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A GENDER AGENDA FOR THE FUTURE OF WORK IN A DIGITAL AGE OF PANDEMICS

Jobs, skills and contracts

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ABSTRACT

This article provides an exploration of the literature concerning the impacts of digitization and the fourth industrial revolution on the world of work, informed by the experiences of Covid-19 and focusing on the gendered implications. Key threats and opportunities are identified in projections for declining and emerging occupations, considering how women will fare in the workplaces of the future. These trends are discussed in terms of emerging skill gaps and women's positioning to exploit key areas of growth. Alternative forms of employment and atypical workers are creating regulatory gaps, challenging existing social protection systems, with the pandemic again demonstrating the need for interventions. The pandemic has highlighted the need for a specific gender agenda to ensure past progress is not eroded and the opportunities described are taken up.

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Introduction

The coronavirus pandemic has accelerated trends associated with the evolution of the Fourth Industrial Revolution (4IR) and deeply embedded patterns of intersectional and gender inequalities. Artificial Intelligence, machine learning and robotics are transforming the type, content and format of work at an exponential rate (Schwab, 2016; WEF 2018a; Neufeind, O'Reilly and Ranft, 2018). There have been variable projections of the impact on jobs and the value to be un-locked through successfully enabling such transformations. The World Economic Forum (WEF) estimate a global potential of $100 trillion in value to society and industry through digitalization, whilst also recognizing that without intervention inequality is the greatest societal concern to accompany these benefits (WEF, 2018a; Schwab, 2016; WEF, 2020).

Existing trajectories of rising economic, gender and ethnic inequalities are being exacerbated by transformations in the world of work. The Covid pandemic has pulled back the veneer on these long-term trends making them even more apparent and poignant for those concerned with social cohesion. Consideration of how innovations impact on equality needs addressing, to ensure progress on multiple dimensions of gender equality is not eroded and opportunities and agendas for change are identified. This article sets out to do this by drawing particular attention to the gender agenda in the context of these fundamental shifts, which critics' note is at present largely missing from the more mainstream commentary (Howcroft and Rubery, 2018; Peetz and Murray, 2019).

The challenge for legislators and policymakers across Europe is varied, complex and extremely challenging. To understand what the impact of the digitalization of work will be for a diverse range of women in the new world of work the current literature presents three key themes:

– the creation and destruction of jobs as labor markets are restructured;
– the skills and retraining needed to exploit new opportunities;
– and the implications of increasingly divergent working arrangements.

The risks and the opportunities in each area will be explored with a gendered focus.

Firstly, as new work is created and existing roles are changing, there is wide variation in projections for how this will alter the shape of the labor market (WEF, 2018c; WEF, 2016; Frey and Osborne, 2017; White et al., 2019; Brussevich et al., 2018; Arntz et al., 2016). The effects of automation are uneven across the skill distribution. This will be explored in terms of the job composition and sectoral variation of the roles under threat. The literature identifies the anticipated emergence of new and growing industries, through technology and resultant change. A gendered lens will be applied to these expanding

sectors. This will consider the projection of further polarization of the labor market as high skill / high pay and low skill / low pay jobs, are likely to grow (Caruso, 2018; Lawrence et al., 2017). In turn, the potential productivity improvements and growing flexibilities at work are explored in light of the benefits that they may afford to gendered inequalities. These themes and the gendered risks therein are considered in light of the developments and inequalities in working prompted by the Covid pandemic.

Secondly, the changed labour market may make some existing skills redundant and require new skill sets (Jandrić and Ranđelović, 2018). Outcomes here may magnify intersectional inequalities and threaten to enhance existing disadvantages (Howcroft and Rubery, 2018). The need for targeted policy interventions in the reskilling challenge has been writ large by Covid. Analysis of work flows shows there is little evidence of sectoral shift shaping job search behavior for the newly unemployed (Brewer et al., 2020). The need for retraining and on going learning to satisfy evolving labor markets prompts consideration of how well placed women are to meet the needs of growing industries. The growth of digital workplaces and new technologies may further disadvantage women in the digital workplaces of the future. The gender dimension of existing skill shortages in ICT and STEM subjects will be explored (Krieger-Boden and Sorgner, 2018). In addition, the factors impacting women's choices, such as the workplace culture and environment, will also be identified (Duke, 2019).

Finally, consideration will turn to the changing shape of jobs. New types of employment and categories of worker, that operate beyond existing legislative provisions, are highlighting both the threats and opportunities of alternative forms of working (Taylor, 2017; Mandl et al., 2015). An understanding of how precarious forms of employment precipitate risks to the effectiveness of employment rights and social protection systems, has been demonstrated by Covid. Applying a gendered lens to these risks demonstrates the inequalities inherent within them. In addition, the importance of unionization, collective bargaining and the readiness of unions to meet the challenge of the new world of work is also relevant (Simón, 2012; Blau and Kahn, 2003). The low value of precarious work is often accompanied by low expectations of employers and exploitation, again demonstrated by the pandemic and reiterating the importance of legislative and collective support (Conaghan, 2020).

While it is clearly difficult to imagine the workforce of the future, the pandemic has exposed and underlined the necessity of a gendered approach to core policy areas for change, those being, job creation, skills and contracts. Coupled with the UK's lack of exposure to regulatory developments, as a result of Brexit, divergence in legislative approaches across Europe may also emerge. This suggests that the UK may see further slippage in its pursuit of gender equality measures, and in so doing provide a useful comparator for the rest of the EU in the future. The article therefore concludes that an agenda for gender

needs to be a central focus for assessing projected transformations in the world of work in a digital age of pandemics.

1 Sectoral variation and roles under threat

1.1 Skills and sectors in decline

Organizations such as the WEF and McKinsey seek to understand how 4IR changes will impact according to industrial sector. It is clear the impact of technological change will not be skill neutral (Dachs, 2018; Bughin et al., 2018; WEF, 2018b). Projections anticipate declining employment in manufacturing and production, distribution, retail, and office and administration. For business and financial operations, sales and construction, there is a flat employment outlook. STEM jobs and non-routine manual work, currently outside of the scope of automation, are predicted to grow (WEF, 2016).

The impact of automation on job roles and employment figures was considered in a seminal article by Frey and Osborne (2017), who suggested 47% of US jobs were susceptible. Application of their methodology to the UK scenario suggested a 35% risk of automation (White et al., 2019), while in the German context this rose to 51% of jobs (Naude and Nagler, 2017). Alternative research employing a different methodology has since suggested that, across OECD countries, the risk is far lower (14%), and with significant variation, ranging from 6% in Norway, to 33% in Slovakia (Nedelkoska and Quintini, 2018). The level of change anticipated in job roles encompasses huge variation, from 2 million to 2 billion by 2030 (WEF, 2018a: 26). While there is clearly debate on the estimation of numbers, just as in earlier industrial revolutions, labor deployment is being reshaped in new ways. The displacement of manual labor and routine tasks by mechanization in the 1980s and 1990s is now seeing new technology erode administration and communicative workplace functions (Autor and Dorn, 2013; Caruso, 2018: 387). Accompanying these potential job losses the WEF predicts “significant churn between job families and functions”(WEF, 2016: 13).

While some job roles have already undergone change, for instance in the UK’s retail market a 25% reduction of supermarket job roles (pre-Covid) occurred alongside record levels of overall employment (White et al., 2019; Lawrence et al., 2017; Bell and Gardiner, 2019). Projections are that change will be incremental (Howcroft and Rubery, 2018; Mönnig et al., 2019: 388). Indeed, some organizations have reduced their previous forecasts and recognize the tendency for a negative outlook, given the potential for technology is essentially unknown (White et al., 2019; Dachs, 2018). Coronavirus accelerated significant shifts in labor markets disproportionately impacting certain sectors (Brewer et al., 2020) and increasing the use of digital technologies. To illustrate, and continuing with the example of retail, a Covid induced increase has been noted in the German context, with particular

reference to e-grocery shopping. Pre-pandemic this remained niche, when compared to other retail (Dannenberg et al., 2020). It has since witnessed a dramatic escalation in use. The impact on women, given the gendered associations with delivery and transportation, may prove disruptive in the long term and reiterate the need for a gender agenda to understand how transformations will impact gender equality.[1]

Pre-Covid a widening of inequality had been acknowledged across Europe, and beyond (Lawrence et al., 2017; Dachs, 2018; Caruso, 2018; Goos and Manning, 2007; Weil, 2019; Bughin et al., 2018; Naude and Nagler, 2017). This was accompanied by an increasingly polarized labor market with concerns that impending change would further increase inequality. Technological innovation had begun displacing routine middle jobs, with a concurrent growth in low paying service occupations and professional and managerial jobs, and recognition of the socio-economic inequalities that these changes exacerbate (Brussevich et al., 2018). However, despite the proliferation of research in this area there is limited consideration of the gendered impact of these changes (Peetz and Murray, 2019). Those that do exist present varied conclusions. Some find the risk to women's employment is greater as a result of automation (Brussevich et al., 2018; White et al., 2019), others predict a similar risk of displacement for men and women (WEF, 2016; OECD, 2017; Lawrence et al., 2017), or alternatively research finds the greater risk is for men (Krieger-Boden and Sorgner, 2018; Sorgner et al., 2017). There does however seem to be greater agreement and consistency in the literature on the occupations likely to grow, and how well positioned women will be to take advantage of these growth areas.

1.2 Skills and sectors anticipated to grow

A report by McKinsey Global Institute considers the changing skill requirements of the future workforce across five European countries and the US (Bughin et al., 2018). Alongside the decline of manual, routine and physical skills, they highlight the growing requirement for technological, social and emotional skills. They assess five different sectors of work and how they will be impacted. While the report does not make gendered assumptions, given the make-up of the sectors (finance, retail, manufacturing, mining and healthcare), this can be inferred.

Accordingly, the positioning of women in the labor market may mean that existing inequalities are likely to be enhanced, given the industries that are expected to grow. Some low pay occupations are at lower risk of automation, notably roles in the health and social services sector requiring social, emotional and manual dexterity skills, which are harder to automate. In addition, employment in this sector is likely to increase, given ageing populations across Europe (Naude and Nagler, 2017; WEF, 2016: 22). Historically these occupations are more likely

[1] This is highlighted in the UK context by the pending equal pay cases for retailers such as Asda, Tesco and Sainsburys, given the gendered dimensions of both shopfloor and warehousing and distribution roles (Croft, 2019).

to be occupied by women. Coronavirus has highlighted the prominence of women in frontline health and social care roles, alongside underlining the gendered division of unpaid labor within the home (Summers, 2020; Zoch et al., 2020; Brussevich et al., 2018). Women occupy two thirds of the paid health workforce worldwide, and across the OECD they represent 90% of long term care workers (Queisser et al., 2020).

The low value ascribed to care is apparent in the increasing shortage of workers in the sector, as low wages and poor opportunities for professional development, fail to encourage workers to these labor- intensive occupations (Hudson, 2017; Spasova et al., 2018). In addition, while gendered analyses of stress statistics is variable across the EU, according to countries that do measure it, the care sector represents one of the most stressful industries to work in (Buckley, 2019; Broughton, 2010). This too has become particularly apparent during the pandemic, with reports of high levels of employee burn out and stress in this sector (Kramer et al., 2020). In turn, if recruitment gaps are not met, the pressure on unpaid carers to fill the void will inevitably also have gendered implications (Craddock, 2017; Plomien, 2018). This has already been reported in the UK, resulting in the highest levels of women leaving paid employment as a result of unpaid caring responsibilities across Europe (DWP, 2019). The implications of Brexit for the UK further reiterate the need for policy intervention, given the skills shortage the sector was already facing pre-pandemic (Future, 2018). These trends have been exacerbated by the crisis, and yet the shortage of applicants for care roles, despite increasing levels of unemployment, underlines the urgent requirement for policy to address the problem (Brewer et al., 2020).

The consequences of the pandemic have polarized opportunities for those who are able to work from home and those who are not. Lower paid and lower skilled face to face jobs are vulnerable to increased economic uncertainty resulting from lockdowns and Covid restrictions. Conversely, there may too be an unintended consequence of the pandemic, given the widespread economic impact of lock-downs in sectors struggling as a result of the crisis. As organizations are compelled to reduce their operating costs, cuts to management roles and senior pay may inadvertently have a positive effect on gender pay inequity, partially offsetting these otherwise negative corollaries.

That said, areas of anticipated employment growth at the top of the pay spectrum are also predicted to increase existing inequalities and gender gaps (Mönnig et al., 2019; Quiros et al., 2018: 81). McKinsey points to the rising need for technological skills, suggesting there will be a 90% growth in the requirement for advanced technological skills between 2016-2030 (Bughin et al., 2018: 9). WEF note that in 2018 71% of tasks were completed by humans, they predict that by 2022 this will drop to 58%, as machines increasingly take on work tasks (WEF, 2018b). Given the occupational segregation already apparent in these sectors, men will be better placed to take advantage of the

growth that is expected in ICT and STEM roles, increasing gaps that are already apparent (Howcroft and Rubery, 2019; Duke, 2019).

1.3 Variable impacts across Europe for integrating women in the Information and Communications Technology (ICT) sector

The challenges will vary according to the national context, as is clear from trends observable in the European Commission's Digital Economy and Society Index (DESI) (Neufeind et al. 2018). The DESI measures the performance of member states according to various dimensions: Connectivity; Human Capital - Digital Skills; use of Internet Services; Integration of Digital Technology; Digital Public Services; Research and Development, and ICT. Within these dimensions the level of ICT specialists is considered and currently provides 3.7% of total employment across Europe and growing. The UK and Germany have the largest number of ICT specialists at 1.6m in the labor force, followed by France with 1.1m ICT specialists (DESI, 2020). Alongside this aggregate benchmark of country performance, a more focused comparison to measure and target the participation of women in the ICT sector, with a view to improving their integration, was instigated by the European Commission's Women in Digital policy. Since December 2018, the Women in Digital Index (WiD) sits alongside the DESI with findings showing that more digitally advanced countries have a better integration of women across a range of simple measures.

Interrogation of the WiD index shows the highly gendered make-up of the ICT labor market. For instance, considering those frontrunners in employment, 17.6% of the UK's ICT specialists are women, whereas this falls to 16.6% in Germany, with the EU average at 17.2% (WiD, 2019b; WiD, 2019a).

Returning to the DESI, the index highlights growing recruitment difficulties within the sector between 2017-2018 (DESI, 2019a). Across the EU just under 60% of firms report finding vacancies hard to fill, but in places such as Romania, Czechia and Germany this rises to 70%+ (DESI, 2020). Intervention and a gender agenda is needed to both to meet demand and offset the increasing inequalities the sector is facing (Quiros et al., 2018).

2 Skill shortages and new forms of employment

2.1 Changing skill sets

Skills challenges are a significant part of these policy objectives to steer the evolution of emerging sectors and address issues of gender inequality. The WEF 2020 Global Gender Gap report shows that globally gender parity in education has nearly been reached (WEF, 2019). More women than men have achieved tertiary education in nearly all OECD and EU countries (OECD, 2019: 39, 50).

Given the exponentially growing need for ICT skills at work, consideration of how well placed the workforce will be to meet these increased needs, reveals the likely skills gaps of the future. WEF considers the qualification gap in information, communication and technology subjects, and among others note that the growth of ICT Roles is set to enhance a gendered skill gap (WEF, 2018c; OECD, 2019; DESI, 2019b). The European Commission's 'Women in the Digital Age' report suggests four times more men study Science, Technology, Engineering and Maths (STEM) subjects than women. Of all tertiary graduates in Europe, 21.2% are in STEM subjects, which when broken down by gender reveals 33.8% of male graduates, compared to 11.8% of women (Quiros et al., 2018). This divergence is even more marked in areas like engineering and physics.

2.2 Variability between and within countries

The DESI and WiD scoreboards enable evaluation of progress over time. Analysis shows that women's level of digital skill has increased, however men outpace this growth. Comparison of female STEM graduates between countries reflects the variability across Europe. In 2019 Slovenia (20.5%) and the UK (17.6%) had amongst the highest level of STEM graduates. The EU average is at 13.1%, with Germany at 11.4% (DESI, 2019a; DESI, 2019c; WiD, 2019b; WiD, 2019a).

The ability to track progress over time will be invaluable to measure how countries are progressing at different speeds and the impact of policy reforms to address these inequalities. The divergence between women and men within countries is also interesting. The relatively high level of female STEM graduates in Slovenia stands in stark contrast to the 45.3% of men that graduate in these areas, likewise in Germany 28.1% of men graduate in STEM subjects, marking the clear gendered skill gap. This highlights the need for change to ensure readiness for the future demands of work, so that it does not entail regression in terms of inequality.

Research has suggested that Northern and Western European labor markets have greater adaptability to meet this challenge than those in Southern and Eastern Europe (Jandrić and Ranđelović, 2018: 770). Alternative analysis from Naude and Nagler (2017) identifies specific

challenges some countries, like Germany, may face in their ability to meet new educational requirements. For example, in Germany the labor market is largely focused on specialized skills, that will in turn require a complete shift of the education system to refocus and meet emerging needs.

2.3 The cyclical nature of the barriers women face

Qualifications aside, existing markers of occupational segregation present an additional challenge. In Europe women occupy 21% of the ICT workforce and 32% across the OECD (Davaki, 2018; Quiros et al., 2018; WEF, 2016). Women's presence in senior roles and STEM leadership positions is even lower (Adams and Kirchmaier, 2016). Women's underrepresentation in ICT has been attributed to unappealing workplace cultures, gendered environments and the long hours working culture. The sector also suffers from high levels of women leaving, the so-called 'leaky pipeline' (Quiros et al., 2018; Eden, 2017: 106). Women are not currently well placed to take advantage of a growing ICT sector given limitations to their educational orientation, dis-embedded workplace experiences and relative absence from relevant senior management positions (WEF, 2016).

The disruptive potential that these emerging inequalities may hold is two-fold. First, without addressing the inequities described, given the speed and scale of growth in the sector, the glacial progress towards pay equity looks set to stall or regress. Second, without diversity in the creation of new technologies, existing intersectional inequalities are likely to become further embedded. Recognition of these potential obstacles in the literature points to gender bias in the creation of computing and 'boys toys' as masculinized endeavors (Henn, 2014; Quiros et al., 2018; Hicks, 2018). The inevitable outcome of this process is visible in the inequality being reproduced by algorithms, data and machine learning. For example, the literature describes the digital platforms that preference men in their highly paid job adverts, the capacity of Artificial Intelligence (AI) to learn and magnify existing inequalities on social networking sites, and in fields as diverse as urban planning and medical research (Criado-Perez, 2019; Wellner and Rothman, 2019; Quiros et al., 2018; Howcroft and Rubery, 2019; O'Neill, 2016; Buolamwini and Gebru, 2018). This represents not merely the shifting of an existing goalpost in the drive for equality, but the emergence of a new one (Rubery and Grimshaw, 2015).

2.4 Retraining for the future of work not just the pandemic

The necessity for education systems to ensure that relevant provision is being delivered and is accessible, has been further underlined by the pandemic. The disruption to particular sectors, alongside the speed of change prompted in others, requires policy to support the resultant lifelong learning and retraining needs of the workforce. The pandemic is also perceived to have increased the demand for skilled workers, across the board (Lohr, 2020). To meet these needs, essential for future economic growth, provision should be made widely available to meet the anticipated supply / demand gap and in so doing offset rising levels of unemployment (DESI, 2019b; Brewer et al., 2020). Governments should also ensure that measures prompted by Covid are not merely focused on the short-term crisis but address the wider workplace changes and future of work. Evidence from the financial crisis and previous recessions shows that increased spending trends through periods of economic decline are typically withdrawn as economies recover (Chote et al., 2015: 25-26; Lohr, 2020). Investments for training need to maintain relevance beyond the current crisis. The prerequisite of a properly embedded gender mainstreaming approach to these policy programs is vital to address the barriers that women, and those with other intersectional inequalities may face, when pursuing STEM qualifications and occupations (Queisser et al., 2020). This reiterates the importance of a gender agenda.

In the UK context combined calls from both the business and the union community to use the downtime workers may have as a result of the pandemic to retrain, have, thus far, not been actioned.[2] There is mixed and uncertain messaging in the strategy proposed, as the promise of a ‘Lifetime skills guarantee’ has been somewhat undermined by the concurrent decision to remove the funding for Union learn (TUC, 2020; PM'sOffice, 2020). Thus far, the gender aware strategy that is required for a more equal future of work, is decidedly absent.

[2] https://www.resolutionfoundation.org/events/jobs-jobs-jobs/

3 The growth of precarious work and emerging regulatory gaps

3.1 Divergent work formations

Sectors are being transformed through the process of digital adoption, and more recently the consequences of the pandemic. Alongside the need to address the inequalities arising from the evolving patterns of skill requirements that this is prompting, regulation surrounding the employment contract itself also needs amending.

Research by Eurofound has categorized the emergence of nine new forms of employment across the EU, characterized by their unconventional work patterns, locations and hours (Mandl et al., 2015). They suggest that some forms are more commonly used in certain industries. For example, there are a disproportionate number of women undertaking casual work on zero-hour contracts in social care and increasing levels of precarious employment for women in growing sectors (Taylor, 2017: 93-4).

The rapid growth of platform work since the late 2000s similarly challenges the typical employment relationship, making protection systems concerning wages, holiday and sick pay hard to regulate (Jaehrling et al., 2016; Clarke and Cominetti, 2019: 7; Wood et al., 2020). Annual growth in global revenue from sourcing platforms has risen from 53% in 2010 to 74% in 2011 (Mandl et al., 2015: 112). Platform workers are more likely to come from households with dependent children, and use the work as a means to top up income from elsewhere (Pesole et al., 2018; Huws et al., 2017). Research is unclear as to the gender split of these workers across the EU, given sample limitations and heterogeneity of take up across member states (Pesole et al., 2018; Huws et al., 2017).[3] What is clear is that women are more prominent in certain lower skilled areas of the gig economy, for example ancillary and on-location work (ie. housekeeping, cleaning and beauty services).

The rise of these forms of work are associated with lower job quality, risks of low pay, issues of timing, uncertain regularity, and insecurity in terms of employment protection. Social protection systems are outside the scope of atypical work and so policy is needed to protect from the "risk of substituting a traditional sweat shop for a digital one" (OECD, 2017). A gender agenda here would help flag the variant ways women use atypical work, the motivations for it and the consequences of it (Fredman, 2004). New legislative approaches are needed to offset emerging gaps in provision to ensure employment protection is still sufficient, with a specific understanding of the implications for women and families (Rubery, 2018; Howcroft and Rubery, 2018).

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[3] Pesole et al., research (2018) is based on COLLEEM survey which covers 14 member states and finds that men occupy the majority of platform-based roles, while recognising disparity between nations. Huws et al., research (2017) covered 7 member states and found an overall even split, noting that in the UK and Italy women performed the majority, while in other countries, including Sweden and Germany, men were in the majority.

For instance, consideration of the impact that caring commitments have on women's ability to work, and how access to maternity provision may be affected by women's positioning within emerging forms of work. It is widely recognized that these evolving trends require a legislative response that will vary across the EU (Taylor, 2017; HMGovernment, 2018; Jaehrling et al., 2016; O'Reilly and Lewis, 2018). Gendered impacts may then be evidenced by inequalities such as increased child poverty levels, determined by the take up of atypical work and the varied social protection systems in operation (Papanastasiou et al., 2016: 78).

3.2 Regulatory and collective gaps

The challenge of ensuring new jobs are good jobs also exists beyond the regulatory dimension, as there are other key actors within this framework (Goos and Manning, 2007). The importance of unionization and collective bargaining to promote equality and afford workers protection is clear (Blau and Kahn, 2003; Simón, 2012; Deakin et al., 2015; Jaehrling et al., 2016). The erosion of collective bargaining and declining union membership across the EU makes understanding and meeting the challenge of changing work relationships more important and yet more remote (Waddington, 2015).

The picture across the EU is diverse. After sharp falls in union density countries such as the UK and Germany are beginning to see union membership increase (Anders and Biebeler, 2015; Jaehrling et al., 2016; BEIS, 2018). New forms of unionism to represent platform workers have also started to emerge. Gender and ethnic representation within these organizations is variable. For example, Germany has a larger proportion of traditional union membership amongst men, while the UK has more female trade union members (BEIS, 2018; Anders and Biebeler, 2015). New forms of unions for gig workers, such as ride hailing and food delivery platforms, are also likely to have a higher proportion of younger and ethnically diverse members (Vandaele, 2019; Vandaele, 2018; Vandaele et al., 2019). Traditional unions are competing with new emerging unions responding to localized struggles of marginalized migrant and under-represented workers (Però, 2020; Perrett and Lucio, 2009; Connolly and Sellers, 2017; Alberti, 2016). Traditional unions are being challenged to respond and represent a diverse feminized labor force if they are to remain relevant in protecting them against them the growing regulatory gap between different labor market segments (Zahn, 2019; Staton, 2020).

However, difficulties with organizing often remote workers means trade union presence is limited, resulting in the partial recourse to collective support and advice that workers experience. In addition, exploitation in precarious labor markets is rife (Jaehrling et al., 2016). This has been further exposed by the pandemic as the lack of basic protections, such as sick pay, has become all the more visible (Paul, 2020; Wong, 2020). Consequences, such as the inability to afford to self-isolate are apparent (Hendy QC, 2020). While these consequences

are clearly not restricted to women, the need for a gender agenda to address the specific impacts women face is vital.

3.3 Emerging opportunities for reducing intersectional gender inequalities

The opportunities afforded by digital innovations and new forms of working may present potential benefits to address the limiting factors and barriers preventing women achieving economic independence (Rubery and Grimshaw, 2015; Krieger-Boden and Sorgner, 2018). The ability to balance work and family life and manage the “second shift” at home is a persistent barrier (Sayer, 2005; Hochschild, 2003; ONS, 2016; WEF, 2019). Policies to address this are recognized in the EU Employment policy on Work Family Reconciliation (Broughton, 2011; Quiros et al., 2018: 150).

The WEF claim the 4IR may provide opportunities to shift gendered roles, through developments such as improved workplace flexibilities and the increasing automation of household work (WEF, 2016). Evidence shows improved workplace flexibilities have a positive impact on gender pay gaps (GEO, 2018), and lead to higher rates of maternal employment (OECD, 2017: 271). Utilizing innovations and new flexibilities as a way to reimagine gendered identities may, in turn, enable changed approaches to care across the generations (Howcroft and Rubery, 2019).

However, caution is to be noted as greater flexibility may further institutionalize and embed women’s roles as carers (Grönlund and Magnusson, 2016). Flexibilities need to be available and utilized by both men and women in order to begin to reimagine approaches to care. The difficulty of this is apparent in the UK context, demonstrated by the low take up of Shared Parental Leave (BITC, 2018). Domestic arrangements and cultural constructs will inevitably impact as women’s workforce participation and divisions of labor within the home varies considerably across member states (WEF, 2019).

The improved productivity that the 4IR may create could be translated into shorter working weeks, which has a potential to disrupt existing gendered care patterns. Pre-Covid, organizations such as Microsoft Japan and Perpetual Guardian have reported how the implementation of a four-day working week translated into productivity gains. They also cited improved workplace stress levels and rates of absence amongst staff (Booth, 2019; Booth and Holmes, 2019; Stronge and Harper, 2019; Paul, 2019). Further research around the impact of increased productivity and reduced working hours may prove fruitful, given the ability for innovations to improve workplace efficiencies that have become so apparent during the pandemic with enforced homeworking.

However, recent evidence has shown that those better able to work from home during the pandemic are more likely to be better-qualified and come from higher income households. This is in contrast to young adults, minority ethnic and immigrant communities, who were more likely to be concentrated in occupations that did not enable homeworking (Reuschke and Felstead, 2020; Felstead and Reuschke, 2020; Yasenov, 2020). In addition, there is evidence that male and female experiences of working from home varied significantly during the pandemic: while both men and women felt more negative about increased domestic work (Craig and Churchill, 2020), women often fared less well as a result (Conaghan, 2020; Wood, 2020; Queisser et al., 2020; Summers, 2020).

A gendered perspective on new forms of employment highlights how job markets can be opened up in new and inclusive ways to women, beyond the importance of flexibilities. Barriers that may have prevented women from accessing labor markets and limitations in accessing entrepreneurial funding, such as inherent bias and cultural stereotypes, can be offset (WEF, 2019: 11, 30). Platform work has the capacity to bypass national and cultural barriers. Equally, there is potential for greater financial and entrepreneurial inclusion as women are able to access financial services in new and different ways (Mariscal et al., 2019; Ruehl and Kynge, 2019). Understanding the myriad of ways that women may be limited from participating in the labor market, helps expose the opportunities that the 4IR may afford to re-navigate these trends.

4 Discussion and conclusion

Innovations are changing definitions of the ways we work and will work in the future at a rapid rate. The pandemic has escalated the speed of this change. While the full breadth of consequences arising from the 4IR may be unimaginable now, prompting a tendency for negative corollaries, there is a need to understand and address the outcomes we are facing. A central element within this context is inequality, which is predicted to rise.

This article has explored how changes to the world of work may impact men and women differently, given the varied roles and alternative forms of working they occupy. Within the literature key themes have been identified: jobs predicted to both decline and grow; the requirement for retraining to meet evolving needs, and the emerging regulatory and collective gaps that have accompanied the growth of precarious work. A gendered exploration has highlighted how gender inequality might well increase, demonstrating the need for policy intervention.

Firstly, patterns of declining and emerging employment may be inconclusive but highlight key areas of tension. The growth of low pay occupations in the field of health and social care, combined with ageing populations across Europe, is set to present an unmet labor demand and enhance existing inequalities. Given the redoubled pressures on the care sector, as a result of the pandemic, the requirement for policy here is clear. Corresponding growth in high skill fields such as STEM and ICT are again, without intervention, likely to magnify pay gaps, occupational segregation and see inequalities rise.

Secondly, to meet the needs of the future workforce there is a gender dimension in the projected skill shortages. The current positioning of women further threatens to destabilize progress towards pay equity if it is not addressed. The importance of making this intervention now is underlined by the rapidly growing stream of literature exploring the embedded stereotypes and bias in data, artificial intelligence and new technologies. While technologies are tools created for change, a full appreciation of the change that is desired should inform that creation, or existing inequalities will again be reproduced.

Finally, invalidated regulatory approaches need to be updated to ensure that inaction surrounding new work formations does not further embed inequalities. This in turn may help enable opportunities that may arise through new forms of working and the productivity gains associated with them. Given the G20 commitment to reducing pay gaps and addressing inequality, the disruptions described could and should be utilized for the potential they hold.

Covid-19 has intensified the speed of change to the world of work. In so doing it has exposed the potential for inequality to deepen. The threats and opportunities discussed mark the need for readiness in the face of change to ensure that women can thrive in the workplaces of the future. Given the exponential speed of technological innovation, an

ability to be alert and respond to emerging issues is vital. As such, the requirement for a robust agenda that ensures gender equality tools are used, is paramount. Recognizing and understanding the projections described here through a gender lens will help to build collective understanding and consciousness of the varied inequalities that change will prompt.

This will be of particular relevance in the UK, as without exposure to key EU actors and the framework to benchmark against, the focus on gender equality may be deprioritized. The practicalities and costs of both Brexit and Covid have subsumed the UK government and workings of parliament, occupying national budgets and diverting attention from their Industrial Strategy (Partington and Inman, 2018; HMGovernment, 2017). The post 2007/8 financial crisis austerity measures, effectively deprioritized efforts directed at targeting inequalities, and this may be set to continue (Guerrina and Masselot, 2018; Macleavy, 2018; Rubery, 2015). It can be anticipated that the UK will fare less well in terms of gender impacts as a consequence of the 4IR and coronavirus. A continuation of EU / UK comparative analysis will provide a useful indication of the invaluable resource that peer review, soft law and hard law approaches provide, to those countries within the EU. The oversight that the EU affords through this period of change, through processes like the intergovernmental role of the Open Method of Communication, alongside gender mainstreaming, will be invaluable. The application of a gender agenda to address the jobs, skills and regulatory changes needed for the future of work, should ensure that these are not peripheral processes, but core elements accompanied by targeted efforts to shape an inclusive path to equality.

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