Humanizing work in the digital age: Lessons from socio-technical systems and quality of working life initiatives

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Abstract

New and residual challenges related to digital technology, COVID-19, precarious employment and scientific management are a reminder of research published in the early years of *Human Relations* that laid the foundation for socio-technical systems theory and its later conceptual offspring, the quality of working life. Analysing the evolution, challenges, legacy and lessons of socio-technical systems and quality of working life, we develop guiding principles for the theoretical development and practical implementation of socio-technical systems and quality of working life for the 21st century. These principles are needed to optimize the benefits of new technology and improve job quality. They would enable an effective and sustained humanization of work through stakeholder involvement, inter-disciplinary partnerships and institutional support, producing positive outcomes for employees and employers as well as wider society.

Keywords

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Introduction

In 1949, the recently formed UK National Coal Board was in trouble. Coal production was essential to support post-war reconstruction but the industry was struggling with poor industrial relations, high labour turnover and high absenteeism. Moreover, the new mechanized system of 'longwall' coal extraction was failing to provide the expected productivity increases. It was in this context that the Board invited the Tavistock Institute in London to compare high and low productivity mines. Ken Bamforth, an ex-miner and by then a Tavistock researcher, was sent to his old mine on an observational exercise. There he found that miners on short walls of coal had adapted the new technology to allow traditional groups to operate relatively autonomously resulting in high morale, low labour turnover, low absenteeism and high productivity. Eric Trist, a founding member of the Tavistock, was invited to visit the mine and compare this 'shortwall' system with the longwall system in the context of new technology and the broken traditional group working. From his observations, it was clear to Trist that, with the introduction of new technology, there was organizational choice in how it was implemented and, in due course, this breakthrough morphed into a push, led in the UK by the Tavistock, to re-humanize work.

In their critique of the longwall system, Trist and Bamforth (1951) were also implic-itly plotting a theoretical route between two positions that Perrow (1973: 3) would later call 'the forces of darkness' and the 'forces of light'. The forces of darkness, or the 'mechanical school of organizational theory', advocated managerial authority, worker specialism, clear divisions of labour, rules and regulations, and a separation of concep-tion and execution – better known as scientific management. The forces of light were represented by the human relations school of thought as articulated by Roethlisberger and Dickson (1939), which argued that scientific management was riddled with 'defi-ciencies in the management of work and workers' (p. vii) that caused productive ineffi-ciency. According to Perrow, the first position emphasized machines over people, the second emphasized people before machines.

However, while rightly trying to address the deficiencies in scientific management, human relations had swung the pendulum too far in the opposite direction Perrow believed. Both claimed to be more efficient and hence productive, though each claim was challengeable.

Referencing the Tavistock study, both positions failed to appreciate that organizations are systems in which 'everything', internally and externally, 'is related to everything else' (p. 12). Trist and Bamforth's insight was to recognize that for a given technology there was a choice of social organization and that for effective operation it was necessary to optimize both the social and the technical system or, as they put it, to have 'a social and a technological whole' (1951: 37). Out of their observations, the concept of a socio-technical system (STS) was born and the case for organizations to be regarded as STS. Attracting fervent support but also inducing trenchant criticism, this new theoretical approach triggered practical experiments in workplaces throughout Europe and had a major influence on subsequent thinking and research about the quality of working life (QWL). Indeed, by the 1970s, QWL had become a distinct concept and an international movement (Guest, 2022). While the influence of that movement and its underpinning

theory had long declined by the turn of the 21st century, both speak to recently renewed debates about new digital technology at work and offer the possibility of humanizing work broadly defined that brings productivity gains and that avoids the pendulum problem.

In this article, we define the features and the intersecting development of both STS and QWL. We also evaluate both, identifying their conceptual and practical strengths and limitations. From this critical evaluation, we suggest how they have continued relevance for scholars and policymakers' intent on ensuring the humanization of work in the face of new digital technology and concerns about a continuing deterioration in the quality of jobs. The article has five main sections. The first section outlines research and development of STS and QWL. The second outlines the challenges of early STS and QWL initiatives and their subsequent legacy. The third and fourth sections highlight concerns about new digital technology and the renewed interest in STS and QWL. The fifth section explains how this renewed interest might use the lessons of early STS and QWL to deliver an effective and sustained use of digital technology that is both productivity enhancing and human-centred.

The evolution of theory and research on socio-technical systems and the quality of working life

Trist began to think about the interaction between the social and technical systems while studying unemployment in the jute industry in Scotland in the 1930s, later consolidating his ideas based on his classic coalmining study (Trist and Bamforth, 1951). As it evolved over a number of decades, STS developed several core themes (Trist, 1981). At its heart was the view that there was organizational choice, challenging both the technological determinism associated with scientific management and the human relations school. Instead, it was suggested that the aim should be to optimize both systems to get the best of both, rather than pursue one at the expense of the other. Reflecting these aims, subsequent developments advocated work groups being given the autonomy and skills to make local decisions (what came to be known as autonomous work groups), while also recognizing organizations as open systems susceptible to influences from a complex and turbulent external environment and therefore requiring in-built adaptability (Emery and Trist, 1965). Additionally, Cherns (1976, 1987) highlighted improvements in QWL as one of the goals of STS.

The original research in the coalmining industry had been an observational and interview study (Trist and Bamforth, 1951). The preferred approach to its application developed by Trist and his colleagues was action research incorporating high levels of worker participation based on the ideas of Lewin (1947), who had experimented successfully with group participation to gain commitment to change. An influential example of the approach appeared to demonstrate that a highly participative group-based approach was more effective than traditional approaches (Coch and French, 1948). Subsequently, Trist and his colleagues conducted further studies in the UK coalmining industry, claiming successful action research applications (Trist et al., 1963). Another early application of STS resulted in group working being successfully introduced in four weaving mills in a large organization in India, resulting in increased job satisfaction and improved quality and quantity of output (Rice, 1953, 1958).

Notably however, researchers experienced problems putting STS into practice and sustaining it over the longer term. Attempts to diffuse the positive results more widely within the UK coal industry met with opposition from both senior management and trade unions, effectively blocking further progress. Similar issues were reported in a US coalmine successfully using experimental autonomous work groups to improve quality of working life (Trist et al., 1977). When management agreed to extend the experiment throughout the mine the initiative was narrowly rejected by workers, the project was abandoned and industrial strife increased. Worker rejection exposed the fragility of STS applications failing to take account of wider systems implications, including the prevailing industrial relations climate. Problems with sustainability were also evident in a follow-up study in 1970 of the Indian interventions. It found that group working had survived intact in the first experimental mill but had deteriorated in two mills and disappeared altogether in the fourth (Miller, 1975). This study demonstrated that a participative approach can precipitate change and in certain conditions socio-technical design of work can be sustained over time, but it also reveals the fragility of the approach if it is not reinforced by the organizational system and by careful boundary management (Miller, 1975).

Nevertheless, more positive developments were also evident, notably in Scandinavia. In Norway there had been growing interest in industrial democracy resulting in an evaluation of the effect of appointing worker directors to company boards (Emery and Thorsrud, 1970). Research revealed that this innovation had little or no impact on democracy on the shop floor, leading to a decision to introduce workplace democracy through the application of STS (Emery and Thorsrud, 1976). There was strong support at national level from representatives of business and the trade unions. Four main studies were carried out of which three were successful. Although there were challenges in gaining workers' and local union support and concerns about the role of the action researchers, forms of autonomous group working were diffused throughout each organization and outcomes included greater worker satisfaction and more efficient working. While the studies were a modest success in their company settings, they were less successful in achieving diffusion across Norway (Qvale, 1976). Nonetheless, these studies attracted attention in Sweden, where there was growing dissatisfaction about routine work among more educated workers and demands for a better quality of working life. As a result, many firms were experiencing difficulties in attracting and retaining workers. The response in many organizations was to introduce workplace industrial democracy involving either STS or something closely allied to it. The best-known example is the development of autonomous group working at the Volvo car plants at Kalmar and Uddevalla (Lindholm and Norstedt, 1975; Sandberg, 1993).

Similar rising expectations about the quality of working life led to workers demanding improvements in other advanced industrial economies in the 1960s and 1970s. The result was workplace initiatives in several countries, for example Philips in The Netherlands introduced 'work restructuring' that had similar features to STS while in the UK, Shell, aided by Tavistock researchers, set out a new philosophy of management that advocated the redesign of jobs based on STS principles (Hill, 1971) and which raised the issue of the quality of working life.

Born of concerns to improve the quality of working lives in the context of prevailing scientific management and the introduction of new technology, QWL became a distinct

concept and then a movement. Broadly, QWL involves improving workers' experience of the work and employment that comprises their jobs. Although often conflated conceptually – as in debates about the 'future of work' – work and employment are distinct conceptually. Work is an activity involving some form of technology to produce goods and services for own or others' use. This work can be unpaid or paid. Paid work typically falls within an employment relationship, turning workers into employees. Their employment has terms and conditions, such as pay and contract type. Reflecting this scope, Walton (1973) listed eight characteristics of QWL: adequate and fair compensation; safe and healthy working conditions; opportunity to use and develop human capacities; opportunities for continued growth and security; social integration in the work organization; constitutionalism in the work organization; work and the total life space; and the social relevance of work life. The outcome of QWL implementation for workers would be enhanced well-being at work and beyond; for employers it would be more productive workers; and for governments, a stable society.

As it evolved, two contradictory developments occurred within QWL. The first was a narrowing of its focus. Although QWL initially encompassed work and employment, at that time the overwhelming prevalence of the standard employment relationship (involving permanent, full-time employment with a single employer, at least for men) meant that secure employment was largely taken for granted and QWL interventions narrowed to focus on work, more specifically the promotion of task-centred participation, even if articulated typically as 'job design' (Beirne, 2008; Warhurst and Knox, 2022). The second was a widening of its intent. Although initially informed in the 1950s by a needs-based approach to motivation within jobs, by the time of Walton's (1973) writing, QWL had expanded conceptually to include the social relevance of jobs and a push for industrial democracy and wider social change (see also Emery and Thorsrud, 1976). As such, the QWL movement encompassed research and socio-political agendas with 'a general normative focus on ways of improving working lives' (Grote and Guest, 2017: 151).

It is also important to recognize that, stemming from STS, QWL emerged during a particular political-economic context: post-Second World War reconstruction, tight labour markets and rising worker expectations generated by increasing educational achievement. At the same time, the internal division of labour required by scientific management – the so called 'forces of darkness' – created worker dissatisfaction, anomie and alienation (e.g. Cherns, 1976; Walton, 1973), and produced widespread worker discontent, which played out more widely in society. Worker discontent was associated with reduced productivity, increased strikes and increases in absenteeism, sabotage and turnover along with significant health problems (Wool, 1973; Work in America, 1972). The 'blue-collar blues' became part of the media lexicon in the US (Wool, 1973) along with growing concern that 'all is not well' among employers, unions and government. Workers 'wanted satisfying, interesting and relevant work' (Westley, 1979: 116) and there was growing recognition and advocacy of a humanistic approach to work, with work recognized as a social institution in which social efficiency should be prioritized over purely economic efficiency (Levitan and Johnston, 1973). Attention was drawn to the organization and control of work and its meeting (or otherwise) of human needs, its effects on human well-being and the extent to which it offered a socially useful activity central to the lives of most adults (Wool, 1973). Satisfying

work was seen as a basic human need, essential to identity, self-respect and order in human life.

QWL became a hugely influential movement with numerous studies and research centres in, for example, the USA, Canada, France, and the UK (Grote and Guest, 2017) with the Scandinavian countries having the best-established research centres. There was even a NATO-sponsored conference in 1979, reflecting concern about the impact of poor quality of working life on alienation, societal well-being and western civilization. However, Guest (2022) notes that lack of agreed definition and conceptual fuzziness were becoming problems for the QWL movement. The purpose of QWL was increasingly ambiguous, which impacted the operationalization of interventions. These problems became more apparent over time and more difficult to resolve (Burchell et al., 2014).

Moreover, from the mid-1970s, changing economic and political circumstances, including the Oil Crisis followed by depression and the emergence of neo-liberal-inspired governments initiated the demise of companies' interest in QWL and government interest also began dissipating (Knox et al., 2011). The so-called 'Golden Age' was coming to an end (Stanford, 2016). While pockets of interest remained in some countries, as an international movement QWL fell away. Ultimately, improvements in job design proved to be short-lived and superficial as disinterested companies turned to other strategies that they thought offered more potential for competitiveness (Knox and Warhurst, 2015). At the same time, academic critics were beginning to challenge aspects of STS that had underpinned much of the early QWL movement.

The challenges and legacy of early socio-technical systems and quality of working life initiatives

Despite enthusiasm among advocates for STS and QWL, their application faced considerable challenges, limiting their impact. Three particular challenges are evident.

The challenge of technology

By the 1980s, the main tenet of STS, that organizational choice existed in the socio-technical relationship had empirical validation beyond STS advocates, even if the terminology of STS was no longer being used (see Wilson and Buchanan, 1988). Yet, despite advocacy of joint optimization of the social and technical systems, the early practitioners of STS struggled to affect those choices through intervention, seriously underestimating the challenges of implementing it.

One reason, we suggest, is that early STS advocates were social scientists with primary expertise in the social dimension. Indicatively, a review of the US experience by Pasmore et al. (1982) found 134 experimental interventions of which 53% involved autonomous work groups but only 16% involved technical change and the evidence suggested that these interventions were the least successful. These findings draw attention to a limitation of the dominant role of social scientists in the implementation of socio-technical change. Their competence lies in the social rather than the technical aspects creating an imbalance, resulting too often in social but not technical optimization.

Technical changes were accorded a minor role until engineers became involved. Here, the case for rebalancing to emphasize technical as well as social aspects was reflected in the Volvo innovations which were largely led by engineers but designed with a focus on improvements in QWL for workers (Lindholm and Norstedt, 1975). A similar rebalancing was evident in the Netherlands, where researchers developed their own version of STS. Their approach, set out by de Sitter et al. (1997), critiqued features of traditional STS including what they viewed as an artificial distinction between social and technical systems, over-simplification of the concept of joint optimization and over-emphasis on QWL. Combined with support from senior management and works councils, the aim was to embed an organizational design that can respond to external uncertainties, enhance productivity and ensure the quality of work. The cases cited by de Sitter et al. attest to the efficacy of the approach but it offers QWL as a means to an end rather than an end in itself.

The challenge of action research

Researchers' use of action research to facilitate the changes associated with both STS and QWL also led to challenges. Lewin's (1947) approach to change, with its advocacy of action research, had a substantial influence on early initiatives. This approach traditionally involves an expert in change processes and considerable involvement of those stakeholders experiencing the potential change. Herbst (1976) notes that there are typically stages in an action research programme and that the Tavistock researchers had become experts in the first stage of undertaking experimental changes at a local level. The second stage involves some form of diffusion and here Herbst believes that the Tavistock researchers were less well-equipped. Even in the Norwegian case, when the groundwork for diffusion through national level support was gained, diffusion proved largely unsuccessful, at least in Norway (Bolweg, 1976).

A number of other criticisms were made of the early studies. Heller (1993) claimed that while offered as action research, what was being reported was research without action (e.g. by Coch and French, 1948 and Trist and Bamforth, 1951) even if it led to later action. Heller endorses the view that much action research is long on action, short on data and with limited generalizability. This summation reflects a wider concern that much of the STS research lacked the academic rigour to advance knowledge (see Bolweg, 1976) or create sustainable action once the key change agents had departed (see Blackler and Brown, 1980) and management support had declined (Miller, 1975). Moreover, as the UK coalmining studies revealed, initiatives can be jeopardized without recognition of wider systems interests and power relations (Trist et al., 1977). There is also a need to temper any dominant role taken by outside experts (Gustavsen, 1993). In addition, changing business environments need to be accommodated (Dankbaar, 1997). Finally, as Heller notes, there is a need for rigour and avoidance of particularism in the underpinning research. In summary, in the future there is a need for a more effective strategy of change and more rigorous underpinning research.

The challenge of countervailing forces

Certain countervailing forces also created challenges for STS and QWL. The early QWL movement resulted partly from rising expectations among an increasingly well-educated workforce in advanced industrial economies at a time when labour markets were very

tight. When these conditions changed, so did interest in QWL. One of the most telling examples is Volvo, where the much-lauded Kalmar and Uddevalla plants were shut as demand for Volvo cars became volatile while the traditional car plant at Torslanda survived (Sandberg, 1993).

The sustainability of STS and early QWL initiatives was also constrained by the limited and often conditional support of management. Trist et al. (1963) document how senior management in the UK coal industry was never convinced about the benefits of the socio-technical approach and retained a belief in the superiority of technology. Middle managers and supervisors were also liable to be unenthusiastic about autonomous work groups that threatened their role. Indeed, removal of first line supervisors was one of the frequently cited efficiency gains in a number of the reported studies (Cohen and Ledford, 1994).

There is considerable evidence that STS application resulted in reduced stress, increased satisfaction and wider improvements in QWL such as improved work-life balance (Bakker and Demerouti, 2007; Karasek, 1979). In some cases, unions provided strong support for these initiatives as in the case of the national-level unions in Norway. However, unions were not always enthusiastic. Trist et al. (1963) recount how the mining union in the UK gave priority to pay increases, job security and conflict management. Warner (1976) points out that union priorities were always to advance representative industrial democracy and workers' rights ahead of shop-floor initiatives. Trist et al. (1977) note that the failure to progress autonomous work groups in the US mine was partly owing to suspicion that management was using it to undermine the union's role and the collapse of the scheme was followed by extensive industrial conflict. In Germany, a government sponsored Humanization of Work programme received little support from unions such as IGMetall, which preferred to prioritize collective bargaining (Fricke, 2000).

In consolidating many of the most influential publications addressing STS, Trist and Murray's 1993 *Anthology* brought its aspirations and challenges to a head. Pasmore's (1995) review of the book acknowledges the challenges of diffusion and the political constraints, but as an enthusiast for the QWL movement he describes STS as 'a paradigm which had a greater impact on the "practical affairs of man" than almost any other in the social sciences' and argues it 'remains as valid today as it was in the 1950s' (p. 15). A more critical review by Scarborough (1995) raises familiar concerns including the neglect of power and politics, doubts about the validity of the systems concept, the dominance of action research at the expense of rigorous research and theory development, and the ambiguity of some of the terminology. Indeed, he characterizes STS as 'a kind of intellectual Esperanto: a language championed by a brave and enthusiastic few, but actually spoken by no one else' (p. 32). More broadly, he believes that 'As an intellectual project [socio-technical analysis] seems at best stalled, at worst moribund' (p. 24).

The legacy of early socio-technical systems and quality of working life initiatives

Even as STS and QWL came under challenge and explicit interest waned, they had a legacy that reverberated in subsequent research and policy initiatives. In particular, two core elements of STS, the concept of 'responsible autonomy' and autonomous work

groups, lived on in research that was also pitted against job design based on scientific management, as research by Knights et al. (1985) illustrates. Again, however, such research reflects a narrower focus on the design of work and particularly the design that prioritized the social system largely to the exclusion of the technical system. In this respect, it might be said that this narrow focus reflects the approach of American psychologists such as Herzberg (1966) and Hackman and Oldham (1975). This focus continued in research focused on job content, autonomous work groups and teamworking (e.g. Bacon and Blyton, 2000; Freeney and Fellenz, 2013; Pearson, 1992; Wall et al., 1986). Results tended to show that in comparison with workplaces organized along the lines of scientific management, job satisfaction is higher but productivity gains can take time. Nonetheless, Pearson (1992) concludes that 'autonomous work groups are a viable proposition in contemporary industrial organizations' (p. 932).

Similarly, issues advocated by QWL researchers continued to be addressed, notably in *Human Relations* with the journal including, for example, participation at work (Gallie, 2013), proactivity (Vough et al., 2017) and job crafting (Bakker et al., 2016). Each of these studies, directly or indirectly address the issue of autonomy and control at work and its implications for employee well-being. Illustratively, Gallie found that direct participation was associated with job satisfaction, skill development and well-being but that task discretion, reflecting autonomy and control over work had the strongest association followed by consultative participation and semi-autonomous team working.

A notable shift has been to envelop work-life balance within debates about the quality of working life. In particular, there has been much interest in flexibility at work, typically reflecting degrees of choice about when, where and how much work is expected or agreed (e.g. Angrove and Charlwood, 2015; Heyes and Tomlinson, 2021; Kossek et al., 2010). Angrove and Charlwood, for example, revealed how individual preferences regarding working hours impact the quality of working life. Each of the studies speaks to QWL, highlighting in particular the importance of worker autonomy, choice and participation.

These examples illustrate how, despite declining overt interest in STS and QWL, related research has continued over the years. Drawing together job redesign research, it is useful to compare two contrasting overviews. In his review, Kelly (1992) concluded that when employees perceived increased control and autonomy there was also increased job satisfaction but no convincing evidence of improved performance. By contrast, Knight and Parker (2021) reported good evidence of performance improvements, concluding that job redesign often results in mutual gains including improvements in the quality of work and organizational performance.

Even if job redesign could deliver these mutual benefits for employees and employers, the frailty of many STS interventions led to questions being raised about whether the strategy of change that informed much of the major QWL studies was the right one to ensure sustainability. In this respect, it is interesting to note that Norway and Sweden eventually opted for legislation to bring about more enduring changes. The major Industrial Democracy in Europe research programme (IDE, 1993) concluded that it was only through legislation that lasting change could be introduced and sustained. In other words, it appears that the institutional framework at both organizational and national levels was insufficiently embedded to support STS and QWL, requiring a legislative

framework to sustain it. This point is championed recently in Warhurst and Knox's (2022) call for a new QWL. They similarly argue that what is needed are statutory minimum standards for work and employment if improvements are to be made and sustained.

The new digital technology and its effects on worker well-being

If STS and QWL were a response to the introduction of a new technology to twentieth-century workplaces, another new technology – digital technology – is re-igniting interest in the relationship between humans and technology as the 21st century unfolds. This new technology is said to herald a new digital age (Vallas and Kovalainen, 2019) that represents a 4th Industrial Revolution (Schwab, 2016).

There are a number of ways in which digitalization can affect work and employment (see Warhurst et al., 2020). However, two types have attracted most attention from researchers and policymakers. The first is the digitalization of production, sometimes called 'Industrie 4.0'. Although there is no agreed definition of Industrie 4.0, it involves Artificial Intelligence and advanced automation combined with the emergence of big data, the internet of things and huge and ever-increasing computer power to create 'smart factories' (Davies, 2015). The 'clever robots' used in these factories are capable of undertaking not just physical tasks but, increasingly, cognitive tasks. The second is the digitalization of work, sometimes known as 'gig work' or 'platform work'. The platform economy uses digital networks (platforms) to coordinate economic transactions through algorithms – usually matching the demand for and supply of resources. The platform mediates worker supply and consumer demand for the completion of a task or 'gig', operating as market intermediary (Friedman, 2014; Gandini, 2019). As such, platform companies present themselves as brokers of tasks, not the employers of those who do the tasks, and these tasks are contingent, occurring 'on-demand' as and when needed by consumers, and payment is for the task.

Initial studies examining the digitalization of production, led by Frey and Osborne (2013) and drawing on econometric modelling complemented with educated guesswork from experts, predicted massive and sustained job losses as the clever robots replace human labour. Indeed, according to one commentator cited in the Review of Digital Innovation for the Economy and the Future of Work in Wales (2019), 'robo-geddon' was coming. Initial policy responses accepted the arguments underpinning such studies and sought to accommodate digital technology by adopting active labour market policies to support displaced workers to find new jobs, for example through training, or provide them with welfare if they could not – hence debates about the introduction of a Universal Basic Income (Ainsworth and Knox, 2022; Warhurst et al., 2020).

However, Emery and Marek (1962) long ago warned against fetishizing automation. That warning went unheeded in the initial studies. These predictive accounts were technologically deterministic, ignoring the organizational choices and social and economic context of organizations into which technology is introduced. Historical analyses based on what actually happened in previous waves of new technology plus a limited number of new empirical studies reveal that, while job losses are likely, so too is job creation and

the reconfiguring of existing jobs (Hunt et al., 2022; Warhurst and Hunt, 2019). This reconfiguring can be beneficial or detrimental to worker well-being. It might lead to polarized workplaces with a small number of high-skilled workers designing, introducing and maintaining the digital technologies, and more low-skilled workers either left with only monotonous tasks for which technological substitution would be too expensive or side-lined into machine-minding, simply overseeing machines that do the work (see Warhurst et al., 2020). The need to adapt to new technologies also raises questions about demographics with younger workers adapting more easily to the demands of a digitalized workplace while older workers may find adapting more challenging.

There are similar concerns about the digitalization of work, which heralds the potential death of employment as jobs are replaced by spot markets for tasks mediated by platform companies. Such companies do not have the responsibilities of employers and workers lack the rights of employees (Taylor et al., 2017). Gig work has thus been associated with a range of quality of working life issues. While gig workers often herald the flexibility associated with their work, such work has also been associated with driving down wages, increasing insecurity and income volatility, and limiting collective voice and career opportunities (e.g. Myhill et al., 2021). Further research reveals that gig work exacerbates inequality based on race, gender and ethnicity (Hua and Ray, 2018). The problematic role of algorithmic management has also been highlighted by which workers, despite not being in an obvious employment relationship, are exposed to tight monitoring and control in the execution of their tasks by the platform company (e.g. McDonnell et al., 2021).

Perhaps because of a lack of obvious employment relationship, governments' initial policy response to the digitalization of work was not to press for a labour relations resolution. Instead, governments perceived the relationship between platform companies and platform workers as a business-to-business relationship, with workers cast as self-employed entrepreneurs with their own micro-businesses. The task for government was then twofold: to ensure a level playing field among businesses and to ensure adequate tax capture from these businesses (Mathieu and Warhurst, 2020).

Some policymakers have begun to reflect more critically on the potential human costs of digitalization, leading to a new call for a future of work ('work' again a shorthand that covers both work and employment) that places humans at its centre. First out of the blocks was the German Federal Ministry of Labour and Social Affairs (2017), which argued that policy has to avert a techno-centric future in which machines make the decisions. Instead, the future has to be human-centric. This human-centric approach has transmuted into a call by the European Commission for a new Industrie 5.0. in which 'technology serves people . . . placing the well-being of the industry worker at the centre of the production process' (Cotta and Breque, 2021: 15 and 3). Industrie 5.0 is premised on improving efficiency so that both companies and workers benefit from the digital transformation; essentially charting a course between the forces of darkness and light. Similarly, there are proposals by the European Commission to make gig work a labour relations issue, wanting to ensure that workers have both an employment status that reflects their actual relationship with the platform company and access to applicable labour and social protection rights. There must be 'fairness' for workers in the platform economy, the Commission asserts (Kiss, 2022).

At the same time, policymakers across the US, UK, European Commission and OECD have called for improvements to job quality to improve individual well-being, firm competitiveness and national economic growth (for an overview, see Warhurst et al., 2022). The OECD, for example, asserts that quality jobs are an important driver of increased labour force participation, productivity and economic performance. According to recently departed OECD Secretary General, Angel Gurria: 'Job quality is not only important to workers' well-being, but also to the overall productivity of a firm. This is now understood at the highest political levels' (OECD, 2016: 1). Government policy initiatives to promote 'Fair Work', 'Decent Work' and 'Good Work' or just plain 'good jobs' now proliferate.

What these governments, the European Commission and OECD recognize is that policy options exist in the use of new technology and how it interfaces with workers. This policy realization and its push to humanize work in the putative digital age is laudable we believe but it is a policy push without a theory. In other words, it lacks a set of propositions or principles – the generative mechanisms – as to how this humanization might be achieved.

Full circle: Renewing socio-technical systems and revising quality of working life for the 21st century

In this respect, debate about the problems with and solutions to accruing the benefits of digital technology has gone full circle. There is a new wave of researchers concerned to implement digital technology within organizations to jointly maximize the technical and the social; drawing again on socio-technical systems theory (Avis, 2018; Bednar and Welch, 2020). Referencing the past work of the Tavistock, Bednar and Welch state that a contemporary socio-technical perspective should be the 'cornerstone in discussions about smart working in Industry 4.0 and 5.0' (p. 291). They continue that organizational change that maximizes technological capacity needs to be based on 'human-centred design' (p. 292). For Avis (2018), this renewed advocacy of STS rests on technology and social relations mutually 'co-constituting' the development of the 4th Industrial Revolution with both needed to maximize its outcomes. This return to STS is underpinned by broader recognition that there are organizational choices in how digital technology is used and that these choices affect the quality of jobs (Dhondt et al., 2021). This return to STS and QWL is to be welcomed but will not deliver on effective or sustained humanized workplaces if the lessons from the past are not learnt. The past challenges suggest six guiding principles for the theoretical development and practical implementation of STS and QWL in the 21st century and that might provide the necessary generative mechanisms.

Attempts have been made already by Grote and Guest (2017) and Warhurst and Knox (2022) to revise QWL and, reflecting on past QWL experience, together suggest three guiding principles. The *first principle* addresses the past ambiguity regarding the purpose of QWL by asserting that QWL is primarily a workplace issue. Both Grote and Guest and Warhurst and Knox take the constitution of jobs to be the key focus and the workplace or organization therefore the main point of intervention as it is the site of job-specific well-being and productivity. Thus, improving the content of jobs and the experience of work is the first order priority and potential beneficial extra-organizational outcomes are

spill-over effects rather than the primary purpose of QWL. For example, Marmot et al. (2020) argue that improving quality of working life by reducing unsatisfying work and precarious employment yields benefits that flow to the community, government and society by redressing health inequalities and reducing healthcare costs. Analysis of both potential sets of benefits – intra-and extra-organizational – forms an important feature of the future research agenda while also recognizing first and second order priorities.

Once the purpose of QWL is established, what constitutes QWL needs to be addressed. The *second principle* therefore is that QWL envelops both the work and employment practices that comprise jobs. In seeking to address its past definitional and conceptual fuzziness, Grote and Guest (2017) contemporize the intellectual coherence of QWL by arguing that much of the research has focused on a specific dimension of QWL rather than taking an integrated approach that examines a range of QWL dimensions, including aspects of work and employment. This 'bundling' approach echoes research on high performance working where bundles or 'systems' of practices work synergistically to better maximize outcomes for companies and employees (e.g. Harley et al., 2007). In addition, Grote and Guest update and expand Walton's (1973) list to become 10 by adding 'individual proactivity' and 'flexible working'. In essence, and responding to the development of the gig economy, these additions align with a key legal test of self-employment – the capacity for workers to decide what work is done, when, where and how.

For Warhurst and Knox (2022) a related issue is the focus of past QWL research on work, to the neglect of employment. They argue for a rebalance and offer seven dimensions based on the Good Work measures recommended by the Measuring Job Quality Working Group (Irvine, 2018): terms of employment; pay and benefits; health, safety and psychosocial well-being; job design and the nature of work; social support and cohesion; voice and representation; and work-life balance. This set of work and employment dimensions has been recommended for use to the UK Government and, because it is derived from international research, is likely to have wider applicability. However, what comprises the specific set of practices within each dimension has yet to be agreed (mainly owing to data availability issues, see Irvine, 2018). Moreover, there is, as yet, very little research on which bundles of QWL practices best lever worker well-being or productivity gains (see Bosworth and Warhurst, 2020). Further research is therefore needed to establish the bundling effect.

Where Grote and Guest and Warhurst and Knox differ is on delivery and here the *third principle* comes into play – that QWL requires institutional support, particularly from governments. Both Grote and Guest and Warhurst and Knox support workplace initiatives to promote QWL. However, the latter call for extra-organizational institutional support both for the diffusion and sustainability of QWL. Echoing the Scandinavian experience of STS, they call for statutory intervention to provide minimum standards of job quality. However, they emphasize that such legislation does not preclude the voluntary workplace interventions proposed by Grote and Guest, which could be triggered by employer choice or management-union negotiation, and encouraged and supported by government. Indeed, Warhurst and Knox support such interventions. Organizations that adhere only to minimum standards will provide decent jobs – by providing living wages for example. Organizations that choose, through whatever means, to go beyond minima will offer good jobs, attending not to employee basic needs but to employee

preferences, offering opportunity for employees to use their abilities for example (see, respectively, Stuart et al., 2016 and Sutherland, 2011). How far organizational choice extends beyond the minima and the additional organizational performance benefits that accrue should be another area of future research and the evidence base created will help establish (or otherwise) the business case for any revised QWL based on voluntary workplace interventions.

Future research should also examine how the COVID-19 pandemic has affected the QWL. For example, COVID-19 has amplified pre-existing QWL problems and deficiencies experienced, for example, by ethnic minorities, young workers, marginalized workers in precarious employment as well as those in frontline jobs (in hospitality and aged care, for example), facing intensified risks to their health, and safety, security and well-being (e.g. Baum and Hai, 2020; Quinlan, 2021). Those workers able to work from home faced lower health risks but new social and technical challenges, including increased social isolation and digital surveillance, problems with technological integration and overload, and greater 'spillover' impeding work-life balance (Wang et al., 2021). On the other hand, many workers grew accustomed to working from home and have been reluctant to return to traditional office-based working raising new challenges about flexible work arrangements. The ways in which different industries, organizations and occupations have adapted to the challenges created by the pandemic and its aftermath along with the potentially longer-lasting pressures created by digital technologies will have critical implications for QWL and wider society.

By contrast to these recent suggestions for reviving QWL, little is said in the renewed advocacy of STS about its past challenges and the need for it to be reframed theoretically and practically. Past experience suggests that this reframing needs to focus especially on the potential countervailing forces and the relative ineffectiveness of the chosen action research strategies of change. Doing so suggests two further guiding principles primarily applicable to STS but also, by inference, QWL.

The *fourth principle* centres on optimizing mutual interests. There are parallels between Perrow's metaphor of the forces of darkness and light and the focus on the technical and the social dimensions of STS, with one implying management priorities while the other gives weight to workers' interests. Although setting up two opposing sides – the forces of darkness and light – is ideologically[1] neat – it can overlook the reality of shared workplace interests. Effort to reconcile the different interests for joint maximization has parallels in the industrial relations literature. While a pluralist tradition accepts underlying differences between capital and labour, there is also recognition of the need for collaboration. At the heart of this type of analysis is a recognition from managers and workers that both have and can legitimately pursue different, sometimes conflicting, interests that require institutional mechanisms that build trust such as works councils or forms of partnership to provide a context where the identification of mutual interests creates the opportunity to pursue the implementation of STS and QWL.

Building on the pluralist tradition, the *fifth principle* is the need for awareness of a stakeholder eco-system in which, to return to Perrow (1973), everything is connected to everything else. Beer et al. (1985) have outlined a stakeholder approach to human resource management (HRM) that recognizes the need to consider the interests of a range of stakeholders and therefore a range of potentially different outcomes. Specifically, they

identify shareholders, managers, employees, government, the local community and unions as stakeholders (and today we might add customers); and individual well-being, organizational effectiveness and societal well-being as outcomes. We believe that there is scope to build on the HRM stakeholder approach in developing research and application of STS and QWL.

We recommend the approach advocated by Kochan et al. (1986) in the US and others in Europe to bring stakeholders together, ensuring voice, first within the organization and then beyond to explore mutual interests and seek win-win opportunities through STS and QWL. Support for this proposition is also a question of values. Indeed, the stakeholder approach rests on organizations having a particular set of values – that the organization exists and operates not for the benefit of any one stakeholder, such as shareholders, but for the mutual benefit of all stakeholders (Freeman et al., 2004). Returning to the example of HRM, Peccei and Van de Voorde's (2019) extensive review reveals that the application of HRM generally results in mutual benefits of higher well-being and higher organizational performance. Such outcomes help deliver on the 'deal' between stakeholders based on their shared interests, without which there will be exit (Freeman et al., 2004). In the case of employees who cannot exit, we might add recalcitrance (Ackroyd and Thompson, 1999), which of course is bad for productivity. Moreover, as Freeman et al. (2004) note, it would be a mistake to believe that all managers are only interested in maximizing shareholder value. Managers are aware of their responsibilities to a wide array of stakeholders within and outwith their organizations, and, as the early initiatives demonstrate, can be willing to engage with STS and QWL for both moral – it is the right thing to do – and instrumental – it is good for business – reasons. It is notable that the OECD is advocating job quality as a route to better employee well-being and higher productivity suggesting it to be in the interests of management and shareholders, the latter of course also organizational stakeholders (Freeman et al., 2004).

To better promote balance of focus on both the technical and social and reflecting past evidence of the limited diffusion of STS and QWL initiatives, the *sixth principle* centres on, firstly, rebalancing expert input into interventions and, secondly, widening the expert disciplinary lens brought to bear upon interventions. The turn away from action research and applied research more generally in the past few decades has resulted in too much current research pitched at high level discourse rather than practical initiatives to improve work, with some researchers content more to criticize than to contribute to change (Beirne, 2008). Subsequently there is a need and space for renewed applied research informed by what Beirne calls 'grounded idealism', drawing on the early Tavistock initiatives. Its focus on process, not just outcomes, would help address the problem of diffusion within companies, industries and countries that beget the early STS initiatives (see also Elden and Chisholm, 1993). As part of that process of affecting workplace change and reflecting the first aspect of principle six, researchers, as experts, need to foreground the voices and experience of non-experts at the workplace or organizational level, and have better appreciation of these non-experts' capacities and capabilities. According to Beirne (2008), this generative research should be, 'decentralised, emergent, and negotiated, taking shape openly and interactively, rather than following an expert rationale' (p. 678) and would, ironically, resonate with STS critics' argument for greater sensitivity to

agency (see, e.g., Thompson and Smith, 2009). To avoid the danger of this research being captured by any particular interests there needs to be a plurality of voices and experiences, framed, as we suggest above, within a stakeholder approach.

The second aspect of principle six proposes that the expert disciplinary lens brought to bear upon the problem and its solution must also be widened through inter-disciplinarity. At the very least there needs to be a balance between the social and technical in terms of expertise and focus, which means a partnership involving the social and engineering sciences, including ergonomists. However, if improvements in worker physical and psycho-social well-being are to be an outcome, the health sciences should also be partners. We do recognize, however, two important caveats. First, given the turn to high theory and its diminished status, there is currently a gap in action and, more generally, applied research across these disciplines in universities in some countries, such as the UK. What is required therefore, is the building of new applied research capacity and expertise. Second, there will be educative needs for both managers and unions. Neither will feel comfortable with involvement in any new initiatives if they lack awareness and understanding of STS and/or QWL and their beneficial outcomes (see Trist et al., 1963). These needs should be met through universities that offer management and union education and training. Again, however, capacity is generally weak currently with limited relevant teaching provision.

These two needs will not be addressed quickly or easily. However, Beirne (2008) notes that pessimism only breeds inertia and he challenges the critics' pessimism in his account of the idealism of the early STS researchers. This account is a reminder that these researchers sought to develop a 'grass roots up' (p. 677) workplace-democracy-promoting alternative to scientific management with its alienating work and top-down managerial control. Unlike their critics, Beirne, contends, these researchers were inclined to match their expressed values with efforts to deliver progressive practice.

Concluding remarks

STS and QWL were key theoretical and conceptual developments that helped establish the early significance of *Human Relations* within inter-disciplinary social science, seeking to relate social theory to social practice (Editorial, 1947). It is right therefore that this achievement is marked in the journal's 75th anniversary in 2022. The same year also marks the 50th anniversary of the International Quality of Working Life Conference (Davis and Cherns, 1975) which took place at the height of early interest in QWL and demonstrated the influence of STS and QWL on research and policy development beyond the journal.

Early STS, and its conceptual offspring QWL, provided a trailblazing theoretical approach that plotted an alternative to the forces of darkness and light (Perrow, 1973) that had hitherto dominated research thinking about the relationship between people and machines within organizations. Tavistock researchers pioneered ideas and action to humanize workplaces that sought to overcome the pendulum problem manifest in scientific management and the human relations school. Their solution was based on recognition that organizational choice exists and that, with it, workplace interventions could be pursued to deliver the joint maximization of the technical and social (Trist, 1981). Over the next two decades a body of empirical evidence was developed by researchers that convinced companies and governments of the merits of STS and QWL. Indeed, QWL

became a 'movement' with international influence (Guest, 2022). On balance, the evidence suggests that STS and QWL interventions can result in productivity and well-being gains for companies and workers. More often than not, however, their impact has not been sustained. Nonetheless, the early STS and QWL initiatives had a legacy effect on subsequent research within and beyond *Human Relations*.

With calls for a 21st century humanization of work (broadly defined) in the context of new digital technology (e.g. Cotta and Breque, 2021), STS and QWL are being revisited (e.g. Bednar and Welch, 2020; Dhondt et al., 2021) and, with respect to QWL, already being revised (see Grote and Guest, 2017; Warhurst and Knox, 2022). To be effective and sustained, any renewed STS and QWL will need to learn the lessons from the past. These lessons suggest a number of guiding principles that would provide the theoretical development and practical implementation of STS and QWL. These guiding principles should help the new generation of researchers interested in organizational-level change to draw on STS and QWL. The aim has to be an evidence-informed humanization of work through sustainable interventions that can produce positive outcomes for employees and employers in the first instance and, in the second, wider society. Achieving these outcomes will require gaining the commitment of stakeholders and institutional support not just at organizational level but at industry and national levels. Researchers themselves need to be participative, partnering not only with the range of organizational stakeholders but also their fellow experts from other disciplines. The outcome will not only be a humanization of work in the 21st century but also high-quality research that can continue to be published in *Human Relations* over its next 75 years.

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Note

1   Ideology here refers to the values underpinning how economic activity should be purposed and run, see Freeman et al. (2004).

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