DOES THE EVIDENCE AND THEORY SUPPORT THE
GOOD WORK DESIGN PRINCIPLES?

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ABSTRACT

Work design, or the content and organisation of one's work tasks, activities, relationships, and responsibilities, has a profound impact on individual health, well-being, and motivation, as well as the health and productivity of teams and organisations.

Safe Work Australia Members developed ten good work design principles which have recently been published in the 'Principles of Good Work Design- A work health and safety handbook' (Good Work Design Handbook).

The current paper analyses work design evidence and theory linked to the principles. Although it acknowledges physical, biomechanical, and cognitive work characteristics described in the handbook, this paper focuses on psychosocial work characteristics[1] such as autonomy, support, variety, and a moderate level of demands.

First, after defining work design, introducing the principles, and setting the policy context, this paper reviews the rationale for good work design, linked to the 'why' principles.

Second, the paper analyses major psychosocial work theories and evidence pertinent to the 'what' principles, including sociotechnical systems thinking and autonomous work groups, the Job Characteristics Model, and various job strain models. The exact psychosocial work characteristics that need to be focused on will depend to some extent on the needs, preferences, and capabilities of the individuals whose work is being designed, as well as the unique features of the business or organisational context.

Third, attention is given to the redesign of work, which links to the 'how' principles. This section includes practical elements of work design, including the process of achieving good work design.

The final section is future focused, and reports recent theoretical expansions and contemporary work design challenges.

Key words: work design, psychosocial characteristics, job characteristics, job enrichment, autonomous work groups, teams, future of work.

Intended audience: This paper is intended to be a resource for tertiary institutions to use in units focusing on work health and safety and in particular on the psychosocial aspects of work design, or to use in related units such as organisational design, organisational development, and human resource management. The paper will also be of interest to professionals with responsibilities that may directly or indirectly include the design of work. The paper is designed to support the video on Good Work Design Principles produced as part of the Safe Work Australia 2015 Virtual Seminar Series.

Style and reading level: Academic style and tertiary.

1 LEARNING OBJECTIVES

When you have read this paper, you should be able to:

- Explain the job simplification/ Taylorist approach to work design and the costs it incurs.
- Discuss good work design (and, more specifically, good psychosocial work design) and articulate its benefits for multiple outcomes (including health, well-being, performance, and productivity).
- Describe the Work Health and Safety Act and how it applies to work design.

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[1] Psychosocial work characteristics are also referred to as psychosocial risks, psychosocial hazards, work characteristics, and psychosocial factors.

- Summarise the principles in the Safe Work Australia's (2015) 'Principles of Good Work Design: A Work Health and Safety Handbook'.
- Describe and critique the major psychosocial theories of work design, including the Job Characteristics Model, the Demand-Control model, and Sociotechnical Systems Theory.
- Recognize that good work design varies for different individuals and contexts
- Discuss principles to effectively manage the implementation of work design/ work redesign.
- Describe extensions to established work design theories, and identify contemporary challenges with important implications for work design

2 INTRODUCTION

> "We see about a hundred injuries a year and I'm amazed there aren't more. The main causes are inexperience and repetition… People work the same job all the time and they stop thinking. Workers in a plant like this need to be moved around…"(Slaughterhouse Human Resources Director; Bowe et al., 2000, p. 52).
>
> "You work hard for a piece of work, to plan for the work, to carry out the work, and at the end you feel this great sense of achievement that it has been down to you… (Portfolio worker cited in Clinton, Wood, Totterdell, in press, p. 187)
>
> "I leave my brain at [the] gate when I arrive, and pick it up at [the] end of [the] shift..." (Petrochemical technician, Parker, Griffin, & Turner, 2002)

These quotes highlight that the way that jobs are designed can have a profound impact on employees. These quotes also show the diversity of outcomes affected by work design, including injuries, feelings of meaningfulness, and performance. Indeed, almost every end goal that is of concern in an organization - safety, performance, productivity, creativity, motivation, to name a few – is affected by work design.

Work design, and so the scope of this paper, refers to "*content and organisation of one's work tasks, activities, relationships, and responsibilities*" (Parker, 2014). Illustrative work design decisions include, for example:

- Which activities should be grouped together to form a meaningful job?
- Which decisions should be made by employees and which by their supervisors?
- What feedback does the employee get when carrying out his/her job?
- Does the employee have an opportunity for social contact?
- Can the hazardous manual task demands in a job be reduced by redesigning tasks?
- Can one build in routine tasks amidst complex ones to ensure individuals' are not overwhelmed by the mental complexity?
- How many tasks in the job, and is this level of task demands reasonable?
- What physical hazards are involved in carrying out the tasks?

These example questions illustrate that work design questions address multiple characteristics, including:

- physical characteristics (e.g., chemical hazards)
- biomechanical characteristics (e.g., manual handling demands)
- cognitive characteristics (e.g., mental complexity); and
- psychosocial characteristics (e.g., feedback, autonomy) (see section 3.2).

The focus of this paper is on psychosocial characteristics.

Work 'redesign' refers to a (usually) deliberate intervention to alter the work design. Examples include implementing job rotation, teamwork, job enrichment, or multiskilling: these sorts of work redesigns tend to be large in scope, involving the whole business unit or organisation. Work redesign can also be implemented in a smaller-scale way, such as when a supervisor changes the tasks and responsibilities of one of her/his employees, or when an

injured employee returns to work and a change in work design is made to accommodate the injury.

2.1 EMERGENCE OF SCHOLARLY INTEREST IN THE TOPIC

Key Insight: **Many of the problems with contemporary work design, such as the tendency for managers to design simplified and narrow work, stem from the historical dominance of Taylorism and Scientific Management.**

Work design issues came to the fore during and after the Industrial Revolution. At this time, machine-operated factories replaced small, craft-based manual industries, giving rise to a question as to how factory work should be co-ordinated. Smith's (1776) answer was the 'division of labor'; ideas that Taylor (1911) took further with the concept of scientific management. Taylor argued that "*management must takeover and perform much of the work which is now left to the men*", by which he meant that managers should analyse tasks, break tasks down into simplified elements, train employees to carry out these elements, and then closely monitor employees to enforce compliance with instructions.

Time and motion study (Gilbreth, 1911) complemented these job simplification principles, and then Ford, in the automobile industry, added moving assembly lines. Simplified, narrow, and low autonomy jobs largely became the work design of choice in manufacturing and beyond.

Unsurprisingly many workers were deeply dissatisfied with jobs designed according to Scientific Management principles, as demonstrated by high turnover, strikes, absenteeism, and other negative outcomes. Detrimental effects of job simplification on employees' mental health and job satisfaction began to be documented (e.g., Fraser, 1947; see Box 1).

Over time, work 'redesigns' emerged in response to employees' negative reactions to simplified work, and in response to theoretical developments.

- In the UK, observations of coal mining and Indian textile companies led to the development of the sociotechnical systems theory and *autonomous work groups.* Autonomous work groups were especially popular in Scandinavian countries (e.g., Gardell, 1982).
- Whilst these work design developments were occurring at the level of the group within the UK and elsewhere, other scholars and practitioners focused on designing individual jobs. Early suggestions to combat the negative effects of job simplification were to increase the variety of tasks, either by rotating from one job to another similar job (*job rotation*) or by expanding the content of jobs to include additional tasks (*job enlargement*).
- In Japan, *quality circles* (involving teams of workers coming together to address quality issues) were a popular way of redesigning jobs.
- Ultimately, however, none of job rotation, job enlargement, or quality circles addressed the removal of autonomy that job simplification had caused. Enhancing autonomy at work emerged as a work redesign solution in the 1960s and 1970s in the form of *job enrichment*, which focused on increasing employees' autonomy over the planning and execution of their own work, such as by giving job holders responsibility for decisions that otherwise would be undertaken by support or supervisory staff. Theoretically, the models that informed job enrichment were the Motivator-Hygiene Theory and the Job Characteristics Model.
- An equally important focus that emerged during the 1900s was concern regarding the effect of work design on physical and mental health. In 1979, Karasek proposed the Job Demands-Control Model, which spurred much practical interest in *reducing job demands and/or increasing job control*.

The major theoretical perspectives that underpin the work redesign approach are elaborated in section 4.

> **Box 1. Coal mining example of job simplification: 'Longwall' mining**
>
> The coal-mining industry provides a vivid example of some of the problems of job simplification (Trist and Bamforth, 1951). The traditional work design was as follows:
>
> Small groups of two to eight self-managing colliers and their helpers contracted with management to work a small coal face.
>
> Teams selected their own team members.
>
> Team members carried out the whole task, and used a range of skills.
>
> Teams' sense of "responsible autonomy" enabled them to adapt their work pace to changing conditions, as well as to the stamina of team members.
>
> However, the introduction of conveyor belts and coal cutting tools led to a mass-production or mechanistic oriented approach to coal mining, or the 'longwall method':
>
> Forty to fifty men worked a long coal seam, spread out over a large distance, requiring management by a set of deputies.
>
> Work was broken down into three shifts, each carrying out a separate process.
>
> Each worker performed one task repeatedly across the shift, such as boring holes in preparation for the next shift.
>
> The unpredictable conditions underground contradicted with the rigid work sequencing of the 'longwall method', creating tensions in the interdependent system. There were poor social relations between managers and workers as stressed deputies tried to control the system, and also amongst workers as competitiveness, mistrust, secrecy, conflict, passing the buck, absenteeism, and bribery became rife.
>
> Unsurprisingly, levels of productivity under the 'longwall method' were lower than under hand-got system, despite the new technologies.

2.2 POLICY INTEREST IN WORK DESIGN

Key Insight: **Work design is included within national policy. In Australia, ten principles of good work design have recently been released to support the Australian Work Health & Safety Strategy (2012-2022).**

Almost all nations have developed policy and legislation relating to work design. Most countries have a government agency with responsibility for health and safety at work (see, for example, NIOSH in the USA, the Ministry of Health, Labour and Welfare in Japan), which in turn stimulates a policy-related focus on work design. Work design also often features in government policies concerned with national productivity. For example, the UK Commission for Skills and Employment (2014) argued that government policy should place more attention on how skill use is enabled in organisations through good work design.

Policy diverges across nations. This is because the national institutions (e.g., employment policies, trade unions) and institutional regimes (i.e., configurations of national institutions) that affect work design vary considerably. For example, Holman (2013) showed that the quality of work design was higher in European countries with institutional regimes that combined strong employment policies (e.g., promoting full employment, employment protection legislation) and high trade union participation and influence within firms and government. In a similar vein, Payne and Keep (2003) argued that the institutional structure

in the UK has favoured the adoption of "low road" competitive strategies, such as low cost production, that are not conducive to good work designs with high level skill use.

In Australia, work design is recognized as a central way to achieving the vision of "healthy, safe and productive working lives" described in the Australian Work Health and Strategy 2012-2022. To support this strategy, in August 2015 Safe Work Australia, the national body responsible for work health and safety and workers' compensation policy, released the *Principles of Good Work Design.*

In this document there are ten principles that map the 'why', 'what' and 'how' of good work design (see Figure 1). I begin with the 'why' principles, which describe the reasons that work design matters and the outcomes to be achieved.

Figure 1- 'Why', 'What' and 'How' Principles in Safe Work Australia's Principles of Good Work Design- A work health and safety handbook.

3 GOOD WORK DESIGN MATTERS (THE 'WHY' PRINCIPLES)

One key reason why attention should be given to work design is straightforward: good work design is supported by the Work Health and Safety legislation.

3.1 LEGAL IMPERATIVE FOR GOOD WORK DESIGN

Key Insight: Work design that protects workers from risks to health and safety is part of Australia's model Work Health and Safety Act

The Australian Work Health and Safety legislative framework in all jurisdictions establishes duties to ensure the health and safety of workers and others who may be affected by the work. Taking the model Work Health and Safety Act (model WHS Act) as an example[2], the model WHS Act places the primary duty of care on persons conducting a business or undertaking (PCBU) to protect workers from risks to health and safety so far as is reasonably

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[2] The model Act and regulations have been used as a basis for the legislation in most Australian jurisdictions.

practicable.[3] Supporting regulations (model Work Health and Safety Regulations 2014) require the PCBUs to identify hazards, assess the risk, control the risk, and monitor and review control measures.

It is important to note that 'health' is defined in the model WHS Act to mean both physical and psychological health. Also with reference to good work design it should be noted that the model WHS Act specifically notes:

Without limiting subsections … a person conducting a business or undertaking must ensure, … the provision and maintenance of safe **systems of work**; (emphasis added) (model WHS Act s19(3)(c))

While the definition and scope of a 'system of work' is not defined in the model WHS Act, the notion is discussed by Borys and others (Borys, Cowley, Tepe, Morrell, & Macdonald, 2012) in the OHS Body of Knowledge chapter on *Systems.* Legal case history tends to indicate that a system of work is defined as "a planned and co-ordinated assemblage of procedures and/or arrangements which provides the method by which work is undertaken" while South Australian WorkCover Corporation takes a similar broad approach in their explanation:

Safe systems of work are the total set of methods adopted for carrying out the operations required in a particular workplace. They cover all aspects of the employment situation including:

- the organisation of work processes
- the methods of using machinery, plant and equipment
- the methods of hiring labour
- job training, instruction and supervision about associated hazards and their management
- what to do when things go wrong. (SafeWork SA, 2003 in Borys et al., 2012)

Borys et al., (2012, p. 6) note that:

"This identification of different elements of the 'system of work' reflects the sociotechnical and ergonomics system models, which emphasise the importance of interactions between system elements ranging from micro to macro levels. However, in the absence of widespread understanding of such concepts and models, statements about what constitutes a safe system of work have the potential to mean different things to different workplace parties".

Thus, notwithstanding these definitional issues around systems of work, it is clear that the application of the general duty to ensure the health and safety of workers includes the design of good work. This inclusion of the design of good work under the general duty is further clarified by the definition of health as including both physical and psychological health and the specific requirement to address systems of work.

The most effective and durable means of creating a healthy and safe working environment is to eliminate hazards and risk during the design or redesign of work, structures, plant and substances. This is described under the Australian Strategy Action Area *Healthy and Safe by Design.*[4] Under this action area, two strategic outcomes to strive to achieve by 2022 are: (1) structures, plant and substances are designed to eliminate or minimise hazards and risks before they are introduced into the workplace, and (2) work, work processes and systems of work are designed to eliminate or minimise hazards and risks. To assist achievement of the second strategic outcome Safe Work Australia undertook the collaborative project *Good Work Through Effective Design'.*

The first principle in the Good Work Design Principles is as follows:

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[3] For a discussion on the standard for 'reasonably practicable' see SWA 'Interpretive Guideline—Model WHS Act - meaning of 'reasonably practicable' and *OHS BoK, Principles of OHS law.*

[4] The remaining six areas include: supply chains and networks, health & safety capabilities, leadership and culture, research and evaluation, government, and responsive and effective regulatory framework.

3.2 EVIDENCE THAT WORK DESIGN AFFECTS OUTCOMES

Key Insight: There is a wealth of rigorous evidence that good work design affects the health, well-being, motivation and job performance of individuals, as well as the productivity of teams and organisations.

Work design decisions regarding the content and organising of tasks, activities, relationships, and responsibilities, have important implications for:

- **individual employees**, such as how engaged they feel, their level of job strain, and the chance of injury;
- **teams**, such as how effectively teams co-ordinate their activities;
- **organisations**, such as whether an organisation achieves its productivity, safety, efficiency targets; and
- **society,** such as whether a nation makes the best use of its skill base or promotes effective ageing through the provision of engaging and healthy work.

Research evidence shows that psychosocial aspects of good work design can reduce strain, promote well-being, reduce the chance of accidents and injury and even, in the long term, reduce the likelihood of cardiovascular disease. For example:

- **Mental health.** Much research shows that work design affects mental health. Based on a comprehensive review, Kelloway & Day (2005; see also Burton, 2010) concluded there is solid scientific evidence that mental health is negatively affected by overwork, role stressors (role conflict, role ambiguity), working nights and overtime, poor quality leadership, aggression and bullying, and low job control. Lee & Ashforth's (1996) meta-analysis likewise showed that job demands (e.g., role conflict, role stress, work load, lack of role clarity) predicted emotional exhaustion, a dimension of burnout. On the other hand, positive aspects of work such as job control and social support can enhance mental health and promote well-being. Many reviews and meta analyses (e.g., Humphrey, et al. 2007; Nieuwenhuijsen et al., 2010; Stansfeld & Candy, 2006), and reports (e.g., Leka et al., 2008; EU-OSHA, 2007ab) have documented strong evidence of the link between work design and mental health. Evidence from a systematic review similarly shows that when organizational interventions such as team working, lean production and autonomous work groups, increase job demands and/or decrease job control, these interventions tend to have adverse effects on employees' mental and physical health (Bambra et al., 2007). An interesting expansion to the evidence base are longitudinal studies based on the HILDA study in Australia showing that poor quality work is as bad, and sometimes worse, for mental health than unemployment (Butterworth et al., 2011,2013).

- *Safety.* From a physical health perspective, safety is a critical outcome of work design. An Australian study reports design issues are probably or definitely indicated in 37% of work-related traumatic fatalities (Driscoll et al. 2008). In a longitudinal study of manufacturing employees, Parker et al., (2001) showed that job autonomy (along with communication quality) predicted greater safety compliance, and further analyses showed that this effect occurred because individuals with high job autonomy tended to be more committed to the organization and therefore were more willing to follow the organization's safety rules. In a meta-analysis of 203 studies, Nahrgang et al. (2011) showed that job resources such as autonomy and especially support promote engagement, which in turn predict working safely. In contrast, high levels of demand that hinder an employee, such as risks and hazards are associated with burnout and lower safety.

- ***Musculoskeletal disorders***. Biomechanical and psychosocial aspects of work design affect work-related musculoskeletal disorders (WMSDs). In regard to the former, a US Congress report from the National Research Council and the Institute of Medicine (see Punnett & Wegman, 2004) concluded after an extensive review of more than 2500 articles that, if jobs are designed with few rest break opportunities, high work pace, excess manual material handling, are highly monotonous, or have other similar biomechanical risks, then work-related musculoskeletal disorders are likely to result. This study identified the relationship between such work design factors and WMSDs, even after accounting for age, gender, body mass index, recreational activities, disease, and other such factors (see also the systematic review by da Costa and Vieira, 2010). In the words of Punnett & Wegman (2004, p. 19), *"there is an international near-consensus that musculoskeletal disorders are causally related to occupational ergonomic stressors such as repetitive and stereotyped motions, forceful exertion, non-neutral postures, vibration, and combinations of these exposures"*.

  In regard to the influence of psychosocial work design factors on musculoskeletal disorders, Hauke et al., (2011) summarised the results of 54 longitudinal studies as well as a range of meta-analyses investigating the effect of psychosocial factors on musculoskeletal disorders (MSDs). These authors concluded: "*the meta analyses showed statistically significant small to medium pooled effect sizes, indicating that the risk of onset of MSDs in all body regions is 15 to 59% elevated amongst employees exposed to adverse psychosocial working conditions*" (p. 251). Examples of adverse psychosocial factors for which there were significant associations with MSDs include: low social support, high job demands, low job control, low decision authority, low skill discretion, low job satisfaction, high job strain, and psychological stress.

  Exposure levels are also high. A study by Safe Work Australia (2015) reported that, from a survey of 4500 Australian workers, "*almost all workers reported some level of exposure to the biomechanical demands surveyed and 22 per cent were deemed to have high overall (composite) biomechanical demand exposure. In particular, young workers, male workers, night workers and lower skilled workers were most likely to report exposure and had the highest overall biomechanical demand exposure"*.

- **Cardiovascular disease**. Landsbergis et al. (2011) reviewed the vast literature on cardiovascular disease (CVD), and summarised evidence for the following work factors as influences on CVD: high demand/low control work, effort-reward imbalances, jobs that involve a high level of vigilance to avoid disaster, long work hours, shift-work, downsizing, and a lack of organisational justice. In their review of 38 rigorous studies, Belkic Landsbergis, Schnall, and Baker (2004) concluded that the combination of high demands and low control predicted cardiovascular disease for men (the results were not as consistent for women). A recent comprehensive narrative review by Ganster & Rosen (2013) concluded that "*there is fairly consistent evidence that job stressors—especially those from the job demands-control model and the effort-reward imbalance models -- are predictive of several indicators of CVD, even after controlling for an array of CVD risk factors representing secondary AL mediators*" (p. 1108). There are several other systematic reviews and meta-analyses linking work design/ work stress to CVD (e.g., Backe et al., 2012; Eller et al., 2009; Li et al. 2015 and Xu et al. 2015).

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[5] http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/nhews-biomechanical

> ### Examples of Unhealthy Work Design
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> A professional with a high work load and conflicting demands from different bosses, yet at the same time low job autonomy, experiences high levels of job strain which, over the long term, increase the chance of cardiovascular disease
>
> A truck driver spends more than ten hours at a time driving, with few rests, resulting in lower back strain.
>
> A cleaner's work is so tightly timed that, to meet targets, s/he has to run between rooms, resulting in more trips and falls.

- **Active mental health and well-being.** Many work design studies, particularly those approached from a 'stress' perspective, have focused on the effect of work characteristics on health outcomes such as psychological ill-health or cardiovascular disease. A medical model of health, which uses medical criteria to classify people as 'ill' or 'not ill', has influenced these studies.

  However, good health is more than the absence of ill-health, injury, or disease. It is being healthy to various degrees and in various positive ways. For example, good mental health by Western standards is more than 'not being depressed', but is also aspiring to learn, being reasonably independent, and possessing confidence (e.g., Karasek & Theorell, 1990). Similarly, safe working is not just avoiding injuries, but also includes proactive participation in safety initiatives. Various researchers have recommended assessing mental health in these more active terms. As Peter Warr (e.g., Warr 2007) has argued, we need to reject this 'passive contentment' view of mental health. Warr identified the following components of mental health that are more active than measures of well-being: positive self-regard (e.g., high self-esteem), competence (e.g. effective coping, mastery); aspiration (e.g., job-related aspiration, intrinsic motivation, goal directedness), autonomy/ independence (proactivity, personal initiative), and integrated functioning (i.e. states involving balance, harmony, and inner-relatedness).

  Importantly, there is good evidence that work design promotes active health concepts such as proactivity, self-efficacy, and employees' active participation in safety (see, for example, Parker et al., 2006).

Good work is also productive. Good work design affects:

- ***Engagement and performance.*** The motivational properties of good work design enhance productivity by developing a committed and energised workforce (Parker & Wall, 1998). Following Huselid's' (1995) influential study of human resource practices, much research has shown the benefits for improving performance of implementing motivational work design in conjunction with other human resource practices (e.g., Tregaskis et al., 2013). Work design has traditionally been an underrated aspect of these practices but is receiving increasing attention in recent years (Becker & Huselid, 2010).
- **Skill use and development.** Good work design makes better use of employee skills (Morrison et al., 2005); which is an important source of productivity. Other researchers have also shown how good work design, such as a reasonable level of job autonomy, promotes learning and the development of expertise (see Parker, 2014, for a review).
- **Efficiency, productivity, and cost reduction.** Greater efficiency can be achieved when good work design principles are employed. Youndt et al. (1996) showed that practices that enhanced skills were related to more efficient procedures and higher productivity. Likewise research has shown that good work design can result in faster responses to problems, as well as lowered costs associated with unnecessary supervision layers (see Parker, 2014). Good work design also has productivity

benefits both in terms of reduced absence, turnover, and workers' compensation costs, as well as improved performance over sustained periods of time (e.g., Van den Heuvel et al. 2010).

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Examples of Unproductive Work Design

A nurse experiences a high level of emotional demands with very little support from others, resulting in high levels of absence.

A production employee has low variety and autonomy in his/her work, resulting in the employee being disengaged and performing nothing more than the bare minimum.

A mining company has too many layers of management, with controlling supervisors spending most of their time micro-managing employees, incurring excess managerial costs and stifling innovation.

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In summary, work design clearly matters, and is central to achieving healthy, safe, and productive work. Whilst the duty to design and manage work and to take practical measures to protect workers from harm is encompassed in the Australian work health and safety legislation, there are benefits for organisations of good work design beyond compliance with legal requirements. In the words of Sinha and Van de Ven (2005):

"work design is a high-priority issue for public policy makers, private commercial interests, and individual workers.…. the system of arrangements and procedures for doing work directly affects the behaviour and performance of individual workers and organizations each day, as well as the aggregate productivity and well-being of economies throughout the world" (p 389).

The evidence is consistent with the Good Work Design principles as follows:

PRINCIPLE 2: GOOD WORK DESIGN ENHANCES HEALTH AND WELL-BEING

PRINCIPLE 3: GOOD WORK DESIGN ENHANCES BUSINESS SUCCESS AND PRODUCTIVITY

This potential for good work design to improve worker health and well-being, as well as broader benefits to organisations and the Australian community, is reflected in the increased importance of this topic amongst employers, unions, employees, and other stakeholders. For example, within Australia, in July 2011 the Australian Government and key employer representatives and unions released a "Joint Statement of Commitment" identifying the importance of good health at work.

3.3 THE NEED FOR BETTER WORK DESIGN

Key Insight: **Despite strong and consistent evidence about the negative effects of poor work design, many workplaces still have less than optimal work designs, which is why work design deserves serious attention.**

There continues to be a large numbers of poor quality work designs in both advanced and developing economies. For example:

- **UK.** In the UK, the DTI/ESRC's 1998 Workplace Employee Relations Survey (WERS) (Cully *et al.*, 1998) showed a high prevalence of low skill, low autonomy and highly routinised jobs, with only as few as 1 in 50 firms, or 2 per cent of the sample, appearing to have a high performance work system. Likewise, the Skills Survey (Felstead *et al.*, 2002, p. 11) suggested there are in the region of 6.5 million jobs in the UK which do not require a single qualification to obtain them, as well as a drop in task discretion (from 52% reporting high discretion in 1986 to 39% in 2001).
- **Europe.** In Europe, the Fifth European Working Conditions Survey, conducted in 2010, of 44,000 workers across 34 European countries, more than one-fifth of jobs

were identified as having poor intrinsic quality and a further 20% were identified as having highly demanding work.

- **Australia**. Dollard et al.'s (2012) report on the Australian Workplace Barometer assessing over 5000 Australians noted that more than 40% of participants work more than the standard hours, and 18% work more than 48 hours per week. They noted for all workers "emotional demands, work pressure, bullying, justice, rewards, and decision authority were significant contributors to poor psychological health, and prevention strategies should focus on addressing these aspects" (p. 9).

At the same time as evidence that poor quality work design persists, there are many changes occurring in the work place, and in the workforce that have significant implications for the design of jobs (Parker et al., 2001; Parker, 2014; section 6). These challenges are a further reason for keeping work design on the agenda.

4 UNDERSTANDING GOOD WORK DESIGN (THE 'WHAT' PRINCIPLES)

In this section, I delve more deeply into what constitutes good work design, especially from a psychosocial perspective.

4.1 MULTIPLE ASPECTS OF WORK DESIGN

Key Insight: **Work design covers physical, biomechanical, cognitive, and psychosocial characteristics of work. These characteristics have been studied from distinct disciplinary perspectives, which can inhibit a holistic approach.**

A starting point when identifying good work design is to recognize that work design covers multiple characteristics, physical, biomechanical, cognitive, and psychosocial. This point reflects, in part, different disciplinary perspectives on the topic as captured in Campion and colleagues' interdisciplinary framework (Campion & Thayer, 1985; Campion & Berger, 1990). Each perspective in this framework has a distinct approach to work design that varies in its derivation, recommendations, and anticipated costs and benefits of work design; see Figure 2.
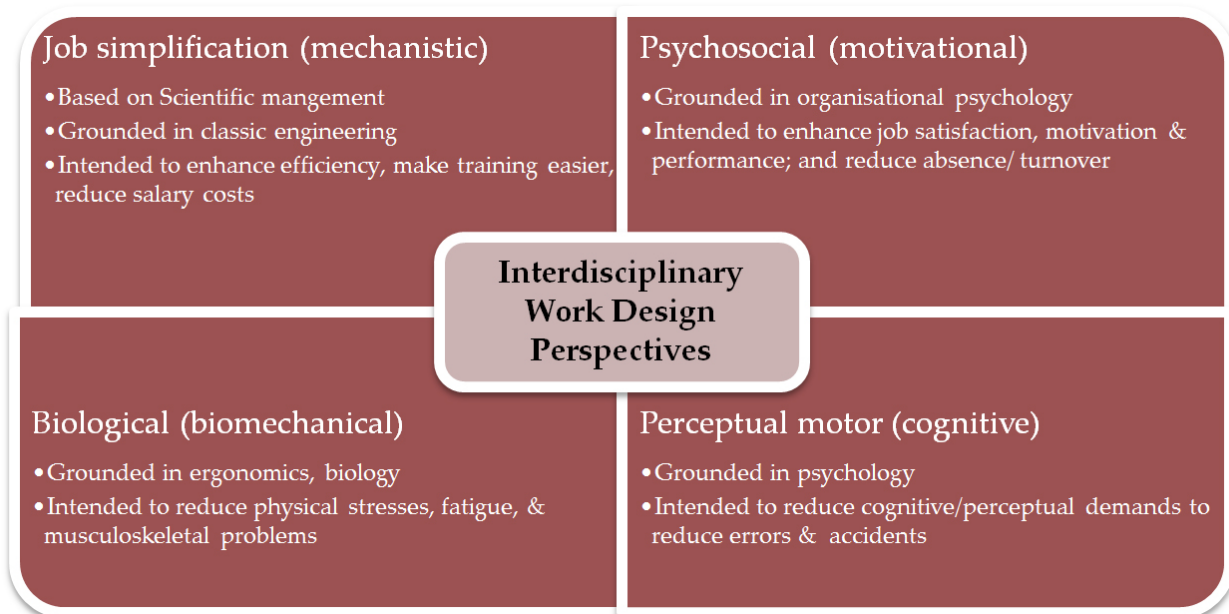

Figure 2: Campion and colleagues' interdisciplinary work design framework

Historically, as discussed above, the dominant approach to work design was the *job simplification (or mechanistic) perspective* that focuses on narrow, simplified, and low

autonomy jobs to achieve efficiencies. This perspective is based on engineering and scientific management principles.

The primary focus in this paper is on the *psychosocial perspective*[6]*,* which is grounded in the discipline of organizational psychology.

In addition, work design can also be considered from a *biological perspective* stemming from ergonomics that focuses on physical comfort and health (this aspect is referred to as 'biomechanical' in the Good Work Design principle), and a *perceptual motor perspective* derived from experimental psychology and human factors research that focuses on reliability and usability (this aspect is referred to as 'cognitive' in the Good Work Design principle).

Campion and colleagues' interdisciplinary framework is useful because it highlights that many different characteristics should be considered when designing work; as captured in the following Good Work Design principle*:*

PRINCIPLE 4 - GOOD WORK DESIGN ADDRESSES PHYSICAL, BIOMECHANICAL, COGNITIVE AND PSYCHOSOCIAL CHARACTERISTICS OF WORK, TOGETHER WITH THE NEEDS AND CAPABILITIES OF THE PEOPLE INVOLVED.

Figure 2. Campion and colleagues' interdisciplinary perspective on work design

The interdisciplinary framework also recognizes that different work design "experts" will have varying perspectives about what is "good" work design, and they will not always be compatible. Likewise, work design might sometimes require trade-offs or compromises.

Example of the Need to Consider Different Characteristics of Work

Imagine a job in which an individual is highly engaged in carrying out a variety of interesting, challenging tasks that uses his/her skills and talents. This might be a positive work design from the psychosocial perspective, but if all the tasks require long hours working at the computer, there might be biomechanical risks, such as excess sitting and excess keyboard work.

4.2 KEY THEORIES OF PSYCHOSOCIAL WORK DESIGN

Key Insight: **To deeply understand what psychosocial work designs will be most motivating and healthy for people, it is important to appreciate key theory and research that unpacks how work characteristics lead to outcomes.**

In this section, I cover the major psychosocial theories of work design that underpin the need to design work that is sound from a psychosocial perspective.

Sociotechnical Systems Perspective and Autonomous Work Groups

Based on observations of longwall mining (Box 1 above), Trist and Bamforth (1951) concluded that "technological" considerations should not dominate work design. Instead, there should be joint optimization of social and technical elements, or a 'sociotechnical systems' approach.

A practical application of this approach is autonomous work groups. In their further coal mine study, Trist and colleagues (Trist et al., 1977) observed that the destructive effects of the mechanistic method of mining were alleviated when groups of miners found a way to complete whole tasks with autonomy (in essence, optimizing social and technical elements). This research led to the idea of autonomous work groups.

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[6] Campion and colleagues referred to this as the 'motivational' approach, but I use the broader term 'psychosocial' to signify a concern not only with motivation but also health

Recommendations (Cherns, 1987; Parker & Wall, 1998) for designing autonomous work groups include:

- Group interdependent tasks to make a meaningful set and to involve a balance between less desirable tasks.
- Provide clear performance criteria for the team as a whole.
- Provide clear feedback on group performance.
- As far as possible, leave methods of working to employee discretion.
- Allow employees to control variances (problems) at the source, but ensure they have the necessary knowledge, skills and information to intervene.
- Allow the group to control equipment, materials, and other resources, making them responsible for their prudent use.
- Increase the skill level of employees to allow flexible responses to uncertainties (but note that complete multiskilling might result in redundancy of skills).
- Ensure that selection, training, payment systems, etc., are congruent with the work design.
- Regularly review and evaluate the work design.

Consistent evidence has emerged for the positive effects of autonomous work groups (AWGs, also called self-managing teams) on job attitudes such as job satisfaction and commitment (see for reviews Cohen & Bailey, 1997; Parker & Wall, 1998; Sonnentag, 1996).

An example of the positive effects of AWGs on job satisfaction comes from Wall, Kemp, Jackson, & Clegg's (1986) classic study within a sweets manufacturing company. Before the work redesign, employees carried out a specific part of the process carrying out a limited task, such as boiling sweets. After the introduction of autonomous work groups, employees worked in teams of 8 to 12 people, and carried out multiple tasks. Group members were collectively responsible for running the group and reaching production targets. They were also involved in new activities, such as quality inspection, solving local problems, and analyzing performance data. The groups had no supervisor, but reported directly to a manager, responsible for three or more other groups. Analysis of this redesign showed clear benefits for employee job satisfaction, as well as productivity gains because of lower indirect (i.e. supervisory) costs.

When it comes to performance and behavioural outcomes of AWGs, the story is more complex. In a review of studies of 134 sociotechnical experiments in the U.S., Pasmore, Francis, Haldeman, and Shani (1982) concluded this work design approach led to enhanced productivity, quality, satisfaction, and lower costs. Further reviews and analyses of AWGs have been similarly positive (e.g., Cohen and Bailey, 1997). For example, in a meta-analysis of field studies involving organizational change, Macy & Izumi (1993) observed that autonomous work groups had significant effects on organization's performance, whereas other team practices (e.g., quality circles, teams in general) did not. The team empowerment literature has also concluded there is a positive association between group-level autonomy and team performance as well as positive affective reactions of team members (Maynard et al., 2010)[7].

Despite the above conclusions that AWGs and team autonomy enhance performance and productivity, other reviews and studies have concluded that the evidence is more mixed (e.g., Guzzo & Dickson, 1996; Parker, 2014). For example, Cordery et al., (1991) reported benefits of self-managing teams for job attitudes, but higher levels of absenteeism. In other words, whilst AWGs can indeed enhance performance and productivity, these positive effects are not universally documented (see Parker, 2014 for a summary of why the effects on performance vary).

There have been several developments in the literature on designing group work. Some studies have sought to extend the core ideas, for example, examining how AWGs should be managed and led (Manz & Sims, 1987; Morgeson, 2005). Some studies have focused on

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[7] There is a tendency in the empowerment literature to disregard earlier work design research, despite the obvious parallels between the two (Parker, 2014).

examining contemporary applications such as virtual work. For instance, focused on 35 sales and service teams, Kirkman et al. (2004) showed that team autonomy predicted virtual team effectiveness, but this was especially so for teams that met face to face less often.

Another extension has been to recognize that a team's work design is only part of what is needed for team effectiveness. Hackman (1987; see also Cohen & Bailey, 1997) proposed an "input, process, output" (a so-called IPO model; see Figure 3) model of team effectiveness. The output, team effectiveness, is typically defined broadly to include team performance (e.g., team innovation), team member satisfaction, and team behavioural outcomes that indicate sustainability of the team (e.g., absenteeism, turnover, and safety). Inputs include not only team design but also aspects such as group composition (e.g., team members' personality) and the broader context (e.g., HR practices). Inputs are proposed to affect outputs via various team processes, such as team members sharing the work load and resolving conflicts effectively.
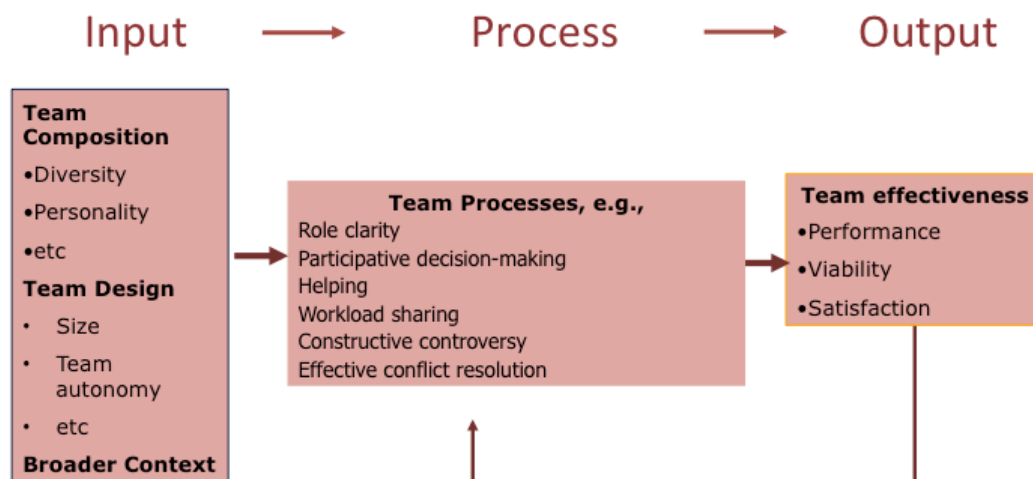

Figure 3. Summary of input-process-output models of team effectiveness (based on Hackman, 1987)

There has been a great deal of research testing and developing team effectiveness models (for a review, see Ilgen et al., 2005). Overall the research shows that the design of the team is important in shaping team effectiveness, but that other factors such as the composition of the team (e.g., age, gender) also affect whether teams work well.

A related development has been to look at team work design as just one element in broader sets of practices, such as 'high performance work practices' or 'human resource bundles'. A meta-analysis of 92 studies by Combs et al., (2006) showed that high performance work practices are positively associated with organisational performance (the overall correlation is estimated at .20), and the link is stronger when a system of practices is considered rather than one single practice. From this perspective, work design is one aspect of a broader organisational system.

Motivational Theories: The Job Characteristics Model

An early theory that fueled interest in job enrichment was the *Motivator-Hygiene Theory (also called the Two Factor Theory)*. Herzberg, Mausner, and Snyderman (1959) proposed that only intrinsic work factors such as recognition, opportunities for advancement, and achievement are important motivators ("motivator" factors). Extrinsic factors (or "hygiene factors"), such as payment, were argued to only be dissatisfying. In fact, later evidence showed little support for this idea of separate motivator and hygiene factors (Locke & Henne, 1986), but this was an important theory for focusing attention on intrinsic job features, and it stimulated many job enrichment experiments.

In 1965, Turner and Lawrence analysed the work experiences of several hundred workers. These authors identified the importance for job satisfaction, attendance and other outcomes of "Requisite Task Attributes", which included variety, autonomy, required interaction (a form of interdependence), optional interaction, knowledge and skill, and responsibility. "Associated

Task Attributes" are aspects associated with the job, although not actually required as part of its intrinsic nature, such as pay, working conditions, and technology. This research was important in laying the groundwork for the next major publications on work design by Hackman and Lawler (1971) and Hackman and Oldham (1976); papers that resulted in the Job Characteristics Model (JCM).

The JCM proposed that five 'core' psychosocial work characteristics (skill variety, job autonomy, feedback from the job, task significance and task identity) promoted three 'critical psychological states' including experienced meaningfulness, feelings of responsibility for one's outcomes, and knowledge of results of one's efforts. In turn, these states were suggested to drive internal motivation, high quality performance job satisfaction, reduced turnover, and performance. Figure 4 depicts the basic model.
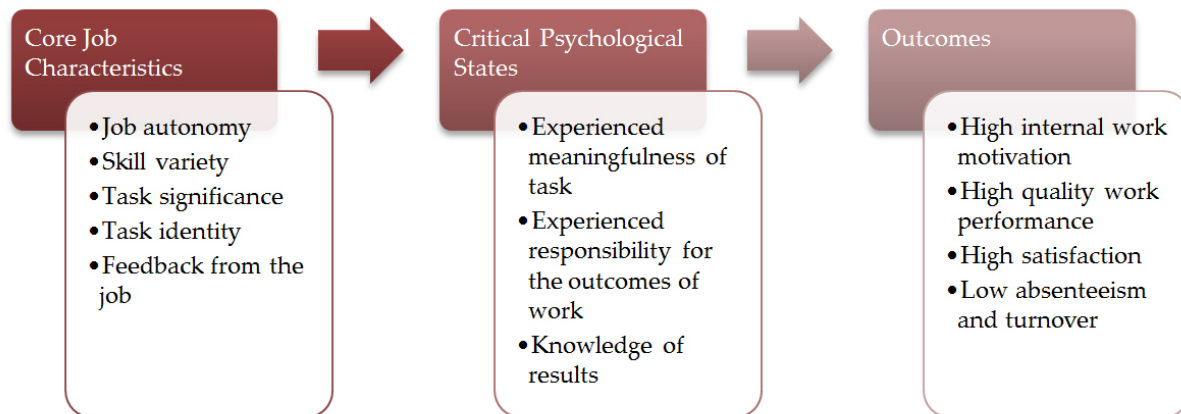
Core Job Characteristics	Critical Psychological States	Outcomes
• Job autonomy • Skill variety • Task significance • Task identity • Feedback from the job	• Experienced meaningfulness of task • Experienced responsibility for the outcomes of work • Knowledge of results	• High internal work motivation • High quality work performance • High satisfaction • Low absenteeism and turnover

Figure 4: Core elements of the Job Characteristics Model (based on Hackman & Oldham, 1976).

These central propositions of the JCM (that core work characteristics predict outcomes) have received considerable empirical support (Fried & Ferris, 1987). Two early meta-analytic studies showed that the five job characteristics collectively relate to attitudinal outcomes such as job satisfaction and motivation, as well as, to a weaker extent, ratings of work effectiveness and absenteeism (Fried & Ferris, 1987; Loher, Noe, Moeller, & Fitzgerald, 1985). An expanded meta-analysis supported the importance of work characteristics relating to the theorised outcomes, as well as other outcomes (organizational commitment, role perceptions, turnover intentions), and identified experienced meaning as the most important state mediating the relationship between job characteristics and outcomes (Humphrey, Nahrgang, & Morgeson, 2007).

These meta-analytic studies collate findings across multiple studies, but they rely mostly on studies with cross-sectional research designs. Longitudinal and quasi-experimental studies are thus an important complement to the above evidence.

- One classic study is that by Griffin (1991). The jobs of bank tellers were enriched to include a wider range of activities, greater autonomy, enhanced feedback, and increased responsibility for meeting customer needs. The intervention led to a durable change in job characteristics, a short-term increase of job satisfaction and commitment, and a performance increase in the long run.
- Parker (2003) showed that a lean production initiative (which decreased employees' job autonomy and skill variety) reduced employees' commitment, lowered their self-efficacy, and increased their depression.
- In yet a third example of a longitudinal study, in this case involving multiple organizations, Birdi and colleagues (2008) investigated the productivity of 308 companies over 22 years. Empowerment, defined as passing considerable operational management responsibility to individuals or teams, was associated with performance benefits whereas there were no performance benefits associated with total quality management, just-in-time, advanced manufacturing technology, or supply-chain partnering.

All together, the meta-analysis findings, as well as evidence from rigorous longitudinal studies provide reasonably consistent and strong evidence for the positive effects of job enrichment on attitudes and affective reactions like job satisfaction.

Rather like AWGs, there is somewhat more mixed evidence for the performance effects of job enrichment (Parker & Wall, 1998) and relatively small associations for absence (Rentsch & Steel, 1998).

Despite being probably the most important model of work design, the JCM has not been without criticism (Roberts and Glick, 1981). Some of its more detailed propositions have not fared well; including arguments for moderators have not been strongly supported by the evidence (see Parker, 2014). A further important critique is that the JCM is overly narrow. In response, Morgeson and Campion (2003) proposed a more integrative conceptualisation of work design, and in their Elaborated Model of Job Characteristics, Parker et al., (2001) advocated an expanded set of work characteristics beyond the five 'core' ones identified in the JCM, additional moderators, a broader set of outcomes, and novel mechanisms in order to more fully capture people's job design experiences at work.

Another development has been to focus on the concept of "empowerment". As discussed by Parker (2014), there is considerable overlap between the concept of empowerment and job enrichment, although this has often not been acknowledged in the literature. Several studies have shown that the delegation of authority and responsibility (referred in the empowerment literature as "structural empowerment") predict psychological empowerment (e.g., Liden, Wayne, & Sparrowe, 2000), which in turn tend to result in positive affective reactions like job satisfaction, commitment, and intention to leave, as well as performance including citizenship (see Maynard et al., 2012 review). For example, in the meta-analysis reported by Siebert et al., (2011), the strongest antecedent of psychological empowerment was work design (mean corrected correlation of .58).

Job Demand-Control Model and other job strain models

Early case studies showed the dysfunctional health effects of heavy workloads combined with low decision latitude (autonomy over decisions). Large-scale epidemiological studies likewise showed the role of high demands in mental health (e.g., Caplan et al., 1975). In 1979, to capture such mental health effects of work design, Karasek put forward the Job Demands-Control model (summarized in Figure 5). This model has become one of the most influential theories of work design.

The Job Demands-Control model predicts that high job demands and a lack of job control (or job autonomy) will cause psychological strain. There is much evidence for both of these propositions: Job demands cause job strain and burnout (Crawford, LePine, & Rich, 2010; Schaufeli & Taris, 2014), and strain in turn compromises physical health (Ganster & Rosen, 2013). Likewise, much research documents the positive impact of job control on well-being (Humphrey, Nahrgang. & Morgeson, 2007), or negative strain effects of low job control. For example, early research associating high job demands and limited decision latitude with cardiovascular disease (Karasek, Baker, Marxer, Ahlbom, Theorell, 1981) commanded much attention. A systematic review of 18 rigorous studies by Egan et al., (2007) showed that when organizational interventions resulted in increased job control, decreased demands, or increased support, then there were positive health effects, although some effects were inconsistent and two studies suggested that these positive work design changes did not compensate for the negative effects of redundancies.

The demand-control model goes further to propose an interaction such that control can buffer the negative effects of demands, and that strain will be greatest when demands are high and control is low. In other words, Karasek (1979) proposed that job control would serve a buffering role by enabling employees to master their tasks and engage in problem-focused coping (Daniels & Harris, 2005; Theorell & Karasek, 1996). Specifically, an active job (high in demands and control) leads to feelings of mastery and confidence which, in turn, help the person to cope with further job demands and challenges, promoting more learning, and so on, in a positive spiral. In contrast, a job with high demands and low control leads to reduced mastery and poorer coping, followed by higher strain, reduced learning, and so on, in a negative spiral.

This proposed interaction is important practically because it suggests that it might be possible to increase demands without incurring strain. However, in fact, empirical support for a statistical interaction between demands and control is mixed at best. Overall, most reviews tend to conclude there is insufficient evidence of an interaction (Brough & Biggs, 2015, Van der Doer & Maes, 1999), even among longitudinal studies vetted for quality (De Lange, Taris, Kompier, Houtman, & Bongers, 2003). What this means is that ,when designing work, one cannot assume that the negative strain effects of high demands will be offset by high control or autonomy. Demands should not exceed individuals' capacity to cope with them, under any level of autonomy.

Figure 5. Job demands-control model (Based on Karasek, 1979)

A later formulation of the model (Karasek and Theorell, 1990) identified social support as another possible antidote to job demands. Although social support is definitely important for well-being and reducing strain, research on its buffering effects are inconclusive (Halbesleben & Buckley, 2004). Some studies have shown that social support reduces the negative psychological and physical health effects of job demands, others have revealed a three-way interaction suggesting that social support is more likely to exert these buffering effects when job control is lacking, and still others have identified no buffering effects of social support (van der Doef & Maes, 1999). Thus, as with control, although social support is a positive force that promotes better health and well-being, it doesn't necessarily reduce the stressful effects of excess demands.

European scholars have developed a new model that examines the effects of job demands and job resources on burnout. This "Job Demands-Resources model" (JDR, Figure 6, Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Bakker & Demerouti, 2007[1]) offers two important advances over Karasek's (1979) earlier model.

- First, the JDR recognizes the fact that other work features in addition to control and support (e.g., rewards, security) might serve as resources to counter job demands, stimulate growth, and foster achievement.
- Second, the JDR actively incorporates both strain and motivation. Although allowing for an interaction between resources and demands, a key feature of the model is its assertion that demands primarily function to impair health, via strain and burnout, while resources lead to high levels of performance, via engagement. This dual-path quality recognized the essential need to consider multiple criteria when examining the impact of work design (Johns, 2010).
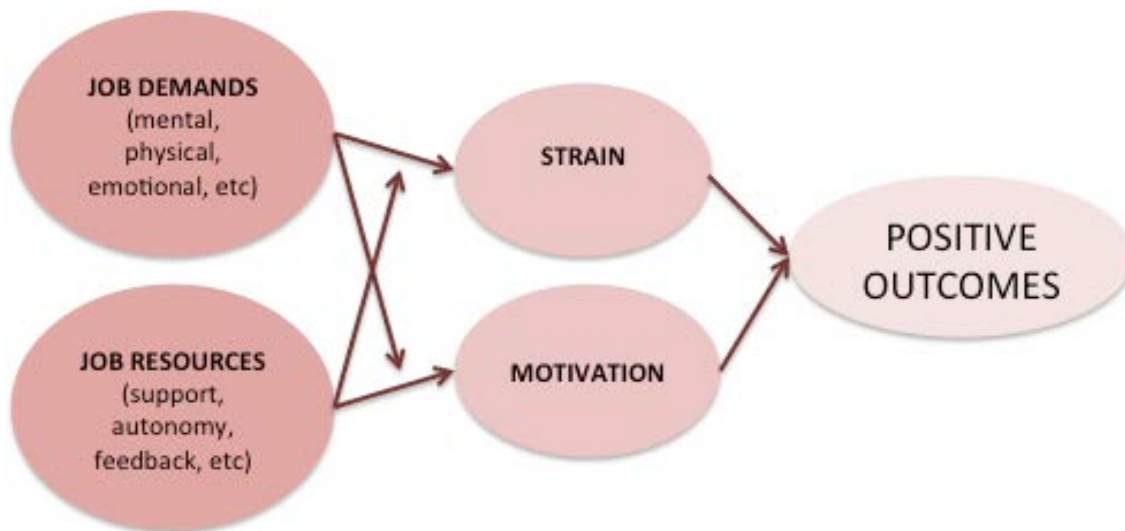
Figure 6. Job demands-resources model (Based on Demerouti et al., 2001)

Although research has supported predictions from the Demands-Resources model (Schaufeli & Taris, 2014), and the model has been extended to other domains such as employee safety (Nahrgang, Morgeson, & Hofmann, 2011), as with the buffering effects of demands on control, the predicted interactions between demands and resources remain elusive.

Research also shows that not all demands are created equal. Drawing on the work of McCauley and colleagues (1994[1]) and Selye (1982), Cavanaugh, Boswell, Roehling, and Boudreau (2000) [1] proposed a distinction between hindrance demands ("bad stressors") and challenge demands ("good stressors").

Hindrance demands, including organizational politics, role ambiguity, and role conflict (see next section), constrain goal attainment and personal development. Challenge demands, including workload, time pressure, and responsibility, can contribute to personal development and career success. Although both challenge and hindrance demands are positively related to strain outcomes, hindrance effects have noticeably stronger negative strain effects (Crawford et al., 2010). Also, challenge demands are positively related to job attitudes and performance and negatively related to turnover, while the reverse applies to hindrance demands (LePine, Podsakoff, and LePine, 2005; Podsakoff, LePine, & LePine, 2007).

Given that one person's challenge might be another's hindrance, Parker (2014) argued for a more nuanced approach that accounts for individual differences in the appraisal of demands. This avoids a priori categorization and accommodates demands such as emotional labor (Grandey, 2000), attentional demands, and responsibility for costs (Jackson, Wall, Martin, & Davids, 1993) that are prevalent but uncategorized.

A further job strain theory is Siegrist's (1996) effort-reward imbalance (ERI) model. This model highlights the role of reward, rather than control, as being important in mitigating demands. This model proposes that job strain occurs when there is an imbalance between effort (extrinsic job demands) and rewards (e.g., salary, esteem, security, career opportunities, and promotion prospects). The idea is that a lack of reciprocity between effort and reward results in arousal and stress which then can lead to cardiovascular disease and other strain reactions. Evidence supports this model. For example high effort and low reward is a risk factor for poor subjective health, burnout, mild psychiatric disorders, and cardiovascular health (see Van Vegchel et al., 2005 for a review). Nevertheless, although there is support for this model, in some respects it can be subsumed into the broader job demands-resources model, with rewards being one form of resource. The advantage of the latter model is that it allows for the possibility that different factors will function as resources in different situations, and it doesn't necessarily make sense to prioritise one type of resource (e.g. rewards) over another.

A related theory that has had much attention is person-environment fit theory (French et al., 1974), which concerns the positive effects of a match between the person and the environment, or the negative effects of a mismatch. Two key types of fit include the

correspondence between one's needs and what a job provides (needs-supply fit) and between one's abilities and the demands of the job (demands-abilities fit). Considerable evidence shows that misfits cause job strain and other negative effects, although there have been several methodological and theoretical issues with the theory (Edwards & Cooper, 2013).

An extension of this model is the Demand-Induced Strain Compensation Model (de Jonge & Dormann, 2003) which focuses on the match between job demands and job resources. This model proposes, for example, that when demands can be positive in their effects if employees possess corresponding resources. For example, high physical demands had negative effects on physical complaints and emotional exhaustion, unless employees also had high physical resources (van den Tooren & Jan de Jonge, 2008).

A further research theme in the area of job strain has been the possibility of curvilinear relationships between work design and strain. Warr's (1987) vitamin model of job influences on well-being offered a unique perspective, proposing non-linear relationships between some work characteristics and well-being. For example, characteristics of work such as physical security - like vitamins C and E – are damaging in their absence but do not add benefit beyond a certain level. Yet other work characteristics such as job control - like vitamins A and D - are suggested to be toxic in large quantities. There is some evidence for curvilinear effects (e.g., De Jonge & Schaufeli, 1998; Warr, 1990; Kubicek et al., 2014). For example, Xie & Johns (1995) reported a u-shaped relationship between job enrichment and emotional exhaustion, suggesting both too little enrichment and too much enrichment can be stressful.

Such findings are important in light of the trend toward work design via restructuring in which disparate tasks are combined into "super jobs" (jobs with many responsibilities) that may greatly tax their incumbents. Relatedly, the idea that a job might be "too good" by conventional job design standards led Elsbach and Hargadon (2006) to prescribe the insertion of daily "mindless" work into creative professionals' jobs so as to curb the effects of excess richness. Indeed, Ohly, Sonnentag, and Pluntke (2006) found that some degree of task routinization contributed positively to proactive and creative job behavior, presumably by conserving cognitive resources. In sum, whilst job enrichment is undoubtedly motivating, extremely enriched jobs – especially if they include high demands - can cause stress.

4.3 LINKS TO THE 'WHAT' PRINCIPLES

Key Insight: **Theory and research support the idea that good work design accommodates individual differences and is tailored to the specific work situation. Good work design applies to all operations within an organization as well as across the supply chain.**

The above theory and evidence highlights why and how psychosocial work characteristics affect key outcomes; consistent with Good Work Design principles 1-3.

Importantly, research stimulated by these theories also suggests there is no "one size fits all", and that people's responses to work designs can vary (relevant to principle 4) and that work design should fit the context (relevant to principle 5), as elaborated next.

This is fundamentally about the wide-scale applicability of work design across all entities within the supply chain, from an organization's start up to demise, such as during downsizing (e.g., Parker et al., 1997) and across the whole operational lifecycle.

Taking account of individual personality, needs, and capabilities

Principle 4 includes the idea that *good* work design addresses multiple characteristics of work *"together with the needs and capabilities of the people involved"*.

Scholars have sought to understand whether and how individual differences moderate reactions to enriched work design. By and large, the findings across studies are inconsistent (e.g., see Morgeson & Campion, 2003). In other words, there is no simple "one variable" that universally moderates all effects.

Nevertheless, as argued by Parker et al., (2001), there is probably little point in seeking the global individual differences that moderate all work characteristics-outcome relationships.

Instead, one should look closely at the particular relationship in question. Whereas peoples' desire for growth might be an appropriate focus when considering enriched jobs as a motivational force, other variables are likely to be important if one is considering different motivational processes, or indeed, non-motivational processes.

For example, a study of service workers showed that emotional demands were negative for employee well-being only when individuals lacked emotional competence (Giardini & Frese, 2006). Likewise, Parker and Sprigg's (1999) showed when employees are faced jobs with high autonomy as well as high demands, those with a proactive personality take advantage of the autonomy to reduce demands and avoid strain, whereas less proactive employees felt higher degrees of strain, presumably because they did not act on the greater autonomy afforded them.

As well as studies highlighting the need to consider personality and capability, scholars have speculated that life circumstances (e.g., whether one has dependents or not), demographics and life stage shape what people value in their work. For example, as people age, for those who work in physically demanding jobs, opportunities for recovery will be especially important (e.g., Parker et al., 2001).

Likewise, with the work population now composing women in almost equal numbers to men, it is much more important than traditionally was the case to consider how to design work that supports families and dual careers, and that reduces home-work conflict. Whereas autonomy has traditionally focused on control over the timing and methods of tasks, increasingly autonomy over work hours, and even the location of work, has become much more important (Parker et al., 2001).

Altogether, the research supports the good sense of seeking to recognize different needs and capabilities of the workforce, but is as yet unable to specify exactly which needs or capabilities should be focused on in which circumstance. This point relates to principle 7 (discussed later) about the importance of involving workers in work design: that is, individual factors can be actively considered by engaging individuals who actually carry out the work in the redesign process.

Adapting work design to the context

Principle 5 highlights the importance of adapting work design to the context:

PRINCIPLE 5: GOOD WORK DESIGN CONSIDERS THE BUSINESS NEEDS, CONTEXT, AND WORK ENVIRONMENT

Consistent with this principle, scholars have recognized that, if contextual contingencies are ignored, inappropriate work design choices will be made or appropriate choices will be ineffective.

Two contextual factors that have had particular attention are interdependence and uncertainty (Cummings & Blumberg, 1987). There is quite consistent evidence that job enrichment, especially job autonomy, is most powerful in enhancing performance when uncertainty is high (e.g., Wright & Cordery, 1999), probably because autonomy enables the quick responses and the learning needed to be successful in such contexts. Such thinking has parallels with more general organizational theory that proposes mechanistic structures for stable conditions and organic structures for uncertain environments (Burns & Stalker, 1961). In the customer service arena, Batt (1999) similarly argued that where organizations aim to build long term relationships with customers by providing quality service, employees need high levels of autonomy and skill to meet these demands. Consistent with this idea, job enrichment and other such work practices are more likely to exist in call centres in which quality relationships with customers are required (Frenkel, Korczynski, Shire, & Tam, 1999).

Beyond uncertainty and interdependence, many other contextual factors are likely to affect whether job redesign leads to positive outcomes (Pearson, 1992; Parker & Wall, 1998), such as:

- how well the change process is introduced,

- the organization's 'readiness' for work redesign, and
- the level of employee job security.

Drawing on sociotechnical systems theory, it has often been proposed that broader work organization and human resource systems (e.g. reward, training, information systems) need to align with the work design in order for it to be effective (e.g., Parker & Cordery, 2007). Contrary to this idea of alignment, however, Morgeson et al., (2006) found that work redesign into autonomous work groups only had a positive effect on self-reported performance when reward, feedback, and information systems were poor, suggesting a substituting rather than a synergistic effect.

There has been some research considering national cultural influences. For example, Robert, Probst, Martocchio, Drasgow, & Lawler (2000) found that empowerment was associated with lower job satisfaction in India, which they attributed to the cultural emphasis to hierarchy and status. Yet such a conclusion contrasts with early studies of successful autonomous work groups in Indian textile companies (Rice, 1958). More research is needed.

Although research unpacking contextual differences are relatively scarce, it makes sense to assume that different outcomes might be needed depending on the type of business, which in turn has flow on implications for work design. For example, in environments where high levels of innovation are required for business success, existing evidence linking autonomy to creativity and proactivity (e.g., Parker et al., 2006) highlights the importance of autonomy as a core work characteristic. But in other situations, different outcomes might be needed, resulting in different work characteristics needing attention. For example, in the context of cybersecurity work, high levels of vigilance are required to identify and prevent threats. Parker, Tetrick, & Wilson (in press) identified the need to consider the cognitive demands associated with intense monitoring of computer screens as an important work characteristic for individuals in this type of work.

The type of occupation also shapes what work design issues might most need attention. For example, many call centers being are along Taylorist lines in which representatives are required to respond to customer inquiries on the basis of tightly-scripted protocols over which they have little control (Fernie & Metcalf, 1998). The work is often highly repetitive, with work timing paced by electronic performance monitoring systems (e.g. Bain & Taylor, 2000). In this context, traditional work characteristics such as job autonomy and task variety are likely to be key factors to focus on.

On the other hand, in a medical context, a more salient issue might be the high level of emotional demands that medical professionals experience, and the consequent need to engage staff so as to prevent the premature turnover of these staff, who are often in short supply. The concept of 'emotional labour' refers to requirement for individuals to manage their emotional expression in return for a wage, such as being required to be friendly towards customers using a service (Hochschild, 1983). There can clearly be positive benefits of such emotional displays for organisations (e.g. customer retention), and even for individuals (e.g. one qualitative study suggested that service staff use positive emotional displays to maintain control in their exchanges with customers; Mars & Nicod, 1984). Nevertheless, there is evidence that high levels of emotional management can be associated with burnout and anxiety (Carver *et al.,* 1995).

As another example, role conflict has been identified as a particularly important demand for front-line workers, many of whom are increasingly expected to play multiple roles, such as to provide information to customers, generate revenue through selling, and perform an intelligence-gathering role (Frenkel, *et al.*, 1999).

For many occupations, cognitive demands are increasing. For example, in contexts such as research and development, information technology often absorbs what is referred to as 'routine knowledge work' (such as processing accounts), and emphasizes more complex problem-solving, or 'non-routine knowledge work' (Mohrman *et al.*, 1995). Two types of cognitive demand have been identified in manufacturing settings: In service work, it has been predicted that problem-solving demands will increase due to greater product variety, the

requirement for employees to carry out multiple roles, and more frequent policy and procedural changes (Frenkel *et al.*, 1999).

Even within a category of worker, the salient work characteristics that might need attention will vary. For some types of teleworkers working from home, such as management consultants, autonomy might be relatively high (Feldman & Gainey, 1997), in which case it would not be the main focus for a redesign. However, other types of teleworkers, such as telephone operators, might have their work tightly controlled and monitored and could therefore benefit from enhanced autonomy. In addition, a key work characteristic for most teleworkers might be *social contact*, or perhaps reducing the interruptions that arise from *home-work conflict*.

In summary, the particular business needs, occupation, and context will shape what types of work design issues are most salient, and what types of work designs will achieve the best outcomes. In a nutshell, work design needs to be 'fit for purpose' and there is no 'one best way'. Equally, one should not allow fads and fashion to dictate work design choices (Clegg, 2000). In the words of Parker et al., (2001):

> *"It is premature, and perhaps ultimately inappropriate, to specify which characteristics are most critical. Rather, it is likely that different work characteristics will be more or less salient in different contexts and jobs…. The approach we advocate, therefore, is one in which we have a broader set of work characteristics to draw from, and one that recognizes that the relative salience of particular work characteristics will depend on the context. In practical terms, this calls for an approach which focuses on a thorough diagnosis of the situation prior to any work redesign….." (Parker et al., 2001).*

To aid in diagnosis, in their Work Design Questionnaire, Morgeson & Humphrey (2006) distinguished 21 job characteristics in four categories: task, knowledge, social, and work context (see box 2).

Box 2: Expanded Work Characteristics

Task characteristics

- Work scheduling autonomy
- Decision making autonomy
- Work methods autonomy
- Task variety
- Significance
- Task identity
- Feedback from the job

Knowledge characteristics

- Job complexity
- Information processing
- Problem solving
- Skill variety
- Specialization

Social characteristics

- Social support
- Initiated interdependence
- Received interdependence
- Interaction outside organization
- Feedback from others

Work context

- Ergonomics
- Physical demands
- Work conditions
- Equipment use

Wide-scale applicability of work design

Principle 6 is fundamentally about the wide-scale applicability of work design across all entities within the supply chain, from an organization's start up to demise, such as during downsizing (e.g., Parker et al., 1997) and across the whole operational life cycle:

PRINCIPLE 6: GOOD WORK DESIGN IS APPLIED ALONG THE SUPPLY CHAIN AND ACROSS THE OPERATIONAL LIFECYCLE.

Work design has been shown to be relevant in multiple organizational situations, such as during the implementation of the following practices: lean production (Jackson & Mullarkey, 2000; Parker, 2003), temporary employment contracts (Parker, Griffin, Sprigg, & Wall, 2002), just-in-time (Jackson & Martin, 1996), performance monitoring (Carayon, 1994), teleworking (Feldman & Gainey, 1997), and team working (Kirkman & Rosen, 1999). The effects on outcomes of these practices depend, at least to some degree, on how the practice impinges on work design. An implication, therefore, is that when introducing these sorts of initiatives, careful attention should be given to work design.

As the various studies of work redesign also show, work design ideas can be applied to manufacturing, retail, professional, medical, and many other forms of work.

The breadth of contemporary application of work design theory is shown by Parker, Morgeson, and Johns' (in press) analysis of articles in recent publications of *Harvard Business Review (HBR)*. HBR was founded in the 1920s as a response to the purported lack

of practical relevance of standard academic research within business, and intentionally aims to popularize management research (HBR, 2011). HBR is widely circulated amongst, and positively perceived by, practitioners and managers (Rynes et al., 2007), and is the most quoted management journal in selected on-line business course syllabi (Thelwall & Kousha, 2008).

In their analysis, Parker et al., (in press) identified that of the 178 articles published in 2014 and in the first few months of 2015, 24% (N=44) had clear work design content and a further 24% (N = 43) were highly relevant to work design. Thus, in total, almost half of the articles had some relevance to work design. Examples of the topics and their link to work design in recent HBR articles include the following:

- Buckingham & Goodall's (2015) article "Reinventing performance management" identified how, at Deloittes, the survey item 'I have the chance to use my strengths every day' (highly relevant to work design concepts such as skill utilisation) "was the most powerful" in correlating with high team performance, leading Deloittes to radically re-think their approach to performance management.
- Kuehn's (2014) "Sustainability a CFO Can Love" reports how a healthcare professional team in Uganda, in response to increasing numbers of AIDS patients, introduced "task shifting" involving pharmacists doing some of the work carried out by doctors, freeing up doctors' time for patient care.
- Nidum et al., (2014) "The Collaboration Imperative" discusses how global sustainability requires "new collaboration models" in the form of multidisciplinary teams.
- Srinivasan & Kurey (2014) in "Creating a Culture of Quality" identified the importance of "empowering workers to make quality decisions".
- Ferrazzi (2014) in "Managing Yourself" identified key elements for the success of virtual teams including "divide the labor appropriately".
- Heimans & Timms (2014) article "Understanding 'New Power' analysed power in contemporary organisations, including "how power is really shifting: who has it, how is it distributed, and where is it heading".
- Hill et al., in "Collective Genius" described how the head of marketing at Volkswagen fostered as sense of purpose amongst staff – as argued to be essential for sustainable innovation - by building "significant responsibility and autonomy into their (employees) rules of engagement"
- Fernandez-Araoz in "21st Century Talent Spotting" identified the importance of job rotation for developing talent.
- Meye (2014) in "Navigating the Cultural Minefield" highlighted how cultural differences affect how individuals respond to hierarchy and related work design factors.
- Kim and Mauborgne in "Blue Ocean Leadership" discussed how to engage employees through (amongst other things) greater empowerment; see also Moritz (2014) on "How I did it.. The US Chairman of PWC on Keeping Millenials Engaged" on the importance of job flexibility and other work design elements for young staff at PWC.
- Zweig (2014) on "Managing the Invisibles" identified the importance of intrinsically interesting work for managing the performance of 'invisible' high performers.
- Sutton & Roa in "Can a Volunteer-Staffed Company Scale?" reported a fictional case study about how too much autonomy amongst game designers can create challenges in growing.

Thus we see work design referred to in the context of creating engagement, managing talent, and enabling outcomes such as innovation, virtuality, sustainability, and global collaboration.

A similar observation made by Parker et al., (in press) comes from examining top selling corporate books. Many of these feature work design (although they do so without reference to this term). Examples include:

- Hammer and Champy's (2006) *Reengineering the Corporation: A Manifesto for Business Revolution,* identified by Forbes (2002) as one of the most influential

business books ever. This book advocates restructuring jobs to remove process fragmentation, similar to the concept of task identity.

- Maitland and Thompson's (2014) book on *Future Work,* which extensively highlights virtual work design, job autonomy, and empowerment as necessary for success in today's dynamic world. A final example is Adam Grant's (2013)
- Grant's (2013) *Give and Take*, which was named one of the best books of 2013 by Amazon, the Financial Times, and the Wall Street Journal. This book is a practical version of relational work design, one of the contemporary developments in work design theory discussed later in Section 6.1.

5 DESIGNING/ REDESIGNING WORK (THE 'HOW' PRINCIPLES)

Regarding "how" to design good work, the issues and approach to this process depends on a number of factors, such as:

- the scale of the change (ranging from, for example, work design as part of a large scale organizational redesign to redesigning the individual job of a person returning to work after injury)
- the type of change and how different it is from the status quo;
- the organization's (or team's) 'readiness' for work redesign (e.g. the management style and culture), and the degree of stakeholder support for the change;
- the degree to which human resource and other systems align with the work design (e.g. payment, training, information systems)
- the history of change in the organization (e.g. repeated unsuccessful attempts at change might enhance employee cynicism)
- the level of job security of employees.

For medium-to-large scale work redesigns, such as the implementation of job enrichment or autonomous group work within a department or an organization, the change will involve considering multiple systems as well as the perspectives of multiple stakeholders (Parker & Wall, 1998); as elaborated next.

5.1 A MULTI-SYSTEM MULTI-STAKEHOLDER INTERVENTION

Key Insight: **Attention must be given to how work is designed (or redesigned) as it can be complex, involving multiple stakeholders and multiple systems.**

Work design is affected by various systems and structures in the wider organization. For example the greater the level of organizational formalization and centralization, the lower the autonomy, variety, and task identity (Pierce & Dunham, 1978; Rousseau, 1978a). Leadership also can shape work design. For example, empowering leadership leads to feeling empowered (e.g., Chen et al., 2007). One implication of these broader influences on work design is that it means work can be 'redesigned' in ways over and above direct manipulation of job characteristics, such as by removing demarcation barriers or developing leaders to delegate greater authority.

A further implication is that these broader elements often need to be considered when redesigning work. In other words, from the perspective of systems theory, a change in work design will have implications for other organisational systems and structures. There will almost certainly need to be some alignment of these various systems to support the work redesign. Table 1 shows some of the systems that can be affected by a work redesign such as the implementation of autonomous work groups.

Table 1. Systems in an organization that need to re-align with the work design.

Systems That Need To Align	Examples
Human resource systems Examples include: job	When autonomous work groups are implemented, flexible 'role descriptions' rather than tightly defined job descriptions will be

Systems That Need To Align	Examples
descriptions, payment & reward, training, selection/recruitment, career development, performance management	conducive to employees' expanded and more emergent roles. Payment on the basis of seniority, or bonus systems, will likely inhibit the incentive for multiskilling. Individuals with good team working skills will need to be selected. Career structures need to be considered in light of the flatter structure. And so on.
Control and Information systems. Examples include: Budget and cost accounting methods; production reports; purchasing systems; attendance measuring devices; electronic monitoring systems	If groups have autonomy, they need information to make effective decisions, which usually mean there is a greater flow of information to employees, as well as feedback systems that ensure employees can continuously learn about their performance. Team members also need requisite authority to be able to make decisions in a timely way, which can require a move away from highly centralized control systems.
Technological systems. Examples include: machinery, layouts, computing systems.	Technology shapes what work design options are possible (e.g., moving assembly lines limit the opportunities for good work design), which means technological modifications might be required to support the work design.

Work redesign also can affect multiple stakeholders beyond the incumbents of the jobs being changed, such as supervisors, managers, support staff, union representatives, and human resource personnel. Some individuals might resist work redesign because they are uncertain about the change or perceive that the change will negatively affect them, such as by reducing their status or making their job vulnerable to downsizing. Resistance is perhaps most likely when the redesign involves empowering employees or expanding job autonomy, which changes the existing power distribution in the organization (Child, 1984; Clegg, 1984; Cummings, 1978). This is evident in Badham, Couchman, and Selden's (1996) account of shopfloor work redesign:

"There will be numerous sources of opposition... - from industrial engineers committed to traditional methods of design and control, from line managers wishing to retain detailed control over production, from trades people opposed to the removal of traditional demarcations and privileges, from union officials perceiving the change as a threat to their power base, from personnel managers reluctant to change pay and classification systems, and from senior managers unwilling to commit resources to a strategic change the benefits of which are not easy to quantify... "

If the multi-system and/or multi-stakeholder nature of work redesign is not taken into account, then it is quite likely to be ineffective or unsustained. For example, Bailey (1998) reported that self-directed work teams in a wafer-manufacturing company were associated with lower productivity relative to the implementation of improvement teams, despite the much higher autonomy and training present in the self-directed work teams. Bailey identified several reasons for the teams' relatively low performance, including: the failure to adequately install an information infrastructure necessary for team decision-making; lack of support from management for the teams; failure to involve engineers in the implementation process (causing a lack of understanding from engineers, who were critical to an effective change process); and the choice of traditional quantity-based measures of productivity (e.g. wafers processed per hour) rather than quality-based metrics.

Likewise, Pearson (1992) identified several factors that affected the success of semi-autonomous work teams, such as the lack of transformational leadership shown by managers, a lack of active union support, and the presence of bureaucratic administrative practices. These studies converge with much of the more general organizational change literature which points, for example, to the importance of top management support, employee involvement in the change, and the alignment of organizational subsystems (e.g. Mohrman & Mohrman, 1997).

To address some of the above challenges, Parker & Wall (1998) identified eight phases as important in a work design (see Figure 7):
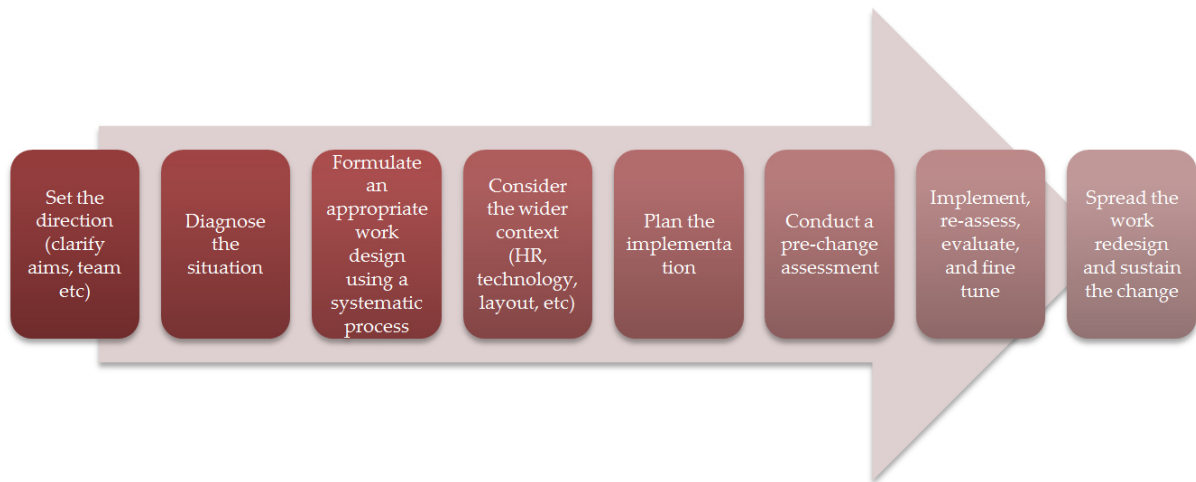
Figure 7. Common phases involved in a work redesign

5.2 LINKS TO THE 'HOW' PRINCIPLES

Key Insight: **Participation, commitment of key stakeholders, effective risk management, and continuous learning are key principles for achieving positive change.**

Because of the many forms of work redesign, instead of specifying steps or phases of change, another approach is to focus on principles of "how" to introduce work redesign.

Commitment and leadership from key stakeholders

The challenges and politics involved in work redesign highlight the need for visible commitment from key decision makers and leaders (Clegg, 2000; Parker & Wall, 1998). This recommendation is not only a core principle when implementing any type of organizational change, the need for engaging stakeholders and leaders is consistently highlighted in guidance for improving health and safety at work. For example, almost all models of risk management highlight the importance of leadership commitment, including the WHO model (Burton, 2010), the EU-OSHA Mental Health Promotion Good Practice (Hassard et al., 2011), and the EU-OSHA (Holden et al., 2008). The importance of engagement from key decision makers and leaders is highlighted in principle 8:

PRINCIPLE 7: ENGAGE DECISION-MAKERS AND LEADERS

As just one example of this research, Malgorzata et al., (2012) analysed various case studies to identify a range of factors as influencing the effectiveness of psychosocial risk management interventions. These factors include various processes for engaging stakeholders and leaders, such as:

- Facilitating dialogue and communication amongst key stakeholders
- Raising awareness of psychosocial issues and their management
- Accessibility and usability of tools, methods, and procedures across all members of the population
- Top management commitment
- Ownership and participation of employees
- Training of managers and supervisors to implement the psychosocial risk management process and interventions
- Organisational readiness for and resistance to change
- Sensitivity of issues such as those relating to violence, bullying, and harassment
- Generating achievable solutions, spurring action, and systematic implementation of the intervention within the organization
- Retaining and recruiting management and organisational support throughout the intervention process

- Retaining and recruiting participation and engagement of workers throughout the intervention process
- Developing skills, abilities, and sufficient dialogue within management and the organisation to promote sustainability and a continuous improvement cycle

Wider-scale participation

One of the most important principles, recommended by almost all authors describing work redesign processes, is to involve people who will be affected by the work redesign in its planning and implementation (Davis & Wacker, 1987; Mohrman & Mohrman, 1997; Parker & Wall, 1998). This idea is captured in principle 8:

PRINCIPLE 8: ACTIVELY INVOLVE THE PEOPLE WHO DO THE WORK, INCLUDING THOSE IN THE SUPPLY CHAIN AND NETWORKS

The importance of participation and involvement is specified in the socio-technical systems principle of "compatibility" which asserts that - if the objectives of work redesign are to create a system capable of adapting to change and using the creative capacities of people - then the design process should reflect this (Clegg, 2000). Leka et al., 2008 identified involvement as a key factor for success in work-stress interventions; and Lamontagne et al., (2007) found that employee participation was integral to systems approach to work stress interventions, with systems approaches being overall most effective in improving both individual and organisational outcomes. Employee involvement is also key to participatory ergonomics, which is an important intervention to address biomechanical hazards.

The usual approach is to involve representatives from all stakeholder groups (such as line managers, supervisors, operators, trade union officials, support staff, and human resource personnel). Not only is the end-solution likely to be a high quality one because many different perspectives are brought to bear on the issue, but there is a greater chance of acceptance and ownership of the work redesign from all concerned. Employees whose job is being redesigned, in particular, need to identify with the new design and want it to work, as well as understand the rationale behind the design so as to anticipate and minimize any potential negative effects (Davis & Wacker, 1987).

In a simulation study, Seeborg (1978) showed how jobs redesigned by subjects for themselves had positive effects on their reactions whereas the imposition of exactly the same changes upon others had a much less positive impact. Similarly, Parker, Myers, & Wall (1995) reported positive effects of Just-in-time practices on work characteristics when employees participated in the change process, but negative consequences when they did not.

This principle of participation extends to the design and implementation of new technologies and new initiatives (e.g., lean production); processes which are traditionally handled by technical specialists (such as engineers) and production managers (Berger, 1994; Clegg et al., 1996a).

Manage the risks

Although work redesign can be approached from many perspectives (e.g., it can be part of a large-scale restructure), from the health and safety perspective, it is vital that risks be actively managed. Principle 9 recommends a risk management approach for designing healthy work:

PRINCIPLE 9: IDENTIFY HAZARDS, ASSESS AND CONTROL RISKS, AND SEEK CONTINUOUS IMPROVEMENT

This principle maps on to the WHS Act Code of Practice and its 'Risk Management Process'. Specifically, the process involves four-steps that collectively involve actively thinking about what could go wrong at the workplace and what the consequences could be, and then doing whatever is 'reasonably practicable' to "eliminate or minimise health and safety risks arising from your business or undertaking". The four steps are:

1. **identify hazards** – find out what could cause harm
2. **assess risks** if necessary – understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening
3. **control risks** – implement the most effective control measure that is reasonably practicable in the circumstances
4. **review control measures** to ensure they are working as planned.

A risk management approach to addressing psychosocial hazards is also frequently used in Europe (e.g., Leka et al., 2008), and is an approach endorsed by the UK Health and Safety Executive, the INRS in France, the European Commission, and the International Labour Organisation.

To help ensure effective application of a risk management approach, the UK HSE identified 'principles of sensible risk management' (see Table 2). These principles emphasise the importance of risk management being sensible and grounded in genuine efforts to reduce risk, as oppose to the exercise being a stifling, bureaucratic, or unrealistic process.

Table 2. The UK Health & Safety Executive Principles of Sensible Risk Management

SENSIBLE RISK MANAGEMENT IS:

1. Ensuring that workers and the public are properly protected
2. Providing overall benefit to society by balancing benefits and risks, with a focus on reducing real risks – both those which arise more often and those with serious consequences
3. Enabling innovation and learning not stifling them
4. Ensuring that those who create risks manage them responsibly and understand that failure to manage real risks responsibly is likely to lead to robust action
5. Enabling individuals to understand that as well as the right to protection, they also have to exercise responsibility

SENSIBLE RISK MANAGEMENT IS NOT ABOUT

6. Creating a totally risk free society
7. Generating useless paperwork mountains
8. Scaring people by exaggerating or publicising trivial risks
9. Stopping important recreational and learning activities for individuals where the risks are managed
10. Reducing protection of people from risks that cause real harm and suffering

It is important to note that the risk management approach, which is largely modeled on approaches to dealing with physical hazards, has been critiqued in regard to addressing psychosocial factors (Cousins et al., 2004; Rick & Briner, 2000; Cooper and Cartwright, 1997). This is because there are many ways that psychosocial risks differ from physical risks. For example, whereas physical aspects tend to have fairly precise risks, this is not always true for psychosocial hazards (for example, how much interpersonal conflict is damaging?).

Psychosocial hazards, such as excess work load, can also have benefits (e.g., faster promotion) as well as risks, whereas physical hazards tend to only have risks. It is also harder to tease out the effects of psychosocial hazards – they can take a long time to emerge, they interact with other factors as well as with person characteristics, and the mechanisms underpinning their effects can be complex.

For all of these reasons, organisations and employers who are familiar with adopting risk management approach to deal with physical risks may benefit from the help of experts when wanting to apply the risk management approach to psychosocial factors.

Beyond risk management, other approaches to improving work include:

- A change approach focused on work redesign.
- **Continual Improvement Process Models** involving Plan, Do, Check, Act processes**.** Many organisations use variations of Plan Do Check Act models (PDCA, Deming), which propose iterative processes in which a plan is made (Plan), implemented (Do), evaluated (Check), improved (Act), and then a new plan is made, and so on (for more information, see Burton, 2010). Examples of health and safety management systems designed according to this process include the Canadian Centre for Occupational Health & Safety (CCOHS) and the WHO Regional Office for the West Pacific.
- **A Mental Health Promotion Approach.** Rather than a primary focus on preventing ill-health or injury, this approach focuses on interventions to promote positive health and well-being (Hassard et al., 2011; Jane-Llopis et al., 2007). These interventions concern "the process of enhancing protective factors that contribute to good health" (Pollett, 2007). In other words, these interventions concern developing conditions that enable "optimal" health and functioning. Such interventions are argued to boost employee performance and productivity. Some mental health promotion interventions concern work design (e.g., the introduction of flexible work hours) whereas other mental health promotion interventions focus on secondary and tertiary interventions such as providing free counseling.

Table 3: Elements Involved In A Mental Health Promotion Approach (based on Hassard et al., 2011)

ELEMENTS	ELABORATION
1. A holistic intervention approach	Approach to health that targets not only individuals but also the workplace/ wider organisation, and that considers physical, mental, and social well-being
2. Strategic planning and monitoring of the action	Systematic, evidence-based, and practical approach to action planning should be adopted after a systematic needs analysis. Both protective and risk factors should be addressed.
3. Active involvement of workers	All key actors across all levels should be consulted because removing work stress involves the design and management of work. The commitment and support of workers is crucial for success. Employees need to believe in the relevance of the initiative for it to work. Active involvement promotes ownership of the initiative, which is crucial for success.
4. Commitment and involvement of management	Both formal official commitment, and active engagement, is needed from management for the initiative to be successful. Employees need to observe management's visible commitment.
5. Assignment of responsibility for the	Having an individual or group responsible for the program increases the chance of success, such as a steering group or project team. Such an

ELEMENTS	ELABORATION
program	individual group can answer questions, market the intervention, gather feedback, and keep management up to date.
6. Evaluation of the action	The program must be evaluated to determine whether objectives are met, the problems are resolved, and to promote organisational learning for the future.
7. On-going and continuous future	The program should not be a one-off event but should be designed as a long-term program with continual creation of new activities and strategies. This is about establishing a culture focused on health that is sustainable.
8. Communication	Multiple forms of communication should be employed to communicate to employees and other stakeholders throughout the process, such as flyers, discussions, and intranet.
BARRIERS	
1. Challenges changing mindsets	Managers and employees often have fixed mindsets that it is difficult to change. All involved need to clearly understand the purpose of the intervention via active communication.
2. Budget constraints	SMEs in particular often lack financial resources for implementation of work health promotion. Cases and anecdotal evidence suggests that investment pays off in the long term.
3. Time constraints	Time is often a barrier, which some organisations overcome by allocating responsibility to one person or team to take charge of the program.
4. Low employee awareness	Employees often lack an understanding of why health programs are important, highlighting the need for active and continual communication.

- **Change management principles.** Work redesign is a form or organizational change. A great deal of knowledge and expertise has accumulated as to how to design and implement change effectively, resulting in widely accepted principles of change management. For example, a classic model of managing change is Kotter and Rathbeger's (2006) eight step model of change. The eight steps are[8]:

  1. *Establishing a sense of urgency:* Help others see the need for change and they will be convinced of the importance of acting immediately.
  2. *Creating the Guiding Coalition:* Assemble a group with enough power to lead the change effort, and encourage the group to work as a team.
  3. *Developing a Change Vision:* Create a vision to help direct the change effort, and develop strategies for achieving that vision.
  4. *Communicating the Vision for Buy-in*: Make sure as many as possible understand and accept the vision and the strategy.
  5. *Empowering Broad-based Action:* Remove obstacles to change, change systems or structures that seriously undermine the vision, and encourage risk-taking and nontraditional ideas, activities, and actions
  6. *Generating Short-term Wins:* Plan for achievements that can easily be made visible, follow-through with those achievements and recognize and reward employees who were involved.
  7. *Never Letting Up:* Use increased credibility to change systems, structures, and policies that don't fit the vision, also hire, promote, and develop employees who can implement the vision, and finally reinvigorate the process with new projects, themes, and change agents.
  8. *Incorporating Changes into the Culture:* Articulate the connections between the new behaviors and organizational success, and develop the means to ensure leadership development and succession.

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[8] http://www.kotterinternational.com/our-principles/changesteps

A learning mindset

Work design and redesign is typically not a "precise" science in which there is an off-the-shelf solution that can be universally applied in all situations. For this reason, principle 10 is:

PRINCIPLE 10: LEARN FROM EXPERTS, EVIDENCE, AND EXPERIENCE

This principle recognizes that work design can require expert input. Importantly, as noted above, expert advice might come from different disciplines, such as physiotherapists concerned with physical aspects, psychologists/ human resource management personnel concerned with psychosocial aspects, or ergonomists concerned with biomechanical and cognitive aspects). Clegg (2000) argued that design is too often dominated by one perspective (those with technical expertise), which constrains the work design choices that are considered, to the detriment of work effectiveness. Thus whilst technical experts can play an important role, other types of experts should almost certainly be involved. In addition, as noted above in the principle on engaging those involved in the work, employees who carry out the work should be recognized as experts in their own work.

This principle also recognizes the depth of evidence that exists on the topic of work design. Indeed, in their recent analysis of the literature, Parker et al., (in press) identified more than 17,000 articles on work design. Burton (2010) argued for the importance in continuous improvement approaches to health of involving individuals with the right expertise, accessing relevant information, and visiting other organisations doing similar things.

The principle focuses on the importance of learning from experience. Learning from experience is best facilitated by continuous monitoring and evaluation (e.g., Clegg 2000; Cox et al., 2005; Parker & Wall, 1998; Hassard et al., 2011).). Importantly, failures, such as near misses and injuries, are an important source of learning about potential work design inadequacies (see, for example, Haunschild & Sullian, 2002).

6 FUTURE DIRECTIONS

In this section, I describe theoretical extensions to the major perspectives reported above, as well as important directions for future practical and research consideration.

6.1 THEORETICAL EXPANSIONS

Earlier I described the most well-established theories of work design. In this section, I describe key theoretical extensions to the topic.

Relational work design and focus on social aspects of work

*Key insight***: An important aspect of good work design is the chance to connect and interact positively with others at work (including beneficiaries), and to obtain support, which can boost workers' feelings of meaning, the motivation to help, and their performance.**

Arising out of changes in work more generally, notably a greater level of collaboration across intra- and inter-organizational boundaries, the interest in social and relational aspects of work design has gathered pace (Grant & Parker 2009).

A relational work design perspective focuses on how work structures can provide more or less opportunities for employees to positively interact with others, which in turn affects their motivation, attitudes, and job performance (Grant 2007).

Specifically, in an extension of research on task significance, Grant (2007) proposed that when jobs are structured so that they provide incumbents with contact with those who benefit from the work (or 'beneficiaries', such as clients, customers, and patients), job incumbents' then empathize with the beneficiaries and want to help them. In turn, incumbents are more likely to want to help beneficiaries and work harder in their jobs.

Several studies have supported these ideas. In an early study by Grant and colleagues, call centre agents were given brief contact with a beneficiary – in this case, with a scholarship recipient who benefited from funding raised by callers. Compared to controls, these callers significantly increased the time they spent on calls over the subsequent month, and significantly increased their average weekly revenue (Grant et al. 2007). In another study, nurses who volunteered to help assemble surgical kits for use in disadvantaged countries met and heard vivid stories from beneficiaries (in this case, healthcare practitioners who had previously used surgical kits in former war zones). Compared to controls, these nurses increased their prosocial motivation and assembled more kits (Belle 2013); an effect that was even stronger for individuals high in prosocial motivation at the outset.

The relational perspective is useful in focusing attention on employees' prosocial motivation, or their desire to bring benefit to others. The Job Characteristics Model, in contrast, focused on designing work to enhance intrinsic motivation in the job. Practically, relational work design can be a path for enhancing the meaning of work when more autonomous and enriched types of work redesign are not possible or are too strongly resisted by management or other key stakeholders.

It is also likely that different forms of relational work design will suit different contexts. Parker et al., (2014) reported a study focused on junior doctors working on the overtime shift in a hospital. For this sample, there was no need to focus on contact with beneficiaries as doctors already have frequent contact with patients. Instead, in this case, the focus was on greater support provided to the doctors by the introduction of an advanced practice nurse role. This enhanced structural support (structural because the new role was embedded into the system) was a powerful form of relational work design that resulted in greater proactive care and enhanced voice amongst the doctors.

From the practical perspective of design professionals, the relational approach provides another avenue for enhancing the meaning of work: deepening the connections between workers and end-users of their work, and/or enhancing support to workers through new forms of organization.

Designing work for learning and development

Key insight: **Work design can promote learning, skill development, and, over the long term, positive personality change, which means work design is a powerful yet rather untapped force for achieving an optimally functioning society.**

Another perspective that we believe is likely to grow in importance, yet which does not neatly fit into the existing theories, is a learning and development approach to work design (Parker, 2014). Learning and development can be seen as indicators of active mental health, so this perspective relates to the idea that work design promotes employees' wellbeing and active mental health.

An extended version of Karasek's (1979) demand-control model of strain (Karasek & Theorell, 1990) proposed that active jobs (high demand, high control) promote learning, which in turn reduces strain. Empirically, Wall and colleagues in the UK have shown good evidence that some of the positive effects of autonomy on performance stem from learning (e.g., learning to anticipate and prevent problems) rather than motivation (Wall et al., 1992), and several studies provide support for this active learning element of the demand-control model (Taris et al., 2003; Bakker et al., 2010). Other research shows that individuals with enriched jobs are more likely to empathize with the perspective of others' in their work environment, and to have 'big picture' understanding of how the whole department works (Parker et al., 2001). Likewise, at the team level, it has been suggested that, because they assume more responsibility for external coordination with others in other organizations, members of autonomous work groups gain an understanding of the broader work processes (Batt, 1999).

Other research goes further and suggests not only learning, but developmental outcomes of work design. Building on earlier work, Schooler et al. (2004) summarised how, controlling for assessments of these variables twenty years prior, having complex work with low supervision

predicted employees' ability to deal with complex cognitive problems, or their intellectual flexibility. These researchers also showed that work that allows for self-direction, especially work with substantive complexity, promoted a self-directed orientation towards the self and society (albeit with small effect sizes).

On the other hand, jobs that limited occupational self-direction led to reduced ideational flexibility and a conformist orientation. Brousseau (1978) similarly examined the effect of job content on later outcomes, including active orientation (e.g. taking initiative, feeling optimistic), freedom from depression, and self-confidence. These aspects were assessed at the time of the individuals' hire and then again later, with an average of 5.9 years separating the two administrations. Job characteristics, assessed at the second administration, were positively associated with change in active orientation and freedom from depression. Task significance and feedback were particularly important predictors of both aspects, and skill variety was additionally important for predicting freedom from depression.

More recently, Li et al., (2014) who showed that job demands and control predict the development of a more proactive personality, which then in turn has lagged beneficial effects on work characteristics. Another example is a study by Wu, Parker, & Griffin (in press), which showed that job autonomy promotes the development of a stronger internal locus of control, which in turn shapes later autonomy. These studies are important because they show that an individual's personality is in part shaped by the quality of the work they perform.

Recently Parker (2014) proposed taking this developmental perspective further, and theorized ways that work design might promote - over the long-term – not only personality and identity development, but also moral and cognitive development.

From the practical perspective of design professionals, this extension means that work design might provide a currently rather untapped vehicle for fostering skill acquisition and promoting adult development across the life span.

Antecedents of work design

Key insight: **The continued prevalence of job simplification in some sectors means it is vital that research is conducted to understand the sources of inertia or resistance in regard to improving work design, as well as factors that enable and support the achievement of good work design.**

Parker (2014) argued we need to reinvigorate research on what factors determine and shape work design, especially given evidence of continuing poor quality work design. For example, Smith and Elliot's ethnographic report of a retail manager shows how constant business pressure and stretched staffing levels results in reduced autonomy: "*basically it doesn't matter what your plans are, you are sort of handcuffed to the front doors at times*" (p. 680). A further powerful example (Davis, 2010) is the job of "gold farmers" (Heeks, 2008) who work long hours carrying out the repetitive and routine aspects of online games such as the World of Warcraft in order to gather and sell points ('gold') in exchange for real money to wealthy recreational players keen to bypass boring aspects of the game. Some estimate as many as 1 million gold farmers in China (Kushner, 2007).

In part, poor work design represents a continuation of traditional notions of job simplification, with insufficient knowledge or motivation on the part of managers or other stakeholders to create better job designs. In part, poor quality jobs are driven by broader changes in technology and work organisation. For example, in a retail shop (Ann Taylor), a performance monitoring system was introduced that monitors individual's sales and then automatically schedules the 'most productive' sellers to the busiest times, reducing both individuals and managers opportunity to control their work hours (Davis, 2010).

Positive work design choices, when organisations are being restructured or when technology is being introduced, might be relatively rare. Dean and Snell (1991) showed that, although integrated manufacturing is likely to be most successful when work designs are also enriched, several sources of organisational inertia (size, performance, etc) mitigate their being a positive effect of integrated manufacturing on work design. Other research suggests that work design is often neglected when new technologies and practices are introduced, and

this is usually to the detriment of their effectiveness (e.g. Waterson et al., 1999). In other words, structures and practices that 'should' result in more enriched work designs will not necessarily do so. The role of organisational inertia, and other such forces, in moderating how new practices affect work design is clearly an important area for further enquiry.

Parker (2014) identified several forces that drive or perpetuate poor work design. These include:

♦ Increased competitive pressure, coupled with the decline of unions, means organisations use outsourcing as well as contingent contracts, to design work in ways they might not otherwise have been able to.

♦ Changes such as outsourcing and IT, also mean that "many more employees are stuck in jobs without career ladders" (Davis, 2010; p 302).

♦ Relevant professionals such as human resources managers are unaware of the evidence of the returns of good work design.

♦ Work design is likely to be more difficult to implement than other sorts of interventions like technology or training because work design typically involves the redistribution of power, and often challenges implicit assumptions about control, leadership, and motivation (see Parker and Wall, 1998).

♦ National policies and institutions shape how organizations are likely to treat work design. For example, in the European Working Conditions survey of conditions in 2010, the Nordic countries had the best quality jobs; likely reflecting national-level practices and institutions that support more positive work designs, such a long-held tradition of co-operation between the key employers' organisation and the key trade union confederation.

The practical implication of this extension for design professionals is that – in order to achieve better work design – more attention needs to be given to the forces that sustain, perpetuate, or create work designs in the first place. For researchers, we need to give more attention to why poor quality work design persists in the face of vast evidence of negative health and economic consequences.

Crafting, i-deals, and other proactive perspectives

> *Key insight*: **Individuals (or teams) with the inclination and opportunity to do so can proactively shape their work designs. This means good work design can create virtuous spirals in which people craft for themselves even better work design.**

The traditional assumption is that work design comes from choices made by management or other external forces outside the individual. However, work characteristics are not only perceived differently by job incumbents, but differentially shaped and crafted by them. Job crafting (Wrzesniewski & Dutton, 2001) refers to the process by which individuals cognitively and behaviourally shapes their jobs and work roles to enhance their sense of meaning. Job crafters are individuals who actively compose both what their job is physically, by changing a job's task boundaries, what their job is cognitively, by changing the way they think about the relationships among job tasks, and what their job is relationally, by changing the interactions and relationships they have with others at work.

Empirical studies on crafting are still scarce, although there are some. One study is that by Leana, Appelbaum, and Shevchuk (2009) who examined job crafting in special education childcare classrooms. These authors found that autonomy predicted both individual job crafting and collaborative job crafting, and task interdependence, supportive supervision, and social capital predicted collaborative job crafting. Interestingly, collaborative job crafting, but not individual job crafting, predicted higher levels of performance (care quality) as assessed by independent raters. This research suggests that job crafting can be undertaken by groups as well as by individual employees, and that such collaborative job crafting efforts—when focused on constructive changes—can improve unit performance. Bakker and colleagues have also increasingly considered how individuals can actively craft the demands and resources in their work.

Other forms of individual proactivity, such as obtaining idiosyncratic deals (i-deal) also shape work design (see Grant & Parker, 2009). Researchers noticed that employees were negotiating changes in roles and job descriptions with supervisors (Fried, Hollenbeck, Slowik, Tiegs, & Ben-David, 1999; Graen & Scandura, 1987; Ilgen & Hollenbeck, 1991), and that idiosyncratic jobs customized to specific individuals were surprisingly common in organizations (Miner, 1987). Thus Rousseau et al. (2006) introduced the notion of idiosyncratic deals, or "i-deals," which are customized employment terms negotiated between employees and their supervisors. I-deals emerge when employees have unique skills that merit additional compensation or special arrangements, or when employees have unique life circumstances that require flexible working times, methods, or locations (Greenberg, Roberge, Ho, & Rousseau, 2004; Rousseau, 2001, 2005).

As an example of a study on i-deals, in a sample of German government employees, Hornung, Rousseau, and Glaser (2008) found a higher proportion of i-deals in departments with individualized work arrangements such as telecommuting and part-time work, and discovered that employees with high dispositional tendencies toward personal initiative were more likely to negotiate i-deals. These authors further distinguished between *flexibility i-deals* (which concern negotiating deals around more work flexibility) and *developmental* i-deals (which concern negotiating deals for training and development at work). *Flexibility i-deals* predicted lower levels of work-family conflict and less unpaid overtime work, while *developmental i-deals* were associated with higher work-family conflict, more unpaid overtime work, increased performance expectations, and higher affective organizational commitment. It seems that developmental i-deals create jobs that are both more demanding yet also more rewarding.

Grant & Parker (2009) proposed a dynamic model of work design that links work design and these proactive and crafting processes. The model depicts that work characteristics can promote or inhibit employees' proactive behaviors through multiple mechanisms, and that individual differences can moderate the relationship between work design, mechanisms, and proactive behaviors. The model also proposes that proactive behaviors influence work characteristics, such as that, by negotiating involvement in a wider range of projects (job-role negotiation), employees increase their task and skill variety. Likewise, by crafting their jobs to establish better connections with end users, employees can enhance job impact and contact with beneficiaries.

In essence, this model posits a dynamic relationship between work design and proactivity, and recognizes that a positive spiral can occur by which good work design promotes individual proactivity and agency, which in turn means the individual is likely to actively take steps to craft an even better quality work design.

6.2 CONTEMPORARY CHALLENGES

Key insight. There are dramatic changes occurring in the workforce (e.g., ageing, more women workers) as well as the nature of work itself (e.g., global teams, changing employment contracts, robot technology), which raise new questions about work design.

A key challenge is to better understand how changes occurring in contemporary work and organisations will affect the design of jobs. For example, a sample of experts (European Agency for Safety and Health at Work, EU-OSHA, 2007) identified several emerging psychosocial hazards in contemporary work, including:

- new forms of employment contracts and job insecurity (e.g. precarious contracts);
- the ageing workforce;
- work intensification (long working hours, work intensification);
- high emotional demands at work; and
- poor work-life balance.

Some commentators predict even more radical potential changes, such as the erosion of 'middle class' jobs as a result of robot technology (see, for example, the UK Commission for Employment and Skills 2014 publication "*The Future of Work: Jobs and Skills in 2030*").

What follows is an illustrative list of work design questions that deserve greater consideration from a policy, research, and practical perspective into the future:

- **What is good work design for an ageing workforce?** Increasing mature labour force participation rates in Australia is necessary for the success of the economy. With increasing life expectancies, individuals will be able to work until they are older; and will need to, because financial systems will not be able to support such a large number of retirees. And yet, we know little about designing work for older employees. Example questions include: what sorts of work designs will motivate the mature workforce to remain in work, especially given evidence that older workers have a stronger preference for generative, fulfilling work? What sorts of work designs will help them to cope with physical demands more effectively? What health risks for older workers can be mitigated by good work design?

- **How should organisations design work to accommodate the needs of more dual career families and increased numbers of women at work?** Although there has been a growth in the availability of flexible working, such arrangements rely heavily on an individual negotiating access to a flexible way of working with his/her supervisor (Perlow & Kelly, 2014). In contrast forms of work design and redesign that empower the employee or team of employees to control when and where they work appear to be much more powerful, such as ROWE (Results Only Work Environment; Perlow & Kelly, 2014). However, work design interventions of this type are exceptionally rare. Questions include: what types of work design both improve home-work balance and effectiveness? What are the costs and benefits of these interventions? What can be done to train leaders and managers to achieve and support home-work friendly work designs?

- **What are the implications of globalization for work design?** Work design is often about maximising meaning, sense of worth, and well-being, but what that entails will vary across cultures. In addition, as well as variations in cultural values, countries differ in their labor-management relations, institutional structures, and the like, which will shape work design choices and their effectiveness. This raises questions like: what sorts of work designs are appropriate in other cultures? Is job enrichment better for well-being in non-Western cultures? A further issue concerns how work designs in one country affect work design in another. For example**,** Eriksson-Zetterquist et al., (2009) showed shows how a new internet based IT system implemented in the US had negative work design consequences in Sweden because the new system required signoffs, approvals, and reduced opportunity to interact personally with suppliers, replacing what was previously fulfilling work with audit and control tasks.

- **What types of work design support virtual work?** We need a better understanding of how to design work to support effective and healthy virtual collaboration. For example, because they don't share context, virtual teams can have difficulties co-ordinating, which can impair meaningfulness of the work and reduce team performance(Erez, 2010). Questions include: how can we best structure work to overcome some of the barriers of virtual team work? What work designs foster members sharing knowledge? Can virtual work be stressful, and what types of work design mitigate the pressures?

- **How can we ensure professional jobs are not eroded?** Scholars have argued that professional jobs "appear to be shrinking, which is perverse because professionals are the people we rely on to make wise decisions in uncertain circumstances" (Oldham & Hackman, 2010). Examples include detailed procedural manuals that must be followed by aircraft flight deck crews, the guidelines that specify sentences judges should impose, protocols for doctors etc, specification of content and pedagogies for teachers. Davis (2010) shares this concern: (p. 306), "*the provision of health care has increasingly come to look like the drive-through window at a fast food*

chain". Questions include: What are the implications of these changes in work design for professionals? How can work design help address projected shortages of skills amongst professional groups?

- **What are the work design implications of outsourcing, expanded temporary contracts, and other changes to employer-employee relations?** Technology is changing where and when jobs are carried out, which can help (or hinder) the meeting of employees and employers' needs. Broadband technology, wireless connections, the Web, and cloud computing, means more jobs can be performed just as well remotely as they can be done face-to-face. One consequence is that employers have much greater flexibility in how they use labor. Workers can be hired on an as-needed basis, so we are seeing rapid increases in the use of part-time and temporary work, as well as much more outsourcing. Questions include: what does extensive outsourcing mean for the quality of work? How is remote workers' work designs monitored? What particular threats to health and well-being are posed by temporary work?

- **How do we address the intensification of work that is happening in many jobs?** Traditional work design theories have focused on enriching work, and there is still a vast need for this type of intervention, as noted above. But some jobs have become "too rich", with workers need to work exceptionally long hours to meet demands, or never switching off their mobile telephones. Example questions include: what are the downsides of work that is "too rich" (e.g., does it result in too much sitting)? How can employees most effectively recover from demanding work? What are the benefits of reducing work intensity for outcomes like absenteeism, presenteeism, and creativity?

- **What are the implications of continued advances in technology?** Commentators predict that cognitive computing and digitalisation mean that *"the nature of employment – the type of work humans do – is going to change dramatically in the coming few decades" (Bradlow, 2015, p. 45).* The argument is that computers and robots are increasingly replacing humans, leaving only high-skilled, complex jobs (e.g., managerial, professional, highly technical jobs) and low-skilled jobs that involves non-routine physical elements (e.g., caring work). As well as the obvious potential implications for unemployment patterns, the jobs that remain will be profoundly affected by computerisation. An example prediction is that people will increasingly wear sensors that continuously monitor their health, meaning that GPs will spend more time on social roles than technical work (Durrant-Whyte, 2015).

In summary, fueled by advances in technology, significant changes are occurring in the world of work. This change in work itself, combined with important changes in the workforce (such as its ageing), gives rise to important and largely unanswered questions about the design of 'good work' into the future. The analysis provided above gives a snap shot of perspectives on this important topic.

7 CONCLUSIONS

In this paper, I set out the evidence-base and theoretical underpinning of work design, focusing particularly on psychosocial aspects of jobs. A great deal of theory and evidence shows the value of good work design for health, safety, well-being, motivation, performance, organisational productivity and other related outcomes; consistent with Safe Work Australia's 'why' principles (principles 1-3).

In terms of the 'what' principles, good work design encompasses multiple characteristics (principle 4), but from a psychosocial perspective, means the job has autonomy, support, variety, and related such characteristics (or 'resources'), as well as moderate levels of demands. The exact psychosocial work characteristics that need to be focused on will depend to some extent on the needs, preferences, and capabilities of the individuals whose work is being designed (principle 5) as well as the unique features of the business or organisational context (principle 6). In essence, one size is unlikely to fit all, although work

design issues should be considered all the way along the product, service, or organizational chain (principle 7).

The fact that one size rarely fits all partly explains why involving employees in any work redesign process is so essential (principle 7): participation enables individuals to shape the work design to fit. Participation also will improve the quality of any work design solution. Other important 'how' principles include the need for leaders and other key stakeholders to be actively committed (principle 8); the importance of following a process to managing risks and hazards (principle 9); and the value of a learning mindset (principle 9).

In sum, the theory and evidence presented dovetails with Safe Work Australia's 'Good Work Design' principles, and provides further guidance in regard to good psychosocial work design in particular. But the story should not end there: the pace of change in the contemporary landscape means that continued policy, research, and practical analysis of good work design is warranted.

8 DISCUSSION QUESTIONS

The following are questions for discussion in tutorials or lectures:

1. Have you ever had a job with a poor quality work design? Have you ever had a job with a good work design? Describe each of these jobs, and analyse them with reference to the major psychosocial work design theories.
2. What are the legal responsibilities of employers when it comes to work design? As well as compliance with the law, what other reasons might there be for giving serious attention to improving work design?
3. When does it make more sense to choose individual work design and when does it make sense to choose group work design?
4. Do off-the-shelf solutions make sense for work design? Explain your reasoning drawing on the Good Work Design principles.
5. Why is it important to involve employees who do the work in any redesign process?
6. As a professional designer, what do you anticipate might be some of the key challenges in achieving good work design, and how might you address these? Do you expect that all industries/ occupations will face similar challenges?
7. In this paper, the process of work design/redesign is described as involving multiple stakeholders and multiple systems. What does this mean, and what are the practical implications that arise from these ideas?
8. Whose responsibility is it to design good work design? Include in your discussion contemporary notions of job crafting in which individuals themselves craft more meaningful or less stressful work.
9. Why do large numbers of poor quality work designs continue to exist, despite the strong and consistent evidence about their detrimental effects? In other words, what forces perpetuate poor quality work design?
10. Thinking into the future, do you believe that work is likely to become better (more good work designs) or worse (more poor work designs)? Explain your answer.

9 USEFUL RESOURCES

AFOEM Position Statement Improving Workforce Health and Workplace Productivity

- http://www.racp.edu.au/page/racp-faculties/australasian-faculty-of-occupational-and-environmental-medicine/realising-the-health-benefits-of-work/latest-news/

Australian Safety and Compensation Council, Guidance on the Principles of Safe Design for Work

- http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/gm2006principlesofsafedesign
- http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/154/GuidanceOnThePrinciplesOfSafeDesign_2006_PDF.pdf

Australian Faculty of Occupational and Environmental Medicine (AFOEM) Consensus Statement

- www.racp.edu.au/page/afoem-health-benefits-of-work

Canadian Centre for Occupational Health and Safety

- http://www.ccohs.ca/oshanswers/hsprograms/job_design.html
- http://www.ccohs.ca/oshanswers/hsprograms/hazard_control.html

Center for Chemical Process Safety, 2010

- https://www.aiche.org/ccps

Cochrane Occupational Health Field

- http://osh.cochrane.org/osh-reviews

Comcare

- http://www.comcare.gov.au/preventing/managing_risks_in_the_workplace
- http://www.comcare.gov.au/preventing/hazards/physical_hazards

Control of Substances Hazardous to Health Regulations

- http://www.legislation.gov.uk/uksi/2002/2677/pdfs/uksi_20022677_en.pdf

European Agency for Safety and Health at Work

- http://osha.europa.eu/publications/reports/7807118

Health and Safety Executive (UK)

- http://www.hse.gov.uk/stress/standards/
- https://www.healthy-workplaces.eu/en/tools-and-resources/practical-tools
- http://www.hse.gov.uk/biosafety/biologagents.pdf
- http://www.hse.gov.uk/research/rrpdf/rr006.pdf
- http://www.hse.gov.uk/offshore/biological-hazards.htm
- http://www.hse.gov.uk/research/rrpdf/rr045.pdf
- http://www.hse.gov.uk/pubns/indg36.pdf)
- http://www.hse.gov.uk/msd/msds.htm
- http://www.hse.gov.uk/pubns/indg163.pdf

Human Factors and Ergonomics Society of Australia

- http://www.ergonomics.org.au
- http://www.ergonomics.org.au/resource_library/definitions.aspx

National Academy of Science

- http://www.nasonline.org/

NIOSH's Prevention Through Design

- http://www.cdc.gov/niosh /programs/ptdesign/
- http://www.cdc.gov/niosh/docs/97-141/pdfs/97-141.pdf

Safe Work Australia

- http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/good-work-design
- http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/gm2006principlesofsafedesign
- http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/key-whs-stats-2014
- http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/119/WorkRelatedMusculoskeltalDisorders_2006Australia_2006_ArchivePDF.pdf

Workplace Health and Safety Queensland

- http://www.deir.qld.gov.au/workplace/hazards/bullying-fatigue-stress-violence/resources/index.htm#.U48Vt_m1YqI
- http://www.deir.qld.gov.au/workplace/zeroharm/index.htm#.U48NiPm1YqI

World Health Organization

- http://www.who.int/en/
- http://www.who.int/occupational_health/healthy_workplace_framework.pdf

WHS Act & Code of Practice 2011

- http://www.comcare.gov.au/the_scheme/the_whs_act/codes_of_practice

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