

The Indefatigable Worker: From Factory Floor to Zoom Avatar

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Abstract

This contribution coins the term *indefatigable worker* as a lens to examine the concerted efforts by state and capital forces, since the early 20th century, to devise methods aimed to reduce mental and physical fatigue among the workforce in order to guarantee the productivity and economic health of the nation. Different interventions have targeted the worker's body from the early 20th century factory labourer to the more fragmented workforce under neoliberal capitalism and finally to the locked-down Covid-19 Zoom participant. Interestingly, each intervention was triggered by the onset of one global economic crisis or the other but cloaked in the benevolent garb of workers' welfare. Ostensibly putting the well-being of the worker at the heart of this seemingly technical, ideology-free regime aims to make it difficult for workers to resist attempts to help them cope with fatigue and to challenge the conditions which cause their physical and mental stress in the first place.

Keywords

Social Control, Labour, Zoom fatigue, Mindfulness, Indefatigable, AI, Productive body

Introduction

With millions of people confined indoors since the outbreak of Covid-19, technology has increasingly been replacing all forms of human contact from leisure to shopping and from teaching to medical consultation as well as all types of office work. Indeed, Naomi Klein (2020) recently commented that use of technology has become the only means to secure a 'pandemic-proof' form of existence. With Covid-19, the world has seen an expansion in the use of technology, Artificial Intelligence (AI) in particular, in multiple areas including diagnostics, surveillance and social control. Now that office workers, teachers and medical personnel are required to spend increasingly large parts of their lengthening workdays on Zoom and other video conferencing meetings, new forms of AI are being developed to relieve the millions of workers suffering from the growing problem of 'Zoom fatigue' and associated symptoms of physical and mental stress which affect both their well-being and productivity. Major tech companies as well as small start-ups are now offering a range of technologies to deal with these problems. Recently, Affectiva's CEO El

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Kaliouby (2020) spoke of efforts to create an ‘emotionally-enabled digital world’ where traditionally emotionally blind technology could be taught to communicate ‘non-verbal expressions of excitement, curiosity and sadness. . .’ by gathering metrics on the emotional engagement of the attendees and reflecting them in graphs that would show people’s enthusiasm or disengagement. In another example, LoomieLive, is an app that develops 3D avatars using the individual’s voice to reproduce body gestures on screen without the emotional strain of having to be constantly visually present. AI is becoming crucial for the well-being of workers to survive the massive psychological and economic crisis caused by the pandemic.

However, this dream of a ‘body without fatigue’ (Rabinbach, 1992) and the project of creating what I call an ‘indefatigable worker’ on whose physical and mental energy the nation’s productivity and economic vitality hinges, is nothing new. Fatigue, which becomes relevant to capital and the state only when it concerns the worker’s productivity, has long been understood as the reduced capacity to work with the resultant declining output of labor (Blayney, 2017). Finding scientific tools not only to understand, measure and quantify fatigue, but to reduce it as much as possible in order to optimise productivity, has been an ever-evolving project since the turn of the 20th century. Different interventions have targeted the worker’s body, which has been defined either solely by its physiological functions or more holistically by a combination of its physical and mental capacities, from the early 20th century factory labourer to the more diffuse workforce under neoliberal capitalism and finally to the locked-down Covid-19 Zoom participant. Interestingly, each intervention has been triggered by the onset of one global economic crisis or another but cloaked in the benevolent garb of workers’ welfare. Equally compelling about this project of social control and management has been its vision of a generic, ahistorical worker’s body, one where gender, sexuality and race play no part in the experience of work or in the process of production.

This article critically follows the historical development of these interventions that form part of a larger project which aims, in the words of Francois Guery and Didier Deleule in their influential book on the management of the worker’s productive body, to ‘scour. . . away’ its unmanageable subjectivity and ‘replac[e]. . . it with the marvellous intelligibility of finely-tuned gears’ (2014: 99).¹ From the Mosso Ergograph, job psychographs and Taylor’s scientific labour management techniques to mindfulness and happiness apps, AI facial recognition technology and tracking devices, and most recently Zoom avatars, the article shows how a regime of ordering and surveillance has come to dominate labour–capital relations for over a century punctured by two world wars, a series of global financial crises and a pandemic. Despite these concerted efforts to control the body of the worker and to remove its resistance to mechanisms of surveillance, history shows that labor has never ceased to counter-act or to retaliate against even the most extreme forms of control including those found in the latest stage of ‘surveillance capitalism’.

Capitalism and the Fashioning of the Indefatigable Body

A capitalist system, like all systems which preceded it, has had to fashion a particular type of body – or several – that would best serve its interests and facilitate its reproduction. None has been more central to capitalism than the body of the worker, for labour is a key resource on whose vitality the process of surplus production and the accumulation of wealth depends. This vitality, however, is necessarily, and paradoxically, threatened by none other than capital itself, which Marx described as dead labour, and its ‘vampire-like’ need to suck the blood of living labor (Marx, 1990). Capital owners have traditionally increased their profit by squeezing as much production from this body by different means: stretching the working day, introducing the shift system and through a myriad other acts of ‘small thefts’ and ‘petty pilfering of minutes’. Shapiro (2008) points out how Marx predicted that capital could end up killing the very human it needs for its own survival. This

danger, however, had not escaped the attention of capital owners who eventually, but not without much resistance, acknowledged that more sophisticated means of increasing workers' productivity were necessary. A whole system, complete with experts, surveillance techniques, management regimes and training and testing has, therefore, been set up to create an ideally 'indefatigable' worker who is capable of working relentlessly and performing optimally. This new regime has had one objective, to use the words of Guery and Deleule, to transform the living machine of labour into a *dead machine*, one 'without problems, without qualms, and above all without wasting time' (2014: 112, italics added for emphasis).

The production of the indefatigable worker has required the expertise and scientific knowledge of generations of experts from a whole range of specialisations who have worked on exploring the limits of the human body as a productive machine (Harvey, 2000). These experts have drawn on the latest technologies in their fields to render the worker's body more explicable, more predictable and hence, more 'efficient, recognisable, and, therefore, manageable' (Guery and Deleule, 2014: 30). In fact, engineers, physicists, economists, psychologists and management experts, among many others, have emerged as a new class of mediators who have positioned themselves between capital owners and workers. In many ways, these mediators have come to present themselves and to be seen by many, instead of the workers, as the actual generators of profit (Guery and Deleule, 2014).

Among this ever-rising sea of scientific knowledge, the discipline of psychology in particular, has carved a central place for itself in the process. Unlike experts from other disciplines who could offer technical and scientific knowledge to lend legitimacy to new systems of production and management, psychology has gone further to offer expertise, which is also based on ethical authority. The role of psychology in capitalist society has been acknowledged by many. By paraphrasing Stalin's remarks about writers when describing psychologists as 'engineers of the human soul', Rose (1992) argues that the social role of psychology is not simply a reflection of its application to different fields, such as industrial production for instance, but to create a framework which offers intellectual technologies and tools of management and control. The 'generosity' of psychology in its capacity to lend itself to others to use it as they see fit, is the main attribute which confers psychology with such power (Rose, 1992). Similarly, Pupavac (2001) contends that psychology, though not individual psychologists, is characterised by a functionalism, which is more than the sum of its individual initiatives, that is coercive and disciplinary. Perhaps, the best way to understand the relationship between psychology and capitalism, however, is through the more nuanced lens of Guery and Deleule (2014: 114) who see it not as a simple ideological reflection of the capitalist mode of production, or as its servant, but as a more subtle companion which:

patiently follows the twists and turns of a grand historical project. . It accompanies it, up holds it, distinguishes itself from it, and returns to it. It is always *there*, a seemingly indispensable gear in the social machinery, always performing its intervention quietly but all the more effectively. (italics in original)

Besides technical expertise, the efficient management of the worker's body to render it more predictable and enduring necessitates a particular order of testing and quantification. Knowledge about the human body, its limitations and its potentials and how to make it adapt to particular contexts has been an ever-expanding field and endeavour since the end of the 19th century. Biological organology, ergonomics, AI and neurosciences have relied on measurement techniques to test and manipulate the body to achieve optimal productivity. The test, according to Foucault (1977), has transformed the subject of examination into a whole field of knowledge – knowledge which is inextricably linked to an exercise of power and control.

Fatigue in the Factory

Concerns about capitalists' untrammelled exploitation of labour and the dangerous effects that exhausting these living machines could have on productivity and profit led to the introduction of a series of factory reforms starting in the middle of the 19th century. The state in Britain and other industrialised nations intervened, on behalf of the capitalist classes, in order to limit the excessive degradation of labour. To reduce repeated illness and increased fatigue, factory working conditions were redrawn and efforts to protect workers' bodies were made into law, such as the prohibition of child labour, limiting the length of the working day and introducing rest periods. The end of the 19th century already began to witness technological strides in studying fatigue and human effort including the use of the Mosso Ergograph and the Dynamometer designed to test muscle performance, the disc dotting machine and the Hipp Chronoscope, while the famous time and motion research by Taylor marked a new era of scientific management of the factory in the early 20th century.

It took a major world crisis, however, to focus the minds of scientists and politicians on the question of industrial fatigue and how to reduce its mental and physiological manifestation in the working population. World War I saw Britain and other European nations struggle with the need to increase profit and productivity at a time when their workforces were exhausted by chronic fatigue leading to absenteeism and increased accident rates. Fatigue soon established itself as a major medical and social problem, which saw a concerted effort to coordinate a response plan among numerous institutions which, in the case of Britain, included the Health and Munitions Workers Committee set up to advise on questions of industrial fatigue (Blayney, 2017), the Industrial Fatigue Research Board, the British Association for the Advancement of Science and its committee on fatigue, the Industrial Health Research Board, the Royal Society for the Prevention of Accidents and the National Institute of Industrial Psychology. The tireless work of these bodies brought together groups of scientists, statisticians, psychologists, physicians and physicists whose sole aim was to manipulate the work process and environment in the pursuit of an indefatigably productive body.

The factory was at the heart of a rising, broad-based health movement which aimed to promote mental and physical vigour while stressing the interaction of the mind and body (Long, 2011). Interventions in the factory were largely guided by the question of whether the worker could adapt to the environment or whether the environment needed to be adapted to worker's particular needs (Long, 2011). A combination of both approaches was employed. On one hand, the work environment was manipulated to the smallest detail to provide the optimal conditions for the worker to produce. Through meticulous surveillance and control of the factory environment, experts were confident in their ability to measure the extent of declining work performance and to scientifically produce the conditions for maximum productivity (Blayney, 2017). Examples of this approach included the use of ergonomics, organology,² finding the optimal degree of lighting, heating and ventilation in the plant and dividing work around rest and start routines. In short, a 'comfort zone' was created for the worker. The 1940 Emergency Report No. 1 of the Industrial Health Research Board, for instance, was so confident in its scientific advice that it recommended heating requirements of 60°F for very light work and 55–60°F for work involving more muscular exertion (cited in Smith, 1943: 55). Various measurements also showed that workers' output was invariably low on Monday and at the end of the week, and that work errors always increased after 4 p.m. Even machine colours were taken into account whereby the use of yellow was to be avoided because it was found to increase a sense of tiredness among workers (Smith, 1943).

Efficiency, well-being and optimal productivity levels, alas, could not always be measured using machine technology. However, psychology and its new applications provided no less scientific methodologies for measurement and control. The objective of those employing psychology in

applied fields, after all, has been to help individuals negotiate their surroundings and to survive difficult contexts. Rose (1992: 360) convincingly argues, in opposition to the commonly held criticism, that psychology is not about techniques of individualisation but about ‘administering individuals in their collective existence’. The goal of psychology, in this view, is to produce a living machine with optimal productivity and without the gears of these machines grinding too loudly (Guery and Deleule, 2014: 118). In the early years of the 20th century, industrial psychology grew to develop new methodologies to better understand fatigue and its consequences. Job psychographs, socio-grams³ and a host of other psychological tests quickly promised to provide enough information to help put the right person in the right job and, consequently, cut down on absenteeism, job accidents, ‘loss of humour’ among workers and to boost ‘industrial morale’ (Blum, 1949; Smith, 1943). The individual factor in how each worker experienced fatigue differently meant that ‘experts’ also had to pay more attention to personal circumstances and characteristics. For instance, the huge increase in female worker numbers during this period led the experts to take into account the particular characteristics of women’s abilities which made them more capable in ‘light’, ‘repetitive’ jobs that required ‘dexterity’ (Milkman, 1982: 345). Nothing was left to chance on the factory floor and the nation’s productive bodies had to be maintained and attended to. In his seminal 1974 work, Braverman affirms how a new layer of industrial psychologists and ‘human relations’ practitioners complemented the time-motion strategies of Taylorism and its efforts to maintain and control the human machinery.

Interestingly, while industrial psychology was decidedly a Euro-American endeavour, the techniques of the newly developed applied field extended to a number of British and French colonies. Testing techniques were adopted in the colonies in order to help create what one could term ‘indirect industrial rule’. While colonial administrators embarked on creating a ‘native authority’ in different social and economic institutions to act as ‘middlemen’ in African colonies, industrial psychology techniques were employed to help with the management of labor in mining and other extractive industries upon which the vitality of the industrial production at home relied. Selection testing and the leaderless group test for example, helped European managers appoint the most appropriate ‘boss-boys’ or foremen in the workplace (Wickert, 1960: 163).

By the onset of World War II, big business was routinely employing psychologists to devise scientific ways of reducing symptoms of increasing mental fatigue including monotony and boredom and their devastating effect on productivity. In the United States, large companies such Eastman Kodak, Caterpillar Tractor Co., the *Washington Post* and American Viscose Co. all had psychologists on their payrolls and advisory boards (Blum, 1949).⁴ In Britain, with the outbreak of World War II, even the BBC would do its share in reducing fatigue among factory workers by airing the ‘Music While you Work Programme’, which targeted different shifts of factory workers and was believed to create optimal productivity conditions for them.⁵

The concern for the fatigued body of the worker, which emerged during this particular global crisis, led to a regime of surveillance and ordering that would dominate labour–capital relations for decades to come. In essence, this regime has created a blueprint for experts and technology to promote the ideology of national efficiency as described by Searle (1971).

The Neoliberal Shift and Mindfulness

Capitalism is a system which is constantly reinventing itself, seeking new frontiers and markets, adopting new technologies and creating new ways of work (Yuill, 2005: 136). In this process, the skilling and deskilling of the workforce dramatically changes working conditions and the workers’ bargaining position. The last quarter of the 20th century, which was characterised by changing regimes of production, saw drastic changes in the working conditions of millions of workers

including increased unemployment, rising job insecurity and the growing withdrawal of social protection regimes. With the transfer of most manufacturing jobs to developing countries and the expansion of the service sector, the factory was no longer the focus of scientific intervention to maintain and improve the productivity of the indefatigable worker in the West. In this new world, characterised by a series of global financial crises, industrial fatigue and workplace accidents ceased to be the main concern of the policy and scientific community (Davies, 2016; Long, 2011). In their place came mental health concerns, burnouts, exhaustion, depression, anxiety and stress-related illness that were leading to increasing lost time and posing a growing threat to productivity. With the advent of the new millennium, the effects of mental health issues on US workers were allegedly costing the economy \$550 billion annually (Mindful Nation UK, 2015). Britain's Healthiest Workplace initiative, a platform launched in 2013, has shown that health-related lost productivity as well as 'presenteesim' was costing the UK economy an estimated £91 billion and costing the NHS at least £ 8 billion (2019). Globally, the WHO (2011) estimated that by 2030, depression would become the world's largest cause of disability.

The productive body needed to be refashioned to survive the pressures of changing work conditions and the mental and physical fatigue they brought with them. To bolster the aim of achieving the indefatigable body of the worker, a new discourse of happiness, resilience, mental fitness, positivity and agility came to define a new paradigm of therapeutic intervention in the work place. Positive psychology rather than industrial psychology has come to define this phase of global capitalism. By the early 2000s, the field of positive psychology had developed several techniques including Mindfulness-Based Cognitive Therapy (MBCT), Dialectical Behavioural Therapy (DBT) and Acceptance and Commitment Therapy (ACT) among others. The common principle of these interventions has been the focus on helping individuals tolerate stress (Arthington, 2016) and to accept the fact that stress is not something imposed on the individual but something 'we impose on ourselves' (Gelles, 2015: 85).

Learning to be resilient in the face of stress became a necessary skill to match new developments and funding models in the economy. As shown by *Logic Magazine*, which dedicated a whole issue in 2018 to this subject, the success of Silicon Valley was largely based on embracing failure. Early capital ventures in Silicon Valley companies understood that most start-ups were doomed to fail but such failure did not matter as long as the few that did succeed, succeeded big, bringing the investors astronomical profits (Project Runway, 2018). Those who failed, however, needed support in order to cope and to continue taking risks. With the motto 'Embrace Your Mistakes. Build Your Success', FailCon had already been launched in San Francisco in 2009 as a platform providing a safe space for failure (<http://thefailcon.com/about.html>:). Emotions such as loss, grief, trauma, agility and resilience became common currency among high-profile employers in this new landscape of celebrated failure.

Central to behavioural psychology and its proliferating techniques, (secular) mindfulness in particular emerged as a panacea for healing the fatigued body and mind of the new century workers and for helping them bounce back from whatever trauma they have experienced. A science of mindfulness was conceived in order to affirm the individual's ability to learn optimism and other coping skills 'irrespective of one's life conditions, material circumstances and class background' (Raveley, 2016: 502). Like previous interventions of Taylorism and industrial psychology, only more so now, mindfulness is promoted as a pragmatic technique, free from ideology where the political and socioeconomic root causes of fatigue and unhappiness are obscured (Arthington, 2016: 88) and where only symptoms need adjustment. The founding guru of secular mindfulness Kabot-Zinn summarises the main tenet of mindfulness as the acceptance of the fact that our world consists of an '... unending stream of human suffering and misery' (1994: 5) and that acceptance of this reality is the only way of dealing with it. It is the 'non-judgemental' and the in-the-moment

approach, both central to mindfulness, that encourages a subject fashioned by neoliberal culture to understand the precarious and fractured conditions of work not as an outcome of neoliberal capitalism but as a manifestation of the core, and inevitable, essence of reality (Cederström and Spicer, 2015: 25). Perhaps the most crucial message of mindfulness directed to the 21st century worker is to be found in Gelles' wise words 'Mindfulness won't make a bad boss better . . . and it won't make difficult labor any less physically taxing' but it can help us ' . . . change the ways the boss affects us, and to change how we respond to the prospect of tough hours on the job' (2015: 30). Long are gone the attempts to organise the workplace and working conditions to suit the worker's body. Acceptance of neoliberal-caused misery is hailed as the only possible reality.

Mindfulness, which has become a multibillion-dollar industry, was suddenly everywhere. Millions of people across the world have downloaded mindfulness mobile apps. Mindapples, for example, is sold on the promise of helping people to manage sadness, to work smarter and to form 'happy habits' by delivering mindfulness in 'bit-size chunks for busy people'. The free app Mappiness, on the other hand, collects data from individuals, regularly reporting on their state of happiness in order to outline a landscape of happiness. Numerous consumer spaces such as in-flight entertainment, retail shops and hotel rooms have begun to include mindfulness as part and parcel of their services. (Arthington, 2016: 90). Major state institutions have also bought into the mindfulness cure for its tired and underperforming workforce. The US army, for example, has invested \$32 million in well-being programmes in general and \$ 4.3 million in mindfulness training in particular (Walsh, 2018). As of January 2018, 165 MPs and peers and 250 staff have completed an eight-week MBCT course in Westminster (Mindful Initiative). Major corporations such as Monsanto, General Mills, eBay, Google, Unilever and Goldman Sachs also pioneered the inclusion of mindfulness courses as a way to ease the fatigue of their employees. However, instead of employing mindful courses as stress-beating techniques, where stress is regarded as a stigma in the cut-throat competitive culture of these companies, company managers framed mindfulness as a tool for cultivating 'emotional intelligence', 'compassion', 'personal excellence' or 'lovekindness' in order to appeal to their employees (Kucinskas, 2019). At the other end of the spectrum from elite politicians and high-flying tech company employees, mindfulness has also been used to help people from disadvantaged backgrounds such as at-risk adolescents and the 'poor' to learn how to deal with their anger, despair and other troublesome emotions (Bluth, 2016; Walsh, 2018).

Within this expanding landscape of mindfulness, a new morality has evolved. Not only has the body become an enterprise which needs careful monitoring to create maximum profit in the Foucauldian sense, but neoliberalism has also given rise to what Zupančič (2008) calls 'bio-morality'. Within this new moral order, unhappiness has become almost equated with corruption and weak moral character. With governments and businesses offering courses on happiness, resilience, agility, mindfulness, well-being and emotional intelligence, individuals who fail to avail themselves of forms of psycho-social support can only be described, in the words of Pupavac (2001), as 'socially irresponsible'.

It is often claimed that the regime of mindfulness is a largely unorganised affair with little state or business intervention and where individual workers have had to assume the responsibility of caring for their well-being. As Kabot-Zinn puts it, mindfulness encourages a shift of balance away from an exclusive dependency on experts and closer to individuals' own personal efforts (2005: 197). While this shift of responsibility is indeed central to well-being regimes, there is enough evidence to show that mindfulness-based intervention retains a strong policy approach albeit less centralised and seemingly uncoordinated. For example, George H. Bush famously ushered in the 1990s as the 'decade of the brain' while New Labor's prophet, Anthony Giddens (1995) assured us that individuals with a good understanding of their mental and emotional make-up are better prepared for the responsibilities of citizenship. Mindfulness, in fact, has become an institutionalised

science supported by academic courses, international conferences, professional forums and textbooks. Peer-reviewed journals, like the *Journal of Happiness Studies* and the *Journal of Mindfulness* have become a major outlet for disseminating the latest research in the field by experts. In the United States, a plethora of institutions promoting and developing mindfulness research has erupted including the Center for Mindfulness in Medicine, Mind and Life Institute (MLI), UCLA's Mindful Awareness Research Center (MARC) the Center for Contemplative Mind in Society (CCMS) and the Search Inside Yourself Leadership Institute (SIYLI). These and other institutions have developed into an elaborate apparatus that lends mindfulness the necessary scientific and cultural legitimacy (Kucinskis, 2019: 55). Governments and state institutions have also embraced mindfulness and in many cases, it has become policy. In the UK, the Mindfulness All-Party Parliamentary Group (MAPPG) published the Mindful Nation UK (MNUK) report in 2015. It detailed how the UK intended to introduce mindfulness into several areas including education, health care, the judiciary and government bureaucracy as well as the business sector. Similarly, the Legatum Institute supported the Commission on Well-being and Policy, which published its final report in Berlin in March 2014, to formulate policies on well-being and how they can be implemented at the individual, the community and regional levels as well as the national and global level.⁶ While not directly targeting factory workers with programmes like 'Music While you Work', the BBC has produced several Mindfulness series in the last decade. The latest 2020 Mindfulness Escapes series, produced in collaboration with Headspace, was promoted by the BBC as a new genre of television where the audience could be fully immersed in 'stunning imagery of the natural world and experience it through a mindful lens'.

The mindfulness industry has largely developed around a professional, middle class workforce which has been relentlessly targeted by a consumerist market of healthy eating and exercise fads. Mindfulness, however, sees the exhausted body of the office worker as a generic prototype not shaped by gender, sexuality or race relations. Anybody can follow the same set of techniques and reap the benefit of mindfulness as long as they choose to let go of negative thinking patterns and accept a never-ending stream of misery. In a curious development, however, the mindfulness industry has recently branched out to target specific consumer groups based on identity and cultural markers. Capitalism, after all, has a tendency to appropriate cultural and even political trends for its own profit. The 'brandwagoning' of the Black Lives Matter movement in 2020 by big brand names testifies to this trend (Colbert, 2020). A remarkable recent example has been the launching of a new mindfulness app, Liberate Meditation, which is designed specifically for 'black, indigenous and people of color' (McGrit, 2019). While the content of mindful meditation remains largely the same in these apps, the performative act of having a black person's voice guide the meditation is meant to help these communities find inner peace.

With a mindfulness culture firmly in place and a scientific community lending it scientific and moral legitimacy, a regime of measurement and testing has evolved to prove its value. Examples of assessment and measuring tools include Satisfaction with life scale, Flourishing scale, Serenity scale, Positive and negative affect scale, Fear of Compassion Scales and Self-Compassion Scale. Furthermore, the Carpe Diem Scale (CD) was developed to measure the individual's active focus on the present (Loveday et al., 2018; Sobol-Kwapinska, 2013) while the Present-Eudaimonic Time Perspective Scale (PE) (Vowinckel, 2015) supposedly measures positive 'eudaimonic' attitudes towards the present, understood as focusing on one's feelings, thoughts, and emotions in the here and now. A nine-week compassion cultivation training (CCT) programme showed a clear association between the amount of mindful meditation and increased compassion for others (Jazaieri et al., 2013) while mindfulness intervention as short as three brief sessions was celebrated as having yielded positive results on employees' well-being (Howells et al., 2014). Also attempting to prove mindfulness as a useful tool in a wide range of production spheres, and not only among

office workers, new measurements have been developed by mindfulness experts to show mindfulness positive results among factory and mining workers. The Best Possible Selves (BPS) activity, which is an optimism induction tool, has allegedly been able to establish a link between optimism induced by mindfulness practices and decreased pain in cold pressor tasks (Hanssen et al., 2013)

Despite their best efforts to establish a positive link between mindfulness training and mental and physical well-being, measurement tools based on self-reporting and expert assessment have become no longer sufficient to reassure policy-makers and employers of the power of mindfulness to bolster the body of the agile worker they so much rely on for maintaining wealth accumulation and productivity. With rapid developments in new technologies, particularly neurosciences and AI, more objective, scientific methods of assessment have started to cast doubt on the efficacy of mindfulness and similar techniques. New measurement tools able to directly examine how mindfulness impacts the brain showed mindfulness effects to be inconclusive at best. In 2015, *Nature* published an article arguing that the underlying neural mechanisms and the molecular bases of the changes in the brain that accompany mindfulness training remain unclear (Tang et al., 2015: 213). Other researchers reported that they found no evidence that mindfulness training has any effect on participants' immune systems (Turner et al., 2020). More bad news has been emerging to cast a shadow on the dream cure as large-scale experiments and meta-analyses have found that mindfulness could in fact negatively affect task motivation due to the inherent tension between encouraging the workers' acceptance of their present experience and the motivation necessary for taking initiatives and achieving something new (Hafenbrack and Vohs, 2018). It is all very well for mindfulness to help us live in the present moment but the real question, as Riopel (2020) asked, is 'What does it do to the brain?'

The 'Dead Machine' Working

In his excellent, seminal work on the Happiness Industry, Davies (2016) explains that increasing reliance on AI marks a discrete return to the scientific management of Taylorism, only this time with far more accurate scientific scrutiny of the body and its performance. New digital surveillance of the living machine has become key to turning labor into a perfect dead machine without problems or fatigue. A first step in this process has been the development of AI surveillance tools to monitor how the population feels and thinks. Using social media profiles, for example, AI has allowed businesses and governments to 'track', 'mine', 'extract', 'harvest', 'exploit' and 'citizen-source' data to better understand the feelings of their citizens and to help them eliminate difficult emotions in the process (Charalabidis et al., 2015). This latest stage of the more than a hundred year-long project of labor surveillance or what Zuboff (2019) calls 'surveillance capitalism' renders human experience in all its forms as raw material for corporations to acquire without needing the consent of the individual. Surveillance capitalism, in this sense, has free and unconditional access to our emotions and thoughts through our own written words, voices and facial expressions, which we generously share publicly and without much reservation. The new machines used during this stage have moved beyond attempts to overcome the limits of the body to actually modifying the behaviour of individuals and groups (Zuboff, 2019: 515).

The so-called 'gig economy' in particular has hugely benefited from a range of technologies for diagnostics and social control purposes. Large logistics, transport and open-pit mining companies, for example, have scrambled to acquire accurate facial recognition programmes that can determine the level of workers' mental alertness by observing the slightest shift in their eyelids or mouth corners. AI technologies are touted for their ability to monitor fatigue by highly precise methods such as moment analysis and cluster analysis in order to ensure workers' safety, increase productivity and avoid lost time in accidents and injury. Solanki (2018) elaborates how the use of monitoring

techniques such as accelerometers, gyroscopes, magneto-encephalography and brain computing interfaces are revolutionising the work of transport, logistics, delivery and open-pit mining where around 65% of truck haulage accidents are believed to be directly caused by fatigue.⁷ In warehouses and other work settings, smart watches such as Fit-Bit and other smart apparel can easily track the individual's every movement and measure the heart rate and skin responses to these movements.

In short, fatigue, stress-related burnouts, empathy, risk-taking, happiness and resilience are no longer treated as subjective conditions. Rather, they are now regarded as physical states which can be constantly monitored through state-of-the-art technology that reads our faces, measures activity in our fronto-parietal cortex and detects patterns of hormonal production. The worker/consumer body has become the domain of intervention by neuroscience and its proliferating subfields including affective neuroscience, social neuroscience, neuro-economics, neurocellular economics and even mindfulness neuroscience. Common to all these new interdisciplinary fields with their sophisticated measuring kits and intervention possibilities is the belief that we can directly work with the neural networks and pathways of the brain in order to manipulate and change cognitive functions of behaviour (Serra, 2019). Affective neuroscience and social neuroscience claim they can influence every area of the individual's life including levels of tiredness, aversion to inequality, ability to empathise with other human beings and, more importantly, fostering cognitive functions such as attention and working memory (Serra, 2019). Taking the claims even further, the McKinsey series, *Notes from the AI Frontiers*, has been documenting how AI capabilities, especially computer vision and natural language procession, can help solve all societal challenges such as hunger, injustice, inequality and credit assessment. For the last area, companies like CreditVidya, ZestFinance and Lenddon have been using AI technologies to examine neural networks in the brain in order to predict and model individuals' credit risk to foster their financial inclusion (Chui et al., 2018).

Covid-19, Zoom Fatigue and 3D Avatars

AI companies had clearly been on a path to produce a standardised individual whose happiness, rationality, compassion, health and of course indefatigable productivity is defined and determined in terms of optimum accumulation. AI, however, has seen great strides since the outbreak of the latest global crisis of the Covid-19 pandemic. For example, AI-enabled computer vision cameras have an increasingly important role in managing the pandemic world. They have been deployed in several cities to scan, detect and report any breaches of social distancing in public (Naudé, 2020) and with increasing reliance on delivery services during lockdowns, AI systems, which were already on the rise in the pre-pandemic gig economy, have continued to evolve. Capitalism, history shows, does not like to let a good crisis go to waste. The pandemic, one of the worst economic crises in the last hundred years, has hit millions of people across the globe leaving them struggling with job losses, worsening working conditions, evictions and issues of food security. However, the pandemic world has seen many tech giants like Microsoft thrive and companies like Zoom, which offers virtual meeting platforms for millions working from home, make phenomenal profits. Zoom, which is estimated to have hosted three trillion minutes of meetings in 2020 is now worth \$35 billion. Other smaller companies also rushed to exploit the economic crisis for their own benefit. A blatant example is the case of OnQall, a US-based company which launched the Civvl app in 2020 in order to offer services to help evict tenants falling behind their rent payments on behalf of banks, legal firms, plaintiffs and property owners. The app is targeting those out of work, probably made redundant by the pandemic, to apply for jobs as eviction crews and process servers.⁸ Pitting different groups within the exploited working classes against each other and relying on violence, in this

case through eviction, to accumulate more wealth continues to serve the interest of capital during this latest crisis.

Since *National Geographic* published an article on 'Zoom fatigue' in April 2020, scientists, large businesses and AI companies have rushed to theorise and respond to this new ailment which is threatening the vitality of the workforce. Zoom fatigue, which is short hand for symptoms associated with all video conferencing technology, is described as an 'exhausting ordeal' that leaves the individual feeling mentally and physically wiped out. Its symptoms reportedly include headaches and migraines, blurred and double vision, eye irritation and pain, lack of focus and general exhaustion. The scientific explanation of this new form of fatigue focuses on two main sets of physiological and psychological factors. First, the multi-person video meetings with an excess of unfamiliar stimuli require mental concentration that overwhelms and challenges the brain's central vision (SKlar, 2020). Searching for non-verbal clues, which are a lot more difficult to decipher on the screen compared to face-to-face communication, is also exhausting to the brain. Furthermore, the experience of having people observe the participant in such close proximity on the screen for long periods can lead the brain to resort to fight-or-flight mode. Being constantly on the alert, the brain experiences more than its fair share of anxiety levels, which, sustained for long periods, is extremely taxing (Basu, 2020). Quickly coming up with methods to deal with this brain overload and to relieve symptoms of fatigue in a population now constantly engaged in a process of 'zooming' has become imperative if the indefatigable body of the worker is to be sustained during the pandemic. The pandemic, after all, is not simply a public health crisis but an economic one which the world has not experienced for generations. While Affectiva's CEO, quoted earlier, spoke of efforts to create an 'emotionally-enabled digital world' and start-ups like LoomieLive developed 3D avatars a few months into the pandemic, several other hologram and Avatar technologies have been promoted by different companies. For example, the US-based Spatial, has recently launched a new avatar as a free app on Oculus Rift.⁹ These new applications rely on a simple technology whereby individuals are able to take a personal photo of themselves, without any facial expression, and to transform it into a cartoon. The avatar then assumes the role of tracking the Zoom participant's voice and facial expressions and reflecting them on the screen. What the avatar does is to free individuals from having to sit behind the screen throughout the duration of long meetings and allows them to get up and move without being observed. Screen icons also help participants to choose the appropriate non-verbal action which they need to communicate such as cheerfulness or enthusiasm.

In order to avoid the numerous miscommunication errors frequently caused by remote communication tools such as Zoom and the stress this can induce among employees, 'speech-to-text' transcription is being developed by the company Otter.ai to enable participants in Zoom meetings to see their words turned into accurate captions in real time. This technology is being sold to management on the promise of 'no more excuses for misreporting the numbers presented by your sales team, or missing the list of targets put forward by your manager'. While the individual workers are the subject of AI technologies, it is understood that the main target is productivity and the wealth accumulation of the businesses. Tellingly, *Forbes* magazine has published an article with tips to employees on how best to communicate their Zoom fatigue to the boss. Prominent among them is the need to emphasise to the manager how this virtual technology is affecting the worker's productivity (Blank, 2020).

Reminiscent of early 20th century attempts to control every detail of the factory environment to ensure the physical well-being of the worker, current technology is used to determine, to the minutest detail, the best work environment in order to create optimal working conditions for the millions glued to their computer screens. Munsamy and Chetty (2020), for example, elaborate how workers relying on digital communication now need to follow a 20:20:20 rule, wear anti-fatigue computer spectacles and regularly apply lubricants and consume omega-3 supplements.¹⁰

Not to be outdone by Zoom avatars and speech-to-text technology, giant Microsoft has recently come up with a 'Together Mode', which uses AI to take a cut-out of the individual's live video image and place it into a fixed position while the individual blissfully relaxes, unobserved, behind the screen. One Stanford University scientist involved in the production of this new technology described its merit as 'an ideal technology' because it allows the individuals to 'disappear' so that they would 'stop being aware' of themselves (Basu, 2020). Such words could not be more revealing. Being able to turn the living machine into one that no longer has a consciousness or awareness of itself, its exhaustion and the socio-political conditions behind its exploitation, is probably a dream come true for capital owners. A dream which could not have been remotely imagined in the early decades of the 20th century but is now more than ever close to becoming reality.

Conclusion

AI is but a recent technology in an overarching historical project in which a regime of labor surveillance and control over workers' bodies has been evolving to respond to new developments in capitalism and to emerging new technologies, regimes of expertise and measurement capacities. These interventions, which are intended to reduce fatigue and to adapt the living machine of the worker's mind and body to the rules of a dead machine without fatigue, have always been presented as technical, scientific and totally free of politics and ideology. One of the most fascinating features of this long project of surveillance and control has been its assumption of the worker's body as one which is free of gender, sexual, racial or other power relations.

More significantly, ostensibly putting the well-being of the worker at the heart of this regime has made it difficult for workers to reject these efforts which claim to help them cope with fatigue and stress. This paradigm of caring has also partly worked to obscure the conditions which create workers' fatigue in the first place, making these conditions ever more difficult to challenge. Despite this strict machinery of control, Taylorism and its more recent wider-ranging and sophisticated manifestations over the decades have failed to do away with workers' resistance. Historical evidence shows how unions provided platforms for organised struggles against discourses of 'man as a machine' while workers have directly engaged in everyday acts of resistance which sabotage or mock this scientific-moral system imposed on them (Antaya, 2015; Whitston, 1997). Even the oppressive 21st century digital surveillance has been met with workers' action. During the pandemic, warehouse workers demanding better safety protection, pay and general working conditions across companies like Amazon, Target, Walmart and other large corporations managed to attract huge public attention to their deteriorating working conditions. Similarly, delivery workers, whose pre-pandemic precarious conditions were exacerbated by the overwhelming increase in business demand during lock-down, coupled with lack of protective gear and safe work conditions, agitated across different countries using tactics such as walk-outs or sick-outs. Digital marches, Webinars, online conferences and hubs and Zoom meetings themselves have also facilitated the exchange of experiences among activists and an increasingly disgruntled population and offered forums for mobilisation against evictions, food insecurity and worsening employment conditions.


Ultimately, the global economy can only recover and continue to thrive on the backs of hundreds of millions of workers in countries of the global South. Their fatigue, well-being and happiness have never been a major concern for capital to say the least. But the pandemic has brought into sharp relief their increasing exploitation and exclusion from any welfare policies and they have continued to organise and resist. In November 2020, 250 million workers and farmers went

on one of the largest ever national strikes in India against new anti-farmer laws, passed during the pandemic, which would leave hundreds of millions struggling to survive. A threat of a similar nation-wide strike by the General Confederation of Lebanese Workers in December 2020 forced the government to delay removing subsidies on essential goods. Delivery workers in countries such as Thailand and health care workers in Kenya, Peru, Chile and South Africa have also organised to demand better protection and pay. Capitalism, it seems, can always thrive in a crisis but its main challenge has always really been its inability to turn living labor into dead machines. It has not succeeded so far and it is doubtful that algorithms, nudging or neural pathways hold the key to this in any foreseeable future.

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Notes

1. Published in French in 1971 against the background of the 1968 events and the anti-psychiatry movement, it was only translated to English in 2014, with an introduction, by Bernard and Shapiro.
2. Ergonomics is the study of humans' relation to the physical aspects of their environment which aims to create optimal human well-being. Organology is the branch of biology which deals with the body's organs or senses. For Guery and Deleule (2014: 112), organology was used to gain an arithmetic knowledge of the body which, along with psychology, would help transform the living machine into 'efficacious motion'.
3. While the psychograph was initially designed to mechanically discern a subject's aptitudes in a number of mental skills, job psychographic methods developed to include a number of assessment techniques including observation and questionnaires. Socio-grams were developed to map out and analyse group dynamics in the workplace.
4. American psychologists contributed to the creation of the field of applied psychology and its armoury of measurement techniques such as groups testing, rating scales and the personality inventory. The most important experiment was undoubtedly the Hawthorne study in 1927.
5. Targeting factory workers from 1940 to 1967, the programme played music which encouraged productivity. Music had to be cheerful, avoid lethargic tunes, be at a consistent volume, and avoid overloud drumming. Jazz was strongly discouraged as it did not offer a clear melody to which the workers could whistle and sing (see for example, Baade, 2012).
6. According to Lord O'Donnell (2014), Chair of the Commission on Well-being and Policy 'Well-being research is a fantastic new growth area. Together. . .we are going to make this the driver of policy and governments' Legatum Institute <https://li.com/reports/the-commission-on-wellbeing-and-policy/>
7. Accelerometer and gyroscope technologies are increasingly being used for monitoring movement and location through smart devices while magneto-encephalography is a functional neuroimaging technique which maps brain activity.
8. While the author has been unable to authenticate the app, a thorough investigative piece by Ashwin Rodrigues published in *Vice* locates the work of Civvl within the growing business of eviction in the United States (see: Rodrigues (2020) <https://www.vice.com/en/article/ep435n/gig-economy-company-launches-uber-but-for-evicting-people>)
9. The 'free app', however, requires a \$400 headset.
10. The 20-20-20 rule is that the person should look away about 20 feet from the screen every 20 minutes for 20 seconds.

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