



Beyond the Factory Paradigm: Digital Nomadism and the Digital Future(s) of Knowledge Work Post-COVID-19

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Abstract

What are the potential futures of knowledge work, given its transformation into almost exclusively digital work during the COVID-19 pandemic crisis? Our ongoing research program on digital nomadism informs a Hegelian dialectical analysis and an envisioning of the future(s) of knowledge work. We contrast the Factory paradigm of work (thesis), exemplified by the “ideal type” of the 9-to-5 corporate worker, with the Hypermobility paradigm of work (antithesis), exemplified by the ideal type of the digital nomad. Reflecting on this contrast, we envision the possible digital futures of knowledge work as a continuous spectrum, ranging from a future based on the Digital Taylorism paradigm of work to a future based on the Worker Autonomy paradigm of work. These futures are discussed in terms of different approaches to organizing work, working with technology, delineating work/life boundaries, and provisioning the social safety net. IS researchers are uniquely positioned to perform research and inform decision-making in all these areas, and thus make a difference in determining whether the future we end up with more closely resembles Digital Taylorism or the Worker Autonomy vision.

Keywords: Digital Work, Remote Work, Knowledge Work, Digital Futures, COVID-19, Future of Work, Factory paradigm, Digital Nomadism, Hypermobility, Dialectics

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1 Paradigms of Knowledge Work

The need for informed exposition of the potential futures of knowledge work has never been as urgent as it is now with substantial changes underway. Knowledge workers, in general, are people whose jobs entail “thinking for a living ... [and] the creation, distribution or application of knowledge” (Davenport, 2005, p. 9), such as scholars, librarians, artists, scientists, engineers, lawyers, bankers, etc. (Davenport, 2005; Pyöriä, 2005). In the wake of COVID-19, the conventional norms and practices of knowledge work have suddenly shifted toward digitally conducted work. We may be observing the dawn of a new

era of knowledge work. This is a world for which we have no playbook (Chik & Benson, 2020) since much of pre-COVID-19 discourse and research is inherently backward looking. Given this paucity of informed, forward-looking analysis, we examine the potential digital future(s) of knowledge work, following its transformation into almost exclusively digital work during the COVID-19 pandemic. We envision what post-COVID-19 knowledge work will look like by reflecting on tendencies and trajectories that are already visible in the present. History and current research, including our own research program on digital nomadism, inform our analysis of knowledge work trends during and after the COVID-19 pandemic.

For many past decades, a way of working centered around what we call the *Factory paradigm* has been the widely accepted understanding of “work” in society. The Factory paradigm is defined by the rigid norms and arrangements developed to optimize manufacturing processes during the Industrial Revolution. These norms and arrangements were notably formalized in the Taylorist principles of increasing economic output by decomposing work into simple parts and measuring each part using quantitative performance metrics as a basis of control (Taylor, 1911). The popularization of Taylorist principles has entrenched scientific management into our collective consciousness archetypes such as the 9-to-5 workday of the typical corporate office job. Thus, the current norms of knowledge work are, problematically, modeled on factory work, despite the substantial differences between the two. Peter Drucker argued almost two decades ago that we ought to move beyond these standards and into better practices for knowledge work, cautioning, at the same time, that “it will predictably take a good many years before we have worked these out” (Drucker, 2002, p. 8). Drucker’s day may have come.

The proliferation of the internet and digital technologies (Berger, Denner, & Roeglinger, 2018) has amplified such critique of the Factory paradigm of knowledge work (Moravec, 2013; Golden & Gajendran, 2018). It can be argued that all forms of work currently include aspects of digital work, directly or indirectly (Orlikowski & Scott, 2016), yet knowledge work, in particular, can be performed entirely digitally and remotely over the internet with relative ease. Remote digital work (or telework) is therefore increasingly feasible (Boell, Cecez-Kecmanovic, & Campbell, 2016), making commuting to the office or factory unnecessary. This challenge to the Factory paradigm has been brought to the forefront of public consciousness during the COVID-19 pandemic. During the COVID-19 pandemic, governments around the world have declared public health emergencies and mandated societal lockdowns. To comply with these lockdowns, knowledge workers all around the world have been requested to vacate corporate offices and work from home as remote digital workers (Hamzelou, 2020). This mass departure from ways of working grounded in the Factory paradigm has therefore suddenly prompted knowledge workers to question what “going to work” means. “The ultimate work-from-home experiment” (Liang, 2020, p. 1) seems primed for propelling a new paradigm of work (Parthasarathy, 2020). By looking beyond the Factory paradigm, we join the ongoing debate and ask: What are the potential future(s) of knowledge work, given its transformation into almost exclusively digital work during the COVID-19 pandemic? How could IS research help to navigate these futures?

To envision what this post-COVID-19 world might look like, we contrast the Factory paradigm with its opposite, what we call the *Hypermobility paradigm* (Green, 2020; Cook, 2020; Mancinelli, 2020). The Hypermobility paradigm entails the large-scale realization of various *mobilities*—a concept used in the sociology literature (Sheller & Urry, 2006). We consider the case of “digital nomadism” as an archetypical exemplar of hypermobility (Green, 2020; Cook, 2020; Mancinelli, 2020). Digital nomadism emerged in the 2010s, with knowledge workers engaging in a new lifestyle of leisure travel enabled by digital work, allowing them to generate income while traveling as a way of life (Schlagwein, 2017; Schlagwein, 2018). The idealized view of a digital nomad is that of a contemporary knowledge worker—travel blog, web designer, affiliate marketer, social media influencer—sitting on a tropical beach or in a trendy coworking space, working on a laptop, producing work for clients while admiring the tropical scenery (Cook, 2020). Digital nomadism seems to encompass the antithesis of the factory-corporate model of knowledge work, a possible paradigm shift of the knowledge work sectors (Kuhn, 1962; Riemer & Johnston, 2019).

In this editorial, we take a dialectical approach toward envisioning the future of knowledge work. We consider the Hypermobility paradigm as an antithetical challenger to the current Factory paradigm of knowledge work. The dialectical reasoning process is outlined in detail in the following section. At its core, it entails a detailed understanding of the incumbent Factory paradigm (the “thesis”) and contrasting it with its challenger, the Hypermobility paradigm (the “antithesis”). The dialectical resolution of tensions between the thesis and the antithesis results in the synthesis, envisioning a spectrum of possible futures of knowledge work by focusing on two extreme yet plausible new paradigms of knowledge work. We call these potential future paradigms *Digital Taylorism* and *Worker Autonomy*. Our envisioning highlights that the impending decisions of individuals, organizations, and governments are consequential for moving us collectively closer toward one of these two future scenarios. IS researchers are uniquely positioned to inform these decisions—the making of these futures—through research and commentary.

2 Dialectical Reasoning for Envisioning the Future

“Prediction is very difficult, especially about the future,” according to the famous saying variously attributed to Niels Bohr and Mark Twain. Nonetheless, we endeavor to envision the post-COVID-19 digital future(s) of knowledge work by building on a range of philosophical and theoretical concepts briefly discussed in this section.

2.1 Dialectical Reasoning and Multiple Futures

First, we use Hegelian dialectics as a method of scholarly reasoning. This form of reasoning is based on Hegel's analytical observation of a forward progression of human history based on thesis–antithesis–synthesis (Maybee, 2019; Van de Ven & Poole, 1995). Hegelian dialectics has informed scholars from Marx to Habermas, as well as IS research (e.g., Karjalainen, Sarker, & Siponen, 2019; Gibbs, Rozaidi, & Eisenberg, 2013). We use Hegelian dialectics as a model to reason “forward” in time.

The outcome of our Hegelian dialectical reasoning approach is multiple plausible futures; we resist the allure of predicting a single future (Shaw 1979). The concept of *futures* (plural) comes from the field of future studies and builds on the comparative analysis of both actualities (what currently is) and potentialities (what could be) (Chiasson et al. 2018; Feenberg 2005). This follows a metaphysical view in which the future is not *maktoob* (Arabic: “already written [in the book of God]”) but instead “created through choice and action,” nondeterministic but not random, manmade within the space of the “assumed fundamental aspects of human, social and/or physical science principles” (Hovorka & Peter, 2018, p. 166).

The dialectical argument draws from existing, conflicting paradigms of knowledge work (thesis and antithesis) and current tendencies, including those emerging from the COVID-19 crisis, to arrive at two future extreme scenarios that demarcate the range of possible futures (synthesis). In other words, there is a multitude of possible futures between the two extremes. Considering the extremes may help us to outline the full space of potentialities and hopefully inform our choices, as they will determine the actual future that we will end up with.

2.2 Paradigms and Ideal Types

To conceptualize the dominant thinking found across the thesis, antithesis, and the range of futures constituting the synthesis, we draw on Kuhn's notion of paradigm. Based on the analysis of the actual history of the natural sciences, Kuhn defined paradigms as the incommensurable sets of scientific standards and ways of looking at the world in particular eras (Kuhn, 1962). Kuhn's work caused a metaphorical earthquake in the philosophy of science because that field had previously entertained a naive “accumulation of knowledge, steady progression” view of science. Kuhn's concept of paradigms has previously been referred to in the “paradigm wars” in IS (e.g., between interpretivism and positivism) (Mingers, 2004; Hassan & Mingers, 2018). This concept has also been used to refer to transitions between incompatible ways of thinking beyond science such as the seismic shift from physical

media to digital/streaming models in the music industry (Riemer & Johnston, 2019). Here, we are taking this second, wider view on paradigms: fundamental shifts in ways of thinking in any area of society (in science or elsewhere).

Finally, in order to exemplify the paradigms across thesis, antithesis, and synthesis, we also draw on the Weberian concept of the “ideal type” (*Idealtypus*). An ideal type draws attention to particular social phenomena by articulating them as an abstract analytic archetype, accentuating certain characteristics, elements, and points of view (Weber, 1904). The “idea” of the ideal type refers to the stylized, archetype representing an idea (it does not refer to the “best” or “optimal,” as is sometimes misunderstood). The 9-to-5 corporate worker can, for example, be seen as an ideal type (archetype, exemplar) of the Factory paradigm of knowledge work. Similarly, the digital nomad can be seen as an ideal type of the Hypermobility paradigm (D'Andrea, 2006). For the two futures outlined below, we treat the *cyborg* (Haraway, 1987) as an ideal-type worker of the Digital Taylorism paradigm, while the *knowmad* (Moravec, 2013) is an ideal type worker of the Worker Autonomy paradigm.

We draw on Weick's fundamental processes of work (Weick, 1974; Puranam, Alexy, & Reitzig, 2014) to coherently describe the paradigms and highlight the dialectical tensions and clashes between them. Puranam et al. (2014) developed four processes for assessing new (digital) ways of organizing: task allocation, reward distribution, information provision, and task division. However, we set our focus slightly wider, beyond this operational view. For the digital future(s) of knowledge work, we consider: (1) *organizing work*, i.e., how task allocation and task division are organized; (2) *working with technology*, i.e., the role that technology plays in organizing and managing work; (3) *delineating work/life boundaries*, i.e., how work and nonwork are related; and (4) *provisioning the social safety net*, i.e., how the responsibility for social safety (e.g., health care, pensions) is organized among workers, organizations, and society. The framework of dialectical reasoning underlying our argument is summarized in Figure 1.

Figure 1 shows the fundamental thesis–antithesis–synthesis structure of dialectical reasoning (and historical progression). Figure 1 shows the role of the COVID-19 pandemic as a catalyst that accelerates the dialectical tensions or clashes between the paradigms. COVID-19 hence accelerates the historical progression toward the range of possible futures. The future may fall anywhere between the two extremes of *Digital Taylorism* and the *Worker Autonomy* paradigms of knowledge work. COVID-19 has moved the timeline of digital and knowledge work forward by years or decades—the future may thus come much sooner than expected.

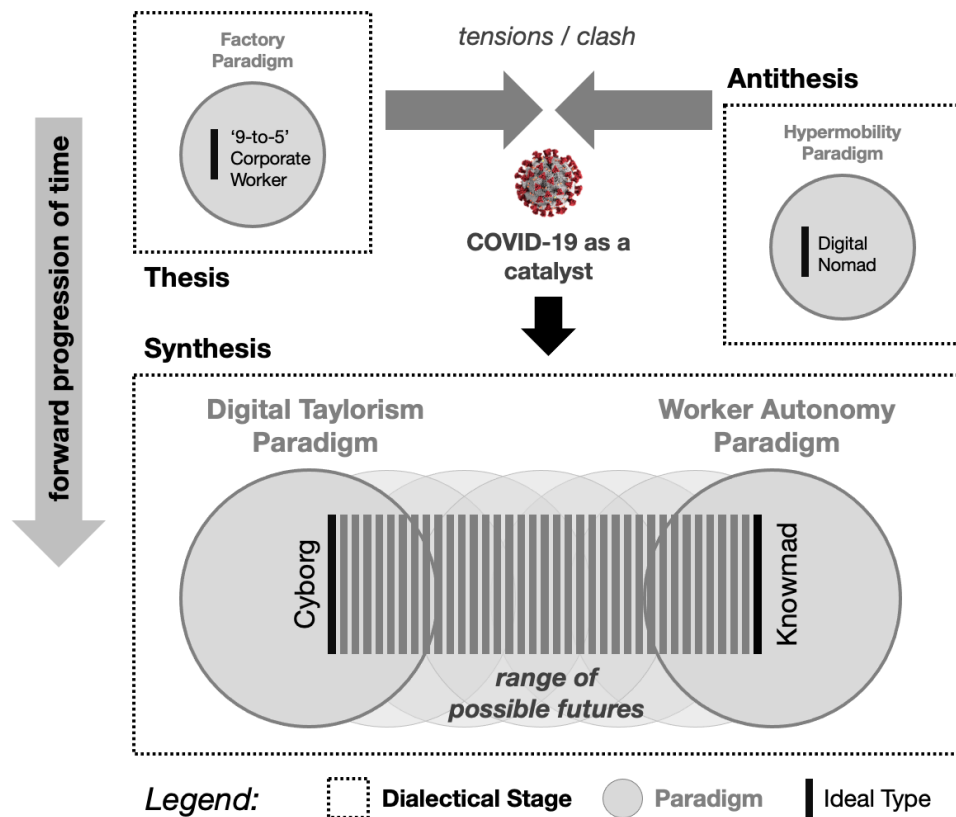


Figure 1. Conceptual Framework for Dialectical Reasoning

3 Thesis: The Factory Paradigm of Knowledge Work

This section analyses the dominant Factory paradigm of knowledge work, exemplified by the 9-to-5 corporate worker ideal type. This paradigm is described according to the above four fundamental processes underlying work. In our critical assessment, this paradigm has shortcomings given the current circumstances and the nature of knowledge work.

In a nutshell, the typical 9-5 corporate-worker environment, featuring a downtown corporate office organized in cubicles, is governed by the norms of the Factory paradigm, using a Taylorist centralized *control* approach to organizing work, which is a mechanizing and standardizing approach to working with technology, a workplace concentration approach to delineating work/life boundaries, and an institutionalization of the “Fordist bundle” for the provisioning of a basic social safety net. We explore these characteristics in more detail below.

3.1 Defining Characteristics

3.1.1 Organizing Work: Taylorist Centralized Control

In the Factory paradigm, work is organized according to the management principles that emerged in the Industrial Revolution (around 1800). These were formalized and summarized in the influential work of Frederick Taylor (Taylor, 1911). Taylor’s theorization of science-based management formed the foundations of what is now referred to as Taylorism (Leijonhufvud, 1984; Littler, 1978). Taylorism promotes guaranteed levels of economic output, delivered at high levels of efficiency, achieved through the decomposition of complex work activities into simple, routine, and standardized tasks. Taylorism entails surveillance and the detailed measurement of the execution of tasks and compensation of workers based on their output. Planning and control are largely in the hands of designated workplace authorities at the top of the organizational hierarchy. Furthermore, in Taylorism, planning and control assume accurate and complete information about the environment and about the production process itself. In modern knowledge work, Taylorist centralized control is applied in more subtle and implicit forms. For instance, it involves underlying

influential concepts such as “management by objectives” or “balanced scorecard” (Dinesh & Palmer, 1998). Taylorism in modern knowledge work may also involve packaging centralized control as seemingly “fun” company social events and regimented “playful” corporate culture (Fleming, Bolton, & Sturdy, 2009). The mindset underlying Taylorist centralized control is illustrated in the following quote:

The timesheets are particularly important to junior accountants because the chargeable time recorded is used to calculate the individual accountant's utilization figures and utilization targets. These targets form part of their performance measures and a failure to meet the target (or having a utilization below your peers) could have negative consequences. (Ladva & Andrew, 2014, p. 642).

3.1.2 Working with Technology: Mechanizing and Standardizing

In the Factory paradigm, work is centered around technology (historically, production machinery) that executes tasks based on precise measurement and standardization. Previously, imprecise artisan craft handiwork was replaced by precise production schedules, movements of materials and workers, and operations of factory machines. The role of the human was merely to fill in the gaps between machines' operations, based on a highly specialized, repetitive, division of labor, typically on an assembly line that produced goods from start to finish. These concepts are famously presented in Adam Smith's “Pin-Maker Parable” in *The Wealth of Nations*, in which ten workers can produce 48,000 pins on an assembly line of subdivided labor, but not a single pin individually (Smith, 1776). In modern knowledge work, mechanization and standardization is visible in technologies such as enterprise resource planning (ERP) systems, which mechanize and standardize the collection and processing of business data to inform key performance indicators (KPIs), such as in the context of business process reengineering/management (Davenport & Short, 1990; Lingyu et al., 2010; Selmeçi et al., 2012). More recently, mechanization and standardization have become visible in people analytics systems. People analytics systems apply algorithmic techniques to workforce management in ways that are ethically problematic because they lack transparency in processes (opacity), oversimplify human behavior (datafication), or manipulate people to act against their own ethical judgment or intuition (nudging) (Gal, Jensen, & Stein, 2020). Overall, the endurance of the Factory paradigm's mechanization and standardization in the knowledge economy shows how the “technological

structures of industrial production enforce and reproduce the social structures of industrial society” (Rogers, 2008, p. 94).

3.1.3 Delineating Work/Life Boundaries: Workplace Concentration

In the Industrial Revolution, work became concentrated in factories because of the invention of steam engines and other heavy machinery that could not be transported to workers' homes—workers had to go to the machinery. The most efficient arrangement was to concentrate work around these machines in factories (Nanda & Browne, 1977). Factories then tended to aggregate in geographical areas (Mokyr, 2001). Furthermore, the assembly line model (introduced by Ford and others) required workers to gather at specific places at specific times to execute synchronized tasks. This *workplace concentration* (Mokyr, 2001) spatially organized work and workers around industrial equipment. In corporate knowledge work, workplace concentration has only been minimally transformed and generally takes the form of high-rise office buildings in urban centers. Concentration still occurs in geographical formations ranging from specific streets within a city (e.g., Wall Street) to entire areas (e.g., Silicon Valley). Workplace concentration also necessitates that workers live near their place of work (a Sydney office worker cannot reasonably live in Tokyo). As workers often cannot afford housing in city centers, they thus often commute from suburbs to urban centers for work. The working hours are typically standardized to 9-to-5 workdays in 40-hour workweeks (Nanda & Browne, 1977).

3.1.4 Provisioning the Social Safety Net: Institutionalizing the Fordist Bundle

The Factory paradigm and the Taylorist regimentation of workers' lives into repetitive and alienating work, combined with the increasing power imbalance and wealth inequalities between factory owners (capitalists, owners of the means of production) and workers (doing the actual working), has attracted compelling criticism, notably by Karl Marx in *Das Kapital* (Marx, 1867). Marx famously predicted (and inspired) socialism as an alternative to capitalism, offering a social safety net provided by the state. Marx's ideas led to a number of socialist transitions, via democratic vote or revolutions. Yet, today, most nations are either decidedly free-market (capitalist) economies (e.g., USA) or are “socialist” by name only and increasingly resemble free-market economies (e.g., China). In free-market economies, the primary social safety net is the Fordist bundle (Vitaud, 2018; Vitaud, 2019). The Fordist bundle is named after Henry Ford, who, in 1926, introduced the weekend and the 40-hour week to all his workers to improve workers' well-being:

We have decided upon and at once put into effect through all the branches of our industries the five-day week. Hereafter there will be no more work with us on Saturdays and Sundays. These will be free days, but the men, according to merit, will receive the same pay equivalent as for a full six-day week. A day will continue to be eight hours, with no overtime ... in the old days, before we had management and power, a man had to work through a long day in order to get a bare living. Now the long day would retard both production and consumption ... within a comparatively short time I believe the practice will be so general in industry that it be made universal. (Henry Ford, quoted in Crowther, 1926, pp. 613-616)

The Fordist bundle refers to social institutions providing security for workers (e.g., stable work contracts, paid leave for illness and parenthood, health insurance). Workers achieved these social benefits through a mixture of negotiation with owners as well as political action (e.g., voting for worker parties, unionization, etc.) (Kasmir, 1999).

3.2 Critical Assessment

The Factory paradigm's key characteristics underpin the often taken-for-granted understanding of "(going to) work" in modern society. This has serious implications for knowledge work. Knowledge work is often more creative than mechanical assembly-line work. Taylorist centralized control, as an approach to organizing work, has been critiqued as ineffective for creative thinking (Brown & Lauder, 2010). In knowledge worker settings, Taylorism tends to reduce rather than improve knowledge worker performance (Parker, 1998) because of its disregard for individual privacy and its outdated assumptions of clearly defined, highly standardized tasks (Langfred & Rockmann, 2016; Bernstein, 2012).

Mechanizing and standardizing as an approach to working with technology has been identified as unhelpful for knowledge work for similar reasons (Moravec, 2013). Modern technology conceptually promises to fully automate work, taking over any mundane tasks (e.g., Wei & Peters, 2018), hence freeing up human workers. Yet Ford's 40-hour workweek has become a myth. Longer hours are common for knowledge workers competing for jobs and careers, and 90-120-hour workweeks have been reported as a "badge of honor" (Hewlett & Luce, 2006, p. 49) in certain industries (e.g., banking). Emails on weekends and after-hours work have become accepted, common, and even expected. *Karoshi* (Japanese for "death by overwork") has been recognized as an "international work (health) hazard" (Li, 2016, p. 139)

and the negative impact of long work hours on work/life balance have been widely recognized (Fleetwood, 2007).

Workplace concentration emerged based on the constraints imposed by industrial machinery; however, this seems no longer relevant for knowledge work in the digital age. Mobile computing offers opportunities for spatially and temporally flexible working arrangements (Golden & Gajendran, 2018). Nevertheless, commuting to a physical office continues to be widely practiced, leading to countless hours spent in grinding rush-hour traffic, vastly overpriced downtown real estate, and significant child care struggles for families, among other issues.

Finally, institutionalizing the Fordist bundle as an approach to provisioning the social safety net has gradually been eroded and seems even dated. While an overall improvement of society through efficient markets and production had been assumed (by leading economists post-WW2), empirically, such gains have seemingly mostly propelled the so-called "one-percenters," and wealth distribution has become increasingly unequal (Piketty, 2013). The social safety net has been substantially diminished in tandem with decreasing unionization, workplace regulations, and full-time employment (Vitaud, 2019; Vitaud, 2018). Although the loss of such protections is not uniform across nations, the Fordist bundle has been widely eroded, leading to an "acceleration in the operation of disciplinary neoliberalism" (Dukelow & Kennett, 2018, p. 483).

Given the many shortcomings of the Factory paradigm, one might question whether it represents the best possible system for knowledge work and workers. Indeed, the paradigm's constituent components were never designed for knowledge work and digital work and largely exist as historical artifacts. The Factory paradigm and the 9-to-5 corporate worker ideal type stand in stark contrast to the promising new paradigm of hypermobility and digital nomadism.

4 Antithesis: The Hypermobility Paradigm of Knowledge Work

The new Hypermobility paradigm offers a promising, fundamentally different approach to organizing work, working with technology, delineating work/life boundaries, and provisioning the social safety net, as outlined below. The Hypermobility paradigm is exemplified by the ideal type of the "digital nomad" (Green, 2020; Cook, 2020; Mancinelli, 2020). As briefly mentioned above, digital nomads are a rapidly growing group of location-independent knowledge workers that travel the world for lifestyle, experience, and global arbitrage (earning a high income while living in low-cost countries). Digital nomads work digitally, using internet connections, laptops, mobile

phones, and coworking spaces. They often describe digital nomadism as the antithesis to the “rat race” of corporate, employed, and location-bound work. We draw on the digital nomadism phenomenon to illustrate the wider Hypermobility paradigm, which also extends to many other forms of work (electronic freelancing, sharing economy, etc.).

The following outline of digital nomadism—as an exemplar and ideal type of hypermobility—is based on our research program on this emerging phenomenon (since 2015). We draw on extensive ethnographic work conducted across the world, including digital nomad destinations such as Indonesia, Thailand, Taiwan, Estonia, Germany, and Portugal. Based on such rich ethnographic material, including participant-observations and interviews with digital nomads and those with whom they interact, we provide firsthand accounts of digital nomads.

4.1 Defining Characteristics

4.1.1 Organizing Work: Emergent Organizing

In the Hypermobility paradigm emerging in digital nomadism, there is no workplace authority physically located alongside the knowledge worker. There is therefore no Taylorist implementation of workplace surveillance, planning, and rigid regimentation. In this sense, the Hypermobility paradigm promises an escape from the Taylorist surveillance apparatus in which “you’ve got to be seen, you’ve got to be here” (in the office) and is instead moving toward a way of working that treats “people like adults, rewarding them for the work that they do as opposed to the amount of time they sit at the office” as “Marc,”¹ a digital nomad, puts it. Digital nomads are typically freelancers and entrepreneurs rather than employees (Schlagwein & Jarrahi, 2020). They take personal responsibility for their business outcomes, achievements, or failures. Leadership and status among digital nomads are fluid and based on the ability to construct a digital identity, “to give and receive” (digital nomads value sharing and reciprocity), and to build and engage a community (Prester, Cecez-Kecmanovic, & Schlagwein, 2019b). Lacking affiliation with formal organizations, digital nomads solicit projects and partnerships with other digital nomads based on current and emerging business needs. A digital nomad, “Evelyn,” interviewed in Bali, explains a typical scenario:

We outsourced [tech support] to a web developer [in another time zone] who runs a business similar to ours and he provides emergency cover during the hours when we sleep. So, if there’s some emergency, like if

a website goes down, all our clients know that they can call the telephone answering service and they will be put through to him and he will fix the problem and then charge us ... I met him at a meetup ... We don’t ever want to hire; we decided early on, we didn’t like working for people and we don’t want other people to have to work for us and go into the office at a set time, stuck on a set salary. We really hope that we’ll grow by finding other people, freelancers, small businesses, that we can team up with, provide solutions to clients and they can live the life that they want to live.

Such emergent, dynamic organizing characterizes the overall decidedly social, informal, and semistructured approach taken by the Hypermobility paradigm of organizing work. The “meetup” is one of many similar events organized regularly by digital nomads in coworking spaces, travel destinations, and online communities. Despite the distributed nature of digital nomadism, prices and projects are often based on social as much as business reasons (e.g., wanting to work with a particular person). Emergent organizing between freelancers and small companies in the Hypermobility paradigm, based on a multitude of factors (beyond economic gain and efficiency alone), offers an alternative to the Factory paradigm’s centralized top-down control model.

4.1.2 Working with Technology: Mobility and Serendipity

In digital nomadism, both work and life are centered around digital technologies, including the use of a network of various online platforms and digital tools (Sutherland & Jarrahi, 2017; Nash et al., 2018). These digital technologies enable digital nomads to work remotely and pursue the digital nomadism lifestyle. Social media such as Facebook and YouTube can enable serendipitous encounters that facilitate the formation and maintenance of business relationships, ultimately supporting the mobilization of digital nomads, as explained by “Ashley”:

I use Facebook for everything now, which is not something that I would have said a few years ago. [There was a time when] I hadn’t posted anything for five years... There are Facebook networking groups for anything. Once I had identified my ideal client, the type of people that I want to work for, I looked for Facebook groups that are full of those people ... Also, sometimes I’m meeting other travelers. For instance, you meet a lot of YouTubers when you’re traveling. I’ve

¹ All interview subjects’ names are pseudonyms.

done some like animations and bumpers for YouTube videos. I've designed branded T-shirts for this one YouTube couple...

As the above quotes illustrates, digital technologies are central to digital nomads' mobility and to serendipitous business and social encounters. Digital technologies facilitate travel and connect digital nomads with communities of people who may become friends, clients, and/or collaborators. These organically emerging, technology-enabled networks stand in contrast to the mechanized and standardized ways of working with technology according to the Factory paradigm. The Hypermobility paradigm thus offers an innovative approach to working with technology and an alternative to the increasingly outdated approach of "planning" technology for the Factory paradigm.

4.1.3 Delineating Work/Life: Merging Work and Life

The Hypermobility paradigm rejects the spatial and temporal workplace concentration of the Factory paradigm. Notably, digital nomadism entails an active and explicit rejection of the 9-to-5 workweek and the cubicle in the attempt to gain professional, spatial, and personal freedom (Reichenberger, 2018). The flexibility to work wherever and whenever is central to digital nomadism. The professional and work time of digital nomads is merged and interwoven with their leisure, travel, and personal time. That is, both spatially and temporally, digital nomads separate work and other life activities much less definitively than other workers. This is most striking with travel bloggers and social media influencers, where work and life cannot be distinguished in any meaningful way. Digital nomads typically chose projects and create business opportunities based on interest in the subject matter, thus conflating working for money with pursuing interests. The distinction between professional colleagues and private friends also often collapses, becoming simply networks of individuals who are both friends and business contacts. Digital nomadism is characterized by "life-hacking" and the use of tools to support autonomy, self-management, health, proactivity, and self-actualization (Wang et al., 2018). To-do lists, project overviews, calendars self-management, and the popular "bullet journals" are often organized with no distinction between work/paid projects, "for fun" projects, and other endeavors. There is no distinction between private versus work email, there are no dress codes, and every day is casual Friday. Digital nomads may create several digital identities for different projects, contexts, experiments etc., yet the separation between professional/work versus private/leisure spheres characterizing the Factory paradigm is abandoned as an outdated dichotomy.

4.1.4 Provisioning the Social Safety Net: Hyperaware Interjurisdictional Prospecting

The Hypermobility paradigm is not based on the conventional Fordist bundle. Digital nomadism takes this to the extreme by rejecting the very notion of settling into a particular organization or nation state at all (i.e., rejecting the entities that would traditionally provide the "bundle" of social safety measures). As they roam from place to place, digital nomads' safety net is largely individually created and based on hyperawareness of geopolitical and socioeconomic conditions (e.g., the rights one has with passport X in country Y). This can be called "interjurisdictional prospecting" (Wang et al., 2019, p. 5) for possibilities and opportunities.

The digital nomads' response to COVID-19 pandemic and the lockdowns is illustrative of their attitudes and approaches. A US-American digital nomad couple, "Juliet" and "William," that we previously interviewed (in Finland) were sheltering in place (in Japan) during our second interview about their COVID-19 response:

Juliet: I'll do some research and then I'll put it away for a few days and then take another look ... I like to know the probabilities of where we could go. We're really not going to be able to understand, as US passport holders, what countries will let us in, until maybe two weeks out from our departure. ... But I'm quite comfortable with this idea that we're going to let the times we're in, and the various government policies, dictate where we go next.

William: We're just here to roll with it and see what comes. ... I feel very fortunate that the worst-case scenario for us is that we go to America. It's just a ridiculous thing to say: that our failsafe, that the worst thing that happens to us, is that we end up [back] in America.

The digital nomad couple appears comfortable with the prospect of "rolling with it" and seeing what comes next because their nomadic lifestyle has emotionally and practically prepared them for uncertain circumstances. Some younger digital nomads may be engaged in temporary nomadic adventure travel—akin to a Wanderjahr or gap year (Wang et al., 2018)—and may not necessarily be preparing for a long-term lifestyle. However, many other digital nomads, such as the above couple (in their 50s), are serious about their choice of lifestyle and have considered its implications. They do not find it scary to organize their social safety in a DIY fashion, via hyperaware interjurisdictional prospecting instead of relying on organizations or national safety nets. "Retiring early" and "financial independence" are common concepts in

digital nomadism: one works until sufficient wealth is acquired (e.g., 1 million USD) rather than until retirement age (i.e., 65 years of age). There is no entity responsible for ensuring a digital nomad's retirement.

4.2 Critical Assessment

The Hypermobility paradigm and its digital nomad ideal type present a stark contrast to the Factory paradigm and its 9-to-5 corporate-worker ideal type. This paradigm's approaches to organizing work, working with technology, delineating work/life boundaries, and provisioning the social safety net are different in fundamental ways. The model integrates the possibilities enabled by specialized skills, globalization, travel networks, and the nature of digital knowledge work.

Digital nomadism emphasizes freedom and independence and may, indeed, sound like a dream come true for many. Digital nomads typically express enthusiastic levels of satisfaction with their lifestyle because of the high levels of freedom it offers. Yet such freedom also comes with potentially unintended consequences. The spatial and temporal conflation of leisure and work may negatively impact digital nomads (Nash et al., 2018) and some report feeling "permanently anxious and stressed because their labor productivity is not high enough compar[ed] to the opportunities they have" (Kuzheleva-Sagan & Nosova, 2014, p. 136). This constant tension about how to use one's time is expressed by "Emily":

I've just felt a bit exhausted ... the beauty of this lifestyle is you kind of merge business and pleasure, I'm in another country because I can be, so I want to enjoy that and explore it, but then I have my work to do as well and I need to do that because that's enabling me to be here.

The DIY approach to ensuring a social safety net has obvious risks. Almost overnight, the COVID-19 pandemic has temporarily halted digital nomadism. (In the long term, however, the pandemic may increase the number of digital nomads because of the vast number of organizations and knowledge workers who are now experienced in remote work.) This illustrates a fundamental problem of digital nomadism. When everything goes smoothly, digital nomads do well. However, when unexpected personal or global crises hit—such as wars or conflicts, backlash against globalization, economic downturns, personal or family health issues, or, in this case, a global pandemic—where will digital nomads who are essentially without a home country turn to? Taxation regimes for digital nomads often do not exist, which means that digital nomads may exist in a tax- and insurance-free zone. This poses long-term risks for digital nomads in a world organized for settlers. Nations may be at risk of

losing taxpayers entirely, or, at best, may feel compelled to engage in a global "race to the bottom" in terms of attractive tax rates (as is already happening with corporate taxes). It is uncertain whether a digital nomad's home country will be willing to extend coverage (e.g., pensions, health care costs) should things not go according to plan.

Despite problems and issues with digital nomadism and Hypermobility, it is an innovative and contemporary paradigm specifically suitable for digital knowledge work, and it presents a complete antithesis to the dominant thesis, the Factory paradigm of knowledge work. Digital nomadism certainly offers many elements from which one can learn. Importantly, considerations of the future of knowledge work should take into account the conceptual tensions between the two paradigms and learn lessons from both. Taylorist centralized control is, as discussed in the previous section, increasingly ineffective; however, expecting knowledge workers around the world to immediately switch to emergent organizing seems unrealistic and, for many, an undesired ideal.

A consideration of the future of knowledge work would also need to resolve tensions between approaches to working with technology. Mechanizing and standardizing work processes constrain knowledge workers' ability to innovate yet carry with them an aura of reliability (e.g., ERP or analytics), compared to the deferment to chance implicit in using technology primarily for enabling mobility and serendipity (e.g., social media). Furthermore, a consideration of the future of knowledge work would also need to resolve tensions between approaches to work/life balance. COVID-19 calls into question whether we will continue to rely on office buildings and the 9-to-5 workday but navigating work/life conflation has proven challenging, even for digital nomads actively seeking it. The prospect of all knowledge workers living with no sense of boundary between work and life therefore seems quite daunting. Finally, a consideration of the future of knowledge work would also need to resolve tensions between approaches to provisioning the social safety net. The Fordist bundle is unraveling, yet hyperaware interjurisdictional prospecting involves significant uncertainty and assumes digital literacy skills and levels of passport privilege (in addition to other forms of privilege) that not all knowledge workers have access to.

This dialectical tension has been accelerated by the COVID-19 pandemic. In our assessment, the pandemic will continue to juxtapose and further accelerate the confrontation between the two paradigms. This is largely because "many organizations have shifted to remote-working models almost overnight" (McKinsey & Company, 2020a, p. 2), forcing a "crisis-induced digital transformation" (Bartsch et al., 2020, p. 1). This has made what, in many organizations, was previously

an uncommon or unaccepted way of working (i.e., remote work) a common experience of knowledge workers worldwide. Faced with the dilemma “between stopping production altogether or taking on the health risk of continuing business as usual” (Bartik et al., 2020, p. 2), most organizations very quickly changed their stance on flexible and remote work. While some knowledge workers may accept commutes and restrictions in spatial flexibility and happily return to the office, others might consider whether an ocean view villa in Bali would be an acceptable replacement for the “work-from-home bedroom office” of 2020. Organizations will begin to consider whether the cost of downtown real estate is justified given that a knowledge worker in a low-cost environment (e.g., Thailand, remote) may be willing (and able) to work for a lower salary compared to one in a high-cost environment (e.g., Bay Area, in office).

The sudden turn of events surrounding COVID-19 certainly gives urgency to the question of what the digital future of knowledge work will look like. In light of the events of 2020, will analysts, traders, writers, admins, developers, accountants etc. go back to the “factory”? Will they become location-independent freelance nomads? Or will there be a third, different model of knowledge work that emerges? The future of knowledge work (and of most other things) is indeterminate yet it is not arbitrary. Hence, drawing from the tendencies and trajectories discussed, we envision the spectrum of possible scenarios for the digital futures of knowledge work as plausible syntheses and resolutions of the dialectic tensions between the above paradigms.

5 Synthesis: The Digital Future(s) of Knowledge Work

There are a number of possible paths that the future of knowledge work can take, emerging from the catalyzing effect of the digital transformation of work during the unprecedented COVID-19 pandemic. We focus on outlining two extreme forms of what is possibly to come, partly inspired by the dichotomy of McGregor’s Theory X and Theory Y (McGregor, 1960). To envisage and, at the same time, provide grounded conjectures about such possible futures, we draw from the dialectic tensions between the Factory paradigm and Hypermobility/digital nomadism, as well as some current trends, indicators, and tensions that have already emerged in the course of the COVID-19 pandemic. Of course, the eventual historically actualized future may fall somewhere between the two extremes (or unexpected developments may open new trajectories).

5.1 The Digital Taylorism Paradigm

The future shaped by the Digital Taylorism paradigm and its “cyborg” ideal type is one extreme on the spectrum of possible digital futures of knowledge work. Digital Taylorism is a version of digitally driven, optimized-for-efficiency work that, in principle, adheres to Taylorism; however, it redesigns work by drawing on the technology-enabled efficiency potential (rather than poorly adopting it, as the factory model does). That is, the control and ownership structures of the Factory paradigm embrace the concepts associated with digital work and “life-hacking,” impose tight time-management on knowledge work, and do away with the physical office and inefficient commutes (like the Hypermobility paradigm).

5.1.1 Organizing Work: Machine-Controlled Work Arrangements

Organizing work in this future paradigm is based on the argument that the ineffectiveness of conventional Taylorism can be overcome using digital technologies. That is, big data, people analytics, artificial intelligence (AI), and deep learning are central to Digital Taylorism (Holford, 2020). Compared to the Hypermobility paradigm, the approach to organizing work in this future will be “emergent” in a different sense—it will be emergent only insofar as directives emerge from algorithms and deep-learning neural networks processing huge datasets. In this future, machines will control the work of both machines and human workers in business processes that are automated as much as technically and economically possible. The majority of companies have already been implementing some form of task, decision-making, and conversation automation (McKinsey & Company, 2020b). Machine-controlled work arrangements based on big data and machine learning have increasingly arisen during the COVID-19 pandemic (Whitelaw et al., 2020; Lalmuanawma, Hussain, & Chhakchhuak, 2020). Examples include AI-informed disaster-responses to COVID-19 (Dwivedi et al., 2020), deep learning for medical triage (Liang et al., 2020), and a (somewhat) AI-written op-ed published in *The Guardian* (The Guardian, 2020). In the Digital Taylorism future, machine-controlled work arrangements will match people with tasks and clients based on performance data and considering fitness, age, learning ability, machine-defined KPIs, and “stretch goals.” Algorithms will “direct workers by restricting and recommending, evaluate workers by recording and rating and discipline workers by replacing and rewarding” (Kellogg, Valentine, & Christin, 2020, p. 366). In Digital Taylorism, work arrangements will be based on dynamically recalibrating machine managers, which will be based on AI and deep learning to optimize human knowledge work toward maximum efficiency. Humans, including owners, may not be able to audit or comprehend the machine decisions, yet many will

accept and welcome such decisions because the machine will be automatically optimized toward achieving predefined goals. This departs from traditional Taylorism, which relies on human managers, direct social control, and fixed bureaucratic structures.

5.1.2 Working with Technology: Cyborgizing Knowledge Work

In this future, under the paradigm of Digital Taylorism, the approach to working with technology will transpose the mechanization and standardization from the Factory paradigm onto the digital technologies (online platforms, digital tools etc.) of the Hypermobility paradigm. As a result, workers will become “cyborgs,” i.e., “theorized and fabricated hybrids of machine and organism” (Haraway, 1987, p. 2). The Digital Taylorism paradigm’s ideal type of cyborg is a human worker who is functionally entwined with the machine and unable to perform work optimally without the machine’s support. This trend has been outlined as “heteromation” (Ekbja & Nardi, 2014; Ekbja & Nardi, 2017). During COVID-19, heteromated cyborg work has accelerated, as individuals’ cost/benefit analysis (and hence acceptance) of interacting with a machine instead of a human has shifted: “before COVID-19, people said they would prefer a human element to their interactions ... COVID-19 may start to change consumer preferences, as human contact has become a risky activity that may be harmful to people’s health” (Coombs, 2020, p. 2). In this future of Digital Taylorism, cyborgized knowledge work will be about the substitution or augmentation of the human mind with the robotic mind. This can already be seen in nascent examples such as algorithmic journalism (Dörr, 2015) and predictive policing (Meijer & Wessels, 2019). Furthermore, physical artifacts, such as the brain-implant chip of Elon Musk’s Neuralink company (Pisarchik, Maksimenko, & Hramov, 2019), may be predecessors to the future cyborgization of knowledge work. The aim is to optimize human knowledge workers in order to receive the maximum output from human resources and to remain competitive in fully digital, transparent, global markets.

5.1.3 Delineating Work/Life Boundaries: Prioritizing Work Above Personal Life

In this future, the approach to delineating work/life boundaries combines the Factory paradigm’s demand for workers’ full attention during work hours with the Hypermobility paradigm’s work/life conflation. In the extreme, to be selected for highly competitive jobs workers must be willing to work at any and all hours (within biological and health limitations). How much a knowledge worker is willing to work will be part of their job negotiation: a disadvantage in cognitive capacity could thus be made up by a willingness to work longer

and harder. The examples given above of overworked commercial bankers and *karoshi* existed before the mass proliferation of digital technologies (brokers, consultants, professors, etc. often work vastly more than the 35-40 hour ideal because of intense competition); however, digital technologies are currently exacerbating this phenomenon through a vicious cycle that enables greater efficiency and intrusion of work into other aspects of life, fueling a “Silicon Valley” culture of living life “at 2x (double) speed” (Wajcman 2019, p. 316). This has prompted the design of digital technologies with values inscribed in them capable of minimizing sleep or microdosing stimulants or psychedelics (for work, not recreation), depending on the workday ahead. Digital Taylorism fully digitalizes, automates (e.g., hire/fire decisions), and exploits the inherent gamification and competitiveness of a “perfect,” “free” labor market.

For workers, the result of iterating through this cycle will likely manifest as a 9-to-9 instead of a 9-to-5 workday for six instead of five days per week (i.e. “996”), culminating in a 72- rather than 40-hour workweek. This is already the standard in the IT sector in rapidly modernizing economies such as China (Zhang et al., 2020). As Jack Ma, founder of tech giant Alibaba, states:

I personally think that working “996” is a huge blessing ... Without exceeding the efforts and hours of your peers, how can you expect to achieve superior results? ... If you want to join Alibaba, you better be prepared to work 12 hours a day, otherwise what is the point of hiring you? There is no shortage of workers who spend 8 hours a day sitting comfortably at an office desk, eating lunch every day in the company cafeteria and being admired. One can hire someone like that off the street. (cited in Liang 2019, p. 1).

During the COVID-19 pandemic, it was found that the average knowledge worker in North America and Europe worked 8% more hours per day (DeFilippis et al., 2020), supporting the contention that remote workers tend to work longer hours (Felstead & Henseke, 2017). In China, the lived experience of the “996 in the office” is now “996 in your living room”; it has not changed the reality of “KPIs heavier than a mountain” (Liu 2020, p. 1). In this future shaped by the Digital Taylorism paradigm and its cyborg ideal type, it is expected that such prioritization of work above the personal and social life of knowledge workers will become the norm. Given the improvements in AI and analytics over recent years, coupled with the anticipated post-COVID-19 economic downturn, it may become necessary to “sweat the assets” using digital means to stay afloat, and knowledge workers may be compelled to accept tougher conditions in exchange for a decent paycheck.

5.1.4 Provisioning the Social Safety Net: Normalizing the Gig Economy

The collapse of the Fordist bundle means that, in Digital Taylorism, everyone must provision their own safety nets through an acceptance of “rolling with it” and seeing what comes next (as described above). However, for many knowledge workers in this future, this does not mean interjurisdictional prospecting but rather prospecting for opportunities, such as looking for work in the gig economy, given fewer and increasingly competitive full-time work opportunities. Gig economy workers are among the most economically vulnerable of all workers, as has been demonstrated during the COVID-19 pandemic (Whyte, 2020; Fredman et al., 2020). Nevertheless, there has been strong pressure on many workers, including knowledge workers, to turn to smaller freelance projects, or gig jobs, to “continue their hustle just to meet basic needs,” including healthcare (Chohan, 2020, p. 8). The Digital Taylorism paradigm and its cyborg ideal type leverage gig-based hiring rather than traditional employment to provide frictionless scalability (up or down), market-based pricing, and full automatic control over a “global on-demand workforce” (Altenried, 2020, p. 145). This is very cost efficient. For any digital worker who might calculate healthcare, pension/retirement, and high housing costs into their asking price, there is always a just-as-good alternative digital worker living in a low-cost area who is willing to take none of these costs into account. The latter worker will be hired by a hiring AI in nanoseconds, and all the AI’s owner has to do is pay the new digital worker. While digital nomads may have thus far been able to make use of global arbitrage, the corporate AI will be able to do so as well. Healthcare and retirement funding is not the AI’s problem to solve; this is to be handled by the “independent contractor.” Since all “employees” have now been replaced with such contractors, this problem is of no concern to the AI decision maker, who will certainly suffer no sleepless nights over decisions made.

5.2 The Worker Autonomy Paradigm

We envision a different future in the Worker Autonomy paradigm, featuring a *knowmad* ideal type of knowledge worker (a knowmad has the flexibility and work attitude of the digital nomad but not necessarily the globe-trotting lifestyle). Here, the forward trajectory and historical synthesis of the thesis and the antithesis play out vastly differently from Digital Taylorism.

5.2.1 Organizing Work: Democratizing Decision-Making

In this future, COVID-19 accelerates the trend toward an approach to organizing work that addresses the

shortcomings of the Factory paradigm’s centralized control through a cultural shift in organizing and leadership. Specifically, leadership moves toward cultivating the kind of emergent organizing exemplified in the Hypermobility paradigm by empowering workers to make their own decisions rather than imposing preconceived decisions and bureaucratic structures upon them. Decisions are made in a fluid and engaging way—through design thinking, creative brainstorming, and democratizing decision-making instead of imposing control and force. This trend toward democratized decision-making and improving worker welfare, attracting and retaining workers, and increasing engagement has been a visible trend, not least of all in the ICT sector. Focusing on the intrinsic motivations and the desire for self-determination (Deci & Ryan, 2000; Deci & Ryan, 1980), the evidence has repeatedly shown that letting go of control and empowering workers is efficient and successful, particularly for knowledge workers (Pink, 2009; Gambardella, Khashabi, & Panico, 2020; Ariely et al., 2005). It represents a fundamental shift in the mindset of many organizations regarding control. For an analogy, the bazaar model of open source software (OSS) development (Raymond, 1999) initially greatly irritated technology companies following the cathedral model of proprietary development (e.g., Microsoft), yet companies did, in some cases, switch to the OSS paradigm (e.g., IBM endorsing Linux, not without having lost substantial time and money on proprietary operating system developments following the old paradigm; Microsoft is now following suit). Karl Weick’s work has also shown that commitment to mutual respect, trust, diversity, loose coupling (i.e., accounting for the possibility that information is not complete), and attentive communication and sincere interrelating lead to successful collective action (Eisenberg, 1990; Weick, 2009; Weick & Roberts, 1993). Self-organization— from the 2019 Greta Thunberg climate change movement to many cases of COVID-19 collective actions (Mirbabaie et al., 2020)— illustrate that modern, successful leadership that is about “influencing” and trusting (instead of “measuring and controlling”). Being able to shape but not determine trajectories might be more suitable for modern knowledge work than a leader-servant or principal-agent (control, functional) idea of managing and leading collectives of knowledge workers.

5.2.2 Working with Technology: Proliferating Human Creativity

In this future, shaped by the Worker Autonomy paradigm, the approach to working with technology will be aimed toward the empowerment of human innovations and human creativity (quite the opposite of cyborgization or heteromation). The use of some automated systems (e.g., big data, analytics, AI, algorithms, and deep learning) will still feature in this

future; however, only in so far as they support human creative capacities, leaving humans responsible and in control of algorithmic automation and including the option not to use algorithms. This approach addresses the fundamentally problematic lack of transparency (or often intelligibility) of automated systems (Gal et al., 2020) as well as their short-circuiting of human-based learning pathways for tacit knowledge (Riemer & Peter, 2020), their exclusion of contextual specificities (Hadjimichael & Tsoukas, 2019), and their tendency toward “algorithmic pollution” (Marjanovic, Cecez-Kecmanovic, & Vidgen, 2018). As of the time of writing, technological solutions (such as AI or the various tracking apps) have contributed little to combatting the COVID-19 pandemic (Rowe, Ngwenyama, & Richet, 2020) and have primarily attracted attention because of their efficient capacity to algorithmically spread misinformation on social media (Depoux et al. 2020). While technology may be useful for narrowly defined, simpler tasks, trust in human ability and creativity have and will beat automated knowledge work. In the Worker Autonomy paradigm, knowledge workers are treated as independent, responsible professionals, in charge of which technology they want to use for which purposes.

In this future, based on the COVID-19 digital transformation of work, telehealth may continue to be used, but will always be based on the needs and wishes of medical providers and patients (Smith et al. 2020; Zhou et al. 2020b), rather than on AI-based advice (Strickland, 2019, p. 1). Lectures in schools and universities may be remote and may employ a variety of technologies (Zhou et al., 2020a), but will principally feature real teachers and professors rather than AI-based “intelligent tutor[s]” (Selwyn, 2019, p. 67) or AI-based grading (Chin, 2020). In this future, technology will be used when it supports the human spirit in “creative appropriation” (Feenberg, 2005)—for example, by rapidly circulating advice on how to make hand sanitizer or face shields to the masses via social media (Cohen & Cromwell, 2020). The common thread, and fundamental part of the Worker Autonomy paradigm, is that technology is subordinate to human experience, creative thinking, and tacit knowledge. It is widely recognized that technology either cannot replace human professional knowledge workers or, in the few cases where this may be possible, human workers are still necessary to exercise ethical judgment and apply value principles, thus preventing dependence on technology that may be prone to making mediocre decisions that cannot be audited, understood, or corrected in the future.

5.2.3 Delineating Work/Life Boundaries: Planning for Fluidity

In the Worker Autonomy paradigm, the approach to delineating the boundaries of work/life is flexible and can respond to change. Like the approach seen in the future shaped by Digital Taylorism, this approach

implies workers’ attention outside of the Factory paradigm’s 9-to-5 workday. However, here, the intrusion into evenings and weekends is not enforced by emails and KPIs; rather, the knowmad empowered by professional autonomy, is responsible for organizing his or her own work schedule (Prester, Cecez-Kecmanovic, & Schlagwein, 2019a). Management is fundamentally about personal skills in organizing knowledge work, personal time management, and other techniques—as exemplified by digital nomads’ self-managing responsibilities and knowledge work (Wang et al., 2018), according to individual experiences, personality and personal needs, and the totality of professional and private tasks at hand. There is no micromanagement or leadership via surveillance and control. The mindset is one of fluidity (Mol & Law, 1994; Kakihara & Sorensen, 2002), in which “boundaries come and go, allow leakage or disappear altogether, while relations transform themselves without fracture” (Mol & Law, 1994, p. 643). COVID-19 has demonstrated that work can be performed, often much more effectively, if planning is left to individual workers based on their localized circumstances.

The lockdown conditions, have, by accident, demonstrated widely that knowledge workers may perform perfectly well in fluid and flexible arrangements. As discussed above, in the context of working from their bedrooms or patios, workers homeschooling their children (Li, Ghosh, & Nachmias, 2020), running errands and shopping (Richards & Rickard, 2020; Paul & Chowdhury, 2020), and managing health (Usher, Durkin, & Bhullar, 2020) during “work hours” has actually positively impacted overall performance. Many knowledge workers feel they can perform work duties more efficiently away from the office and, in general, find this more flexible, fluid organization of work/life to be less stressful. Time for family, health, and other private matters is simply allocated to the most suitable and logical time periods, as is work time. Working out at the gym or going shopping outside of peak times may not only result in knowledge workers who are less stressed but also in workers who might just free up that extra hour for work at a better time. While knowledge workers, as a whole, have increased their work hours during the COVID-19 pandemic, knowledge workers may eventually be able to leverage the efficiencies associated with working remotely to reduce the number of hours they work. Indeed, research suggests that 5-hour workdays produce results at least equal to 8-hour workdays and that 4-day workweeks may be more effective than 5-day workweeks for knowledge workers (Foster, 2020). The Factory paradigm has forced people to live close to work. In the Worker Autonomy paradigm, this is replaced with spatial flexibility. Instead of commuting in rush-hour traffic to a downtown corporate cubicle, workers will likely be happier,

healthier, and more productive if they are allowed to choose own work space/time (this could mean redesigning city homes, moving to green countrysides, working in local coworking spaces, or, yes, even engaging in digital nomadism) (Terzon, 2020). This fluid work model will allow workers to merge professional and private responsibilities and goals in a seamless manner. For organizations, it will improve productivity and worker retention; it will also decrease urban density, property prices, traffic, and pollution, thus benefiting everyone in society. At the time of writing, a number of organizations have indicated that knowledge workers will be allowed to continue working from home, if so desired, even after the COVID-19 pandemic resolves.

5.2.4 Provisioning the Social Safety Net: Upskilling Toward Lifelong Learning

In the future of the Worker Autonomy paradigm, there will be a recognition that the increasing breakdown of the Fordist bundle means that people must provision their own safety nets. While this implies the same overall objective as in the Digital Taylorism paradigm, the path toward achieving this objective is different in this case. Instead of constructing a safety net based on short-term gigs and projects, the approach here will be to construct a safety net based on ongoing upskilling, working toward lifelong learning, and striving toward upward career progression, whether as employees or freelancers. John Moravec articulates this ideal of the future knowledge worker as an empowered knowmad:

Of particular importance is the emerging class of borderless, “new” workers; or, as I like to call them, knowmads. [A knowmad is] a nomadic knowledge worker—that is, a creative, imaginative and innovative person who can work with almost anybody, anytime and anywhere. Industrial society is giving way to knowledge and innovation work ... in the knowledge society into which we are moving, individuals are central. Knowledge is not impersonal, like money. Knowledge does not reside in a book, a databank, a software program; they contain only information. Knowledge is always embodied in a person, carried by a person; created, augmented, or improved by a person; applied by a person; taught by a person and passed on by a person. The shift to the knowledge society therefore puts the person in the center. (Moravec 2013, pp. 79-80)

Moravec identifies COVID-19 as a turning point in rethinking the relationship between education and work (Moravec 2020). The future of work, including the feared replacement or transformation of jobs through robotics, AI, automation, etc., increasingly affects white-collar knowledge workers rather than only blue-collar workers,

as in previous waves of automation. The trend toward upskilling and lifelong learning—as opposed to the idea of a one-off degree that ensures a conventional career path—has certainly accelerated during the COVID-19 pandemic. Governments have started providing funding for the reskilling and upskilling of workers in recognition of the digitalization of work and the resulting changed and increased skill requirements (Duffy, 2020). While organizations and governments may be more willing to provide at least some social security benefits in a world that settles on a Worker Autonomy paradigm of work (as opposed to a world that accepts Digital Taylorism), the onus will still be on the individual to provide their own social safety nets. In particular, a mindset of personal growth, self-reliance, upskilling, and lifelong learning may be foundational to empower knowledge workers both intellectually and economically.

6 Discussion and Outlook

There is very little doubt that the future of knowledge work is digital and that the COVID-19 pandemic has fast-tracked the digital transformation of work. But how will digital knowledge work be organized in the future? In our argument—using dialectical reasoning, contrasting a corporate work/Factory paradigm (as the thesis) with a digital nomadism/Hypermobility paradigm (as the antithesis), and forward-thinking current trends accelerated by COVID-19—we envisioned two futures of digital knowledge work. They are both extreme yet plausible scenarios that each extrapolate certain aspects of the existing paradigms. In the first future vision, the Digital Taylorism paradigm brings with it a cyborgized nature of knowledge work in which digital technology decomposes, measures, and optimizes work toward maximum efficiency. In the second future vision, the Worker Autonomy paradigm empowers knowmad workers that engage in fluid work arrangements and take charge of technology, their education, and their life trajectories. Table 1 summarizes the two existing and the two envisioned paradigms side by side, summarizing Sections 2-5 above.

The future may look different in different locales, for different industries, or at different times. The purpose of envisioning extremes of possible futures—instead of presenting a median prediction of a single future—is to emphasize that different futures are conceptually and practically possible. Which future we will ultimately find ourselves in—likely a hybrid of the two extremes—depends on our collective aspirations and actions going forward.

Some elements that are bringing the future about, such as the COVID-19 pandemic, are largely out of our control. However, for the most part, the human collective is in charge of creating the digital future of knowledge work and choosing the world in which we would like to live. Technologies can be rolled out and discarded, market rules can be changed; the agency is with us.

Table 1. Comparison of Thesis, Antithesis, and Synthesis

	Thesis	Antithesis	Synthesis	
Paradigm	Factory paradigm	Hypermobility paradigm	Digital Taylorism paradigm	Worker Autonomy paradigm
Ideal type	9-to-5 corporate worker	Digital nomad	Cyborg	Knowmad
Organizing work	Taylorist centralized control	Emergent organizing	Machine-controlled work arrangements	Democratizing decision-making
Working with technology	Mechanizing and standardizing	Mobility and serendipity	Cyborgizing knowledge work	Proliferating human creativity
Delineating work/life	Workplace concentration	Merging work and life	Prioritizing work above personal life	Planning for fluidity
Provisioning the social safety net	Institutionalizing the Fordist bundle	Hyperaware interjurisdictional prospecting	Normalizing the gig economy	Upskilling and lifelong learning

The future shaped by the Digital Taylorism paradigm may seem dystopian, at least from the knowledge workers' perspective (perhaps not from the owners'/shareholders' perspective). The machine-controlled work arrangements and cyborgizing of knowledge work that Digital Taylorism supports could certainly deliver some impressive gains in efficiency in the short-term future (which would also benefit workers in their role as consumers, of course). Arguably, the first manifestations can already be seen in how work is organized for Uber drivers or Amazon warehouse workers. Modern free-market economies, through inherent, competitive market logic, force a constant push toward efficiency. Although some organizations may not wish to push for longer work hours to increase productivity, their competition in the global market will not likely be constrained by such concerns. Digital Taylorism is already becoming entrenched because of existing Taylorism-inspired social beliefs and values (Holford, 2019). As automation increasingly takes over standard knowledge tasks, human creativity and judgment will be stifled and truncated, creating potential long-term risks (Brown & Lauder, 2010; Holford, 2020).

The future shaped by the Worker Autonomy paradigm and knowmads may seem more utopian (from the knowledge workers' perspective). There are nascent examples of how this work might look, including remote working arrangements, digital upskilling efforts, and digital nomads as reference points. Here, much concerted action will be required; as this future must be *made*, it is unlikely to be actualized "on autopilot." For example, countries could legally restrict working hours of knowledge workers, prevent classifying independent contractors as such, or outlaw workplace surveillance. These are political decisions; the market will not push for such changes. The long-term prospects may be better for workers, but potentially also organizations and society overall (as

indicated above, at least some studies suggest workers may be more efficient if "sweated" less; also, workers may have fewer health problems because of less stress, less traffic, and more time recreation; a time-poor worker may consume less, etc.)

There are a number of predicted COVID-19 impacts on this trajectory. First, knowledge work has become digital work and location-independent work in the wake of the COVID-19 pandemic. Remote workers in the past have been seen as the odd ones out, isolated and disconnected from fellow workers if accepted at all (Boell, Cecez-Kecmanovic, & Campbell, 2016; Gajendran & Harrison, 2007; Pyöriä, 2011). In the post-COVID-19 world, remote digital work will likely become much more common and widely accepted by both workers and organizations. As there seems to be both economic efficiencies as well as lifestyle benefits associated with remote work, the change to a substantial share of remote knowledge workers may be rapid. Second, there will be widespread shifts in mindset and how "work" is fundamentally viewed. The lockdowns have visibly displaced a deeply entrenched taken-for-granted way of working that is grounded in the Factory paradigm of knowledge work. This will pave the way for a new future of knowledge work, with much cultural and cognitive inertia (the technology has been around for years) having been shattered and removed by COVID-19.

Third, the forced slowdown of society during the 2020 lockdowns was felt by many to be a relief from the constant forward pressure (for those not having to confront a lack of personal wealth and inadequate social safety nets in an economic slowdown). Many more knowledge workers may now be open to explore ways of working beyond corporate models. Digital nomads have succeeded in creating an alternative paradigm of knowledge work that focuses on the lived experience of the worker, not on the technical

requirements of efficiency. We anticipate that these and other niche models of work are now being considered by a vastly larger number of knowledge workers than before COVID-19. Finally, as with other major events, weak organizations will fail and upstarts will take the market share in the recovery. That is, COVID-19 will likely accelerate economies in the midterm (as did even more vastly devastating events such as WW2). Several organizations have certainly benefited from the problems of others (e.g., streaming services instead of cinemas etc.). Disruptions trigger changes.

The envisioning of possible futures of digital knowledge work calls IS researchers to action. The IS research community has a privileged opportunity to contribute insights that could draw attention to and warn of the potential perils of Digital Taylorism for quality of life and help articulate the opportunities and tangible steps that can be taken to empower Worker Autonomy (we assume most readers agree with our preferred choice of future). The challenge for IS researchers will be to frame problems, conduct research, and communicate findings that demonstrate the power of IS to engender cultural, organizational, and societal changes toward the preferred future—such as toward democratizing decision-making, supporting human creativity, enabling fluid and flexible work arrangements, and supporting the upskilling of the population. Shaping the digital future of knowledge work is not an analytical and explanatory endeavor; rather, it is a forward-looking, value-sensitive, and normative one.

With this call in mind, in this editorial, we hope to stimulate a conversation about the future of digital knowledge work and the possibilities (and threats)

created by the COVID-19 disruptions. To enable such a conversation, we have endeavored to open up horizons for those advocating pure efficiency and Digital Taylorism as the only viable future and those looking for alternative ways of working and leveraging digital technology for richer human lives. The more we expand our horizons, the more we will be able to engage in conversations with the possible work futures and with each other, in our local organizations and across organizations, in our communities and in society at large. By suggesting a vocabulary for such a conversation, including showing vast differences in how the future might play out, we hope to assist in addressing bigger and deeper questions about the nature and meaning of digital knowledge work that are of critical importance for confronting possible futures and acting responsibly.

Overall, we believe that COVID-19 has brought us to a critical juncture in the history of knowledge work. COVID-19 has catalyzed change toward vastly different futures—Digital Taylorism versus Worker Autonomy. Which of the two future visions will become a reality has not yet been decided. Aware of the possibilities, we have an opportunity to exercise our human agency and work toward the future that best serves the interests of workers, organizations, and societies worldwide.

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