Workplace Rights, 16(1), 63–81.

Jacobs, J. A., & Gerson, K. (2001). Overworked individuals or overworked families?

> Explaining trends in work, leisure, and family time. Work and Occupations, 28(1),

> 40–63.

Kalleberg, A. (2009). Precarious Work, Insecure Workers: Employment Relations in

    Transition. American Sociological Review, 74, 1–22.

Kattenbach, R., Demerouti, E., & Nachreiner, F. (2010). Flexible working times: Effects on

    employees' exhaustion, work-nonwork conflict and job performance.Career

    Development International, 15(3), 279-295.

Khallash, S. & Kruse, M. (2102). The future of work and work-life balance 2025. Futures,

    44(7), 678-686.

König, C. J., & De La Guardia, M. E. C. (2014). Exploring the positive side of personal

    internet use at work: Does it help in managing the border between work and

    nonwork? Computers in Human Behavior, 30, 355–360.

Kurzweil, R. (2004). The law of accelerating returns. In Alan Turing: Life and legacy of a

    great thinker (pp. 381-416). Springer, Berlin, Heidelberg.

Lambert, R., & Herod, A. (Eds.). (2016). Neoliberal capitalism and precarious work:

    Ethnographies of accommodation and resistance. Edward Elgar Publishing.

Laudon, K. C., & Laudon, J. P. (2017). Management Information Systems: Managing the

    Digital Firm. Pearson.

Lim, V. K. (2002). The IT way of loafing on the job: Cyberloafing, neutralizing and

    organizational justice. Journal of Organizational Behavior, 23(5), 675–694.

Lim, V. K., & Chen, D. J. (2012). Cyberloafing at the workplace: Gain or drain on

    work? Behaviour & Information Technology, 31(4), 343–353.

Lyons, S. T., Schweitzer, L., & Ng, E. S. (2015). How have careers changed? An

    investigation of changing career patterns across four generations. Journal of

    Managerial Psychology, 30(1), 8-21.

Makimoto, T. & Manners, D. (1997). Digital Nomad. Wiley.

Mäkelä, K., Lauring, J., Lee, H.-Y., Lehrvik, J. E., Luencke, G., Miska, C., Pahlberg, C., & Stahl, G. (2017). Meeting the challenges of globalization: Implications for Teams and Team Leadership. Forthcoming in L. Zander (Ed.): Research Handbook of Global Leadership: Making a Difference. Edward Elgar.

Mäkelä, L., Kinnunen, U., & Suutari, V. (2015). Work-To-Life conflict and enrichment among international business travelers: The role of international career orientation. Human Resource Management, 54(3), 517–531.

Maylett, T., & Wride, M. (2017). The Employee Experience: How to Attract Talent, Retain Top Performers, and Drive Results. John Wiley & Sons.

Mazmanian, M., Orlikowski, W. J., & Yates, J. (2013). The autonomy paradox: The implications of mobile email devices for knowledge professionals. Organization Science, 24(5), 1337–1357.

Mitchell, T. R., Holtom, B. C., Lee, T. W., Sablynski, C. J., & Erez, M. (2001). Why people stay: Using job embeddedness to predict voluntary turnover. Academy of Management Journal, 44(6), 1102–1121.

Morris, S., Snell, S., & Björkman, I. (2016). An architectural framework for global talent management. Journal of International Business Studies, 47(6), 723–747.

Morris, W. T. (1975). Work and Your Future: Living Poorer, Working Harder. Reston: Reston Publishing Company.

Nurmi, N., & Hinds, P. J. (2016). Job complexity and learning opportunities: A silver lining in the design of global virtual work. Journal of International Business Studies, 47(6), 631–654.

Oliveira Lima, Y & Moreira de Souza, J. (2017).The future of work: Insights for CSCW. Proceedings of the 2017 IEEE 21st International Conference on Computer Supported Cooperative Work in Design

Panayotopoulou, L., Vakola, M., & Galanaki, E. (2007). E-HR adoption and the role of HRM: Evidence from Greece. Personnel Review, 36(2), 277–294.

Parker, S. (1971). The Future of Work and Leisure. London: MacGibbon and Kee.

Prottas, D.J. and Thompson, C. (2006) Stress, satisfaction and the work–family interface: A comparison of self-employed business owners, independents, and organisational employees. Journal of Occupational Health Psychology 11: 366–378.

Raguseo, E., Gastaldi, L., & Neirotti, P. (2016). Smart work. Evidence - Based HRM, 4(3), 240-256.

Rasmussen, T., & Ulrich, D. (2015). Learning from practice: How HR analytics avoids being a management fad. Organization Dynamics, 44(3), 236–242.

Reddick, C. G. (2009). Human resources information systems in Texas city governments: Scope and perception of its effectiveness. Public Personnel Management, 38, 19–34.

Reyt, J., & Wiesenfeld, B. M. (2015). Seeing the forest for the trees: Exploratory learning, mobile technology, and knowledge workers' role integration behaviors. Academy of Management Journal, 58(3), 739–762.

Robinson, J. P., Werner, P., & Godbey, G. (1997). Freeing up the golden years. American Demographics, 19(10), 20–24.

Rodrigues, R. A., & Guest, D. (2010). Have careers become boundaryless?. Human Relations, 63(8), 1157-1175.

Rosenzweig, P., & Nohria, N. (1994). Influences on human resource management practices in multinational corporations. Journal of International Business Studies, 25(2), 229–251.

Ross, A. (2009). Nice Work If You Can Get It: Life and Labor in Precarious Times. New York: New York University Press.

Ruël, H. J. M., Bondarouk, T., & Looise, J. K. (2004). E-HRM: Innovation or Irritation: An explorative empirical study in five large companies on web-based HRM. Management Revue, 15(3), 364–381.

Ruhi, U. (2015). Level up your strategy: Towards a descriptive framework for meaningful enterprise gamification. Technology Innovation Management Review, 5(8), 5–16

Ryan, A. M., & Wessel, J. L. (2015). Implications of a changing workforce and workplace for justice perceptions and expectations. Human Resource Management Review, 25(2), 162–175.

Schwab, K. (2016). The fourth industrial revolution. Geneva: World Economic Forum.

Stahl, G. K., Maznevski, M., Voigt, A. and Jonsen, K. (2010). Unraveling the effects of cultural diversity in teams: A meta-analysis of research on multicultural work groups, Journal of International Business Studies, 41(4), 690-709.

Stahl, G., Björkman, I., Farndale, E., Morris, S. S., Paauwe, J., Stiles, P., Trevor, J., & Wright, P. (2012). Six principles of effective global talent management. Sloan Management Review, 53(2), 25–42.

Standaert, W., Muylle, S., & Basu, A. (2016). An empirical study of the effectiveness of telepresence as a business meeting mode. Information Technology and Management, 17(4), 323–339.

Standing, G. (2011). The Precariat, the new dangerous class. London: Bloomsbury Academic.

Stanford, J. (2017). The resurgence of gig work: Historical and theoretical perspectives. The Economic and Labour Relations Review 2017, 28(3) 382–401.

Stecy-Hildebrandt, N., Fuller, S., & Burns, A. (2018). 'Bad'Jobs in a 'Good'Sector: Examining the Employment Outcomes of Temporary Work in the Canadian Public Sector. Work, Employment and Society.

Stone, D. L., & Deadrick, D. L. (2015). Challenges and opportunities affecting the future of human resource management. Human Resource Management Review, 25(2), 139–145.

Stone, D., Deadrick, D., Lukaszewski, K., & Johnson, R. (2015). The influence of technology on the future of human resource management. Human Resource Management Review, 25(2), 216–231.

Strohmeier, S. (2007). Research in e-HRM: Review and implications. Human Resource Management Review, 17(1), 19–37.

Sullivan, S. E., & Arthur, M. B. (2006). The evolution of the boundaryless career concept: Examining physical and psychological mobility. Journal of vocational behavior, 69(1), 19-29.

Sullivan, S. E., & Baruch, Y. (2009). Advances in career theory and research: A critical review and agenda for future exploration. Journal of Management, 35(6), 1542–1571.

Treem, J. W., & Leonardi, P. M. (2016). Expertise, Communication and Organizing. Oxford, United Kingdom: Oxford University Press.

Ulrich, D. & Dulebohn, J.H. (2015). Are We There Yet? What's Next for HR? Human Resource Management Review, 25(2), 188–204.

Urbach, N., Smolnik, S., & Riempp, G. (2011). Determining the improvement potentials of employee portals using a performance-based analysis. Business Process Management Journal, 17(5), 829–845.

Valenduc, G. and Vendramin, P. (2016). Work in the Digital Economy: Sorting the Old from the New. European Trade Union Institute Working paper 2016.03, 5 April. Brussels: European Trade Union Institute. Available at: https://www.etui.org/Publications2/Working-Papers/Work-inthe-digital-economy-sort (accessed 6th of April 2018).

Valenduc, G., & Vendramin, P. (2001). Telework: from distance working to new forms of flexible work organisation. Transfer: European Review of Labour and Research, 7(2), 244-257.

Van Der Vegt, G. S., Bunderson, J. S., & Oosterhof, A. (2006). Expertness diversity and interpersonal helping in teams: Why those who need the most help end up getting the least. Academy of Management Journal, 49(5), 877–893.

Van Ostrand, A., Wolfe, S., Arredondo, A., Skinner, A. M., Visaiz, R., Jones, M., & Jenkins, J. J. (2016). Creating virtual communities that work: Best practices for users and developers of E-collaboration software. International Journal of E-Collaboration, 12(4), 41–60.

Voermans, M., & van Veldhoven, M. (2007). Attitude towards E-HRM: An empirical study at Philips. Personnel Review, 36(6), 887–902.

Wang, S., & Chern, J. (2008). The 'night owl' learning style of art students: Creativity and daily rhythm. International Journal of Art & Design Education, 27(2), 202-209.

Wajcman, J. (2008). Life in the fast lane? Towards a sociology of technology and time. British Journal of Sociology, 59(1), 59–77.

Wajcman, J. (2014). Pressed for time: The acceleration of life in digital capitalism. Chicago: University of Chicago Press.

Warr, P. & Inceoglu, I. (2018). Work Orientations, Well-Being and Job Content of Self-Employed and Employed Professionals. Work, Employment and Society 2018, 32(2), 292–311

Wiesenfeld, B. M., Raghuram, S., & Garud, R. (2001). Organizational identification among virtual workers: The role of need for affiliation and perceived work-based social support. Journal of Management, 27(2), 213–229.

Zander, L., Mockaitis, A., & Butler, C. L. (2012). Leading global teams. Journal of World

    Business, 47(4), 592–603.

Zhu, P. (2012). Are telecommuting and personal travel complements or substitutes?. The

    Annals of Regional Science, 48(2), 619-639.

TABLE I. Work and Time: New Questions

DISCONNECTION Work & Time	NEW QUESTIONS	
	HR function	**HRM practices**
Working outside traditional office hours	**Individualization of work arrangements:** - What are the consequences of increasingly individualized and flexible work arrangements for HR policies and service delivery? - How to ensure a balance between individual needs on the one hand, and fairness and transparency on the other? **-** How will the work load of HR professionals be affected, and will HR need to be continuously available? In different electronic formats such as self-service dashboards, bots and chats – or in-person?	**Any-time and real-time HRM practices:** - How can traditional HRM practices such as performance management be transformed into real-time practices? Do they need to be accessible at any time by the employee and/or the organization? - How can employee-based real-time data and feedback influence and improve traditional HRM practices? What kinds of new ethical issues need to be considered? For example, who decides what data to collect and how to use it?
Blurring of work and free time	**Boundaries of HR:** **-** How will the boundaries of work and life be redefined? Which aspects belong to the HR domain, and which do not? **-** What are the ethical questions concerning the boundaries of responsibility and accountability of different HR actors?	**Practices for managing employee performance and well-being:** - What kinds of HRM practices can help employees improve their well-being and maintain a healthy work-life balance?

TABLE II. Work and Place: New Questions

DISCONNECTION Work & Place	NEW QUESTIONS	
	HR function	**HRM practices**
Shift from company office to more diverse and individualized places	**Management of a virtual organization:** - How can HR maintain the social, emotional, and cultural aspects of work, and facilitate a sense of community and belonging for employees who are not co-located, and/or have only virtual colleagues? - How will the work of HR professionals themselves be affected by increased virtuality? Will the roles of HR professionals become increasingly blurred with or replaced by IT professionals, or artificial intelligence?	**Remote supervision and performance management:** - What kinds of practices and digital tools will be needed for managing, steering, and motivating employees in remote working arrangements? - Will we move to predominantly output/results-based control, or will new behavioral control mechanisms emerge? What are the ethical issues related to these? What kinds of privacy issues will arise related to monitoring employees in their homes and in other countries?
Decreasing importance of geographical location for deploying talent and expertise	**Effective global talent management:** - Where do the best talents come from and who owns their contracts? - What is the future role of HR professionals in assessing employee capabilities? Will predictive algorithms be better suited for this purpose? - How do we make sure talents stays in the organization, when social bonds are more difficult to build in an increasingly virtual organization?	**Managing distributed collaboration:** - How can HR facilitate virtual and distributed collaboration, and provide support for potential problems that arise? - What kinds of practices help transcend cognitive, cultural and psychological boundaries of global and virtual collaboration?

TABLE III. Work and Employment: New Questions

DISCONNECTION Work & Employment	NEW QUESTIONS	
	HR function	**HRM practices**
Shift from hierarchical career ladders towards individual portfolios	**Competing for expertise:** - How can HR attract and retain the best experts? Increased HR attention on employer branding? - What aspects will an attractive employee proposition include going forward?	**HRM practices for managing increasing differentiation of the workforce:** - Will the company workforce be increasingly divided between highly-skilled 'stars' and those with non-competitive skills? What does this mean for performance and talent management, and pay and benefits practices?
Increasing mobility across organizational and professional boundaries	**Continuous learning:** - What is the role of HR in training new skills and capabilities? - Should companies be responsible for continuous learning or does the responsibility reside with the individual? Who should fund the training – companies, individuals or governments?	**Practices for commitment building:** - How can employee commitment and loyalty be built in an environment of increasing mobility? - How about if your 'employees' are freelancers or micro-entrepreneurs who also work for others? - How can confidential information be protected and shared?