

Beyond Motivation: Work Design For Development, Health, Ambidexterity, and More

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Running title

Work Design for Our Times

Keywords

Job design, autonomy, job enrichment, job characteristics, self-managing teams

Abstract

Much research shows it is possible to design motivating work, which has positive consequences for individuals and their organizations. This article reviews research that adopts this motivational perspective on work design, and it emphasizes that it is important to continue to refine motivational theories. In light of continued large numbers of poor-quality jobs, attention must also be given to influencing practice and policy to promote the effective implementation of enriched work designs. Nevertheless, current and future work-based challenges mean that designing work for motivation is necessary but insufficient. This review argues that work design can be a powerful vehicle

for learning and development, for maintaining and enhancing employees' physical and mental health, and for achieving control and flexibility simultaneously (for example, in the form of ambidexterity); all these outcomes are important given the challenges in today's workplaces. The review concludes by suggesting methodological directions.

Glossary of Key Work Design Terms

Empowerment (psychological): Individuals' experience of meaning, impact, self-determination,

Empowerment (structural): Structures, policies, practices design to delegate power and authority.

Interdependence: How much individuals need to work closely with others to carry out their role.

Job autonomy: Degree to which the job provides discretion over daily work decisions, such as when and how to do tasks.

Job demands: Aspects of jobs that require high levels of, or sustained, physical, mental or emotional effort (e.g., high time pressure).

Job design/ work design: The content and organization of one's work tasks, activities, relationships, and responsibilities.

Job enlargement: Expanding the content of jobs to include additional tasks.

Job enrichment: Increasing employees' autonomy over the planning and execution of their own work. such as by giving responsibility for decisions normally undertaken by supervisors.

Job rotation: Rotating employees from one job to another job.

Job feedback. Degree to which job incumbent obtains clear information about his/her effectiveness by

Job identity: Degree to which a job requires completion of a 'whole' job, from beginning to end.

Job resources: Aspects of the job that help achieve goals, personal development, and help deal with job demands (e.g., job autonomy, social support).

Job significance: Degree to which a job has a substantial impact on the lives or work of others.

Job variety: Degree to which a job involves a variety of activities and uses a number of different skills.

Scientific management: A system in which managers analyze tasks, break them into simplified elements, train employees to perform the elements, and then monitor employee compliance.

Self-managing team (autonomous work group): Team of interdependent members in which the team has collective autonomy over aspects of their work, such as how to carry out tasks and to allocate work.

INTRODUCTION AND BRIEF HISTORY

“Ten hours (a day) is a long time just doing this...I’ve had three years in here and I’m like, I’m going to get the hell out... It’s just the most boring work you can do. (Ford autoworker, p. 38)

“I love my job... I’ve learned so much... I can talk with biochemists, software engineers, all these interesting people....I love being independent, relying on myself...I just do whatever works, it’s exciting” (Corporate Head Hunter, p. 12).

“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...” (Slaughterhouse HR Director; p. 52).

These quotations, from a book in which Americans talk about their jobs (Bowe et al., 2000) highlight the diverse outcomes can be affected by one’s work design. Work design, or the content and organization of one’s work tasks, activities, relationships, and responsibilities, has been linked to almost every end goal that is of concern in an organization - safety, performance, and innovation, to name a few. Work design also matters for individuals, affecting their sense of meaning, health, and development. Miner(2003) rated work design theory as one of the few theories in the field of organizational behavior that is simultaneously important, valid, and useful. Moreover, work design is core to organizing, or “how people solve the dynamic problems of aligning goals and coordinating action”, so it is a topic that organizational psychology uniquely contributes towards understanding (Heath & Sitkin, 2001, p. 54).

Yet work design has not had the research attention that is warranted (Humphrey at al. 2007), especially given recent radical shifts in work organization (Grant & Parker, 2009). As an example, work design has not been the focus of an Annual Review article to date. My goal in this article is thus, unashamedly, to help promote work design research as a distinct area of psychological enquiry. After I define work design and review its history, I structure the article in two parts. First, I review motivational approaches to work design, which I suggest are of enduring value. I recommend research that refines and tests more nuanced motivational theories, and that pays more attention to the application of theory to

practice and policy. Second, I argue that contemporary challenges mean designing work for motivation is necessary but insufficient. I identify three goals of work design that are central given enhanced complexity in many workplaces: work design for learning and development, work design for health and well-being, and work design for ambidexterity. In other words, work design can be much more than a motivational tool.

Defining Job and Work Design

Imagine designing the role of a police officer. Illustrative work design decisions include: *Which activities should be grouped together to form a meaningful police officer job? Which decisions should be made by officers and which by their supervisors? Should individual jobs be grouped together into a team? Can one build in routine tasks amidst complex ones to ensure officers are not overwhelmed?* These decisions concern the content and organization of one's work tasks, activities, relationships, and responsibilities that, in turn, affect outcomes at multiple levels including: individual officers, such as how engaged they feel or their level of strain; the wider organisation, such as whether the police service achieves its targets; and society, such as how effectively crime is detected and prevented.

The term work design has increasingly replaced that of job design (Parker & Wall, 1998; Morgeson & Campion, 2003) to reflect that employees not only carry out set tasks in a fixed job, but they sometimes engage in emergent, social, and self-initiated activities within flexible roles. Nevertheless work design can be distinguished from the larger system of leadership and organization design. For example, one could ask how much support a police officer should receive from his/her manager: such support is an aspect of leadership that can shape work design, and interact with it to influence outcomes. In contrast, the social support that arises from grouping individual police jobs into a team is a work design issue because it is concerned with the nature and organization of tasks and relationships. Importantly, work can be redesigned, either being caused by forces external to the job incumbent (such as a restructuring, new technology) or initiated by the job incumbent (such as crafting).

Job Simplification and Early Work 'Redesigns

At the time of the Industrial Revolution, machine-operated factories replaced craft-based industries, giving rise to a question as to how work should be organized. Fredrick Taylor's solution was scientific management (Taylor, 1911), an approach in which all mental work was allocated to the managers, leaving simplified manual work to the workers. Narrow, low autonomy jobs became the work design of choice in manufacturing and beyond. However, unsurprisingly workers were often deeply dissatisfied with these simplified jobs as demonstrated by a strike in 1912 at Watertown Arsenal, a factory in which Taylor had helped to implement scientific management. As well as turnover, strikes, and absenteeism, employees became alienated and dissatisfied. Coal-mining jobs provide a vivid example (Trist & Bamforth, 1951). Originally, small groups of self-managing and multiskilled colliers contracted with management to work a specific coal face, but after the introduction of conveyor belts and coal cutting tools, a 'longwall' approach involved 40-50 men working a whole coal seam, each man performing a single manual task repeatedly under management supervision. Unpredictable conditions contradicted with the rigid work sequencing, creating conflict and lowered productivity.

Ultimately, their observations of longwall mining led Trist & Bamforth (1951) to advocate the need for joint optimization of social and technical elements when designing work, rather than solely focusing on technical aspects. Example sociotechnical criteria for work include that work provide variety, allow learning, include an area of autonomous decision-making, offer social support, be of social relevance, and lead to a desirable future (Cherns, 1987). When applied to groups, these criteria resulted in autonomous work groups, which were found to alleviate some of the destructive effects of the longwall method of mining (Trist et al. 1977) and improve the effectiveness of Indian textile mills (Rice, 1953). Today self-managing teams are even used in knowledge-intensive work settings such as product design.

Meantime, whilst these group work design experiments were occurring, others focused on redesigning individual jobs. To combat job simplification, early suggestions were for job rotation, job enlargement or, in Japan, quality circles. Ultimately, however, none of these redesigns addressed the removal of control inherent in job simplification. Thus work redesign proposals in the 1960s and 1970s focused on increasing employees' autonomy over the planning and execution of their own work, or job

enrichment. Job enrichment was partly spurred by the Job Characteristics Model (JCM), which also prompted much research on the motivational effects of work design, as I elaborate next.

PART 1: MOTIVATIONAL WORK DESIGN PERSPECTIVES

In this section, I first describe the JCM, elaborations to this model, and group work design. Second, I review extensions that consider work design from different motivational perspectives. Third I discuss the embedding of motivational work design principles into policy and practice.

Job Characteristics Model, Elaborations, & Group Work Design

Job Characteristics Model. In a synthesis of earlier developments, Hackman and Oldham (1976) proposed in the JCM that work should be designed to have five core job characteristics (job variety, autonomy, feedback, significance, and identity; see glossary). Jobs with these characteristics were proposed to result in individuals' experiencing meaning, feeling responsible for their outcomes, and understanding the results of their efforts. In turn, these critical psychological states were proposed to enhance employees' internal motivation, job satisfaction, and performance, whilst reducing turnover. Further specific propositions were made, including: that work characteristics combine in a multiplicative formula to affect outcomes; that particular work characteristics relate to particular psychological states; and that the beneficial effects of enriched work characteristics are greater for individuals who have a preference for growth at work, who are more satisfied with their general work context, and who have more knowledge, skill and ability.

Whilst the more specific propositions have largely been unsupported (Tiegs et al. 1992), the core proposition that work characteristics affect attitudinal outcomes is well established. Two early meta-analyses of 28 studies (Loher et al. 1985) and 76 studies (Fried & Ferris, 1987) showed that the five job characteristics positively relate to attitudinal outcomes such as job satisfaction and motivation. An expanded meta-analysis of 259 studies (Humphrey et al. 2007) showed that all or most of the five core work characteristics related to the JCM outcomes of job satisfaction, growth satisfaction and internal work motivation, as well as other outcomes like organizational commitment, co-worker satisfaction, burnout,

and role perceptions. In addition, experienced meaning was the key critical psychological state that mediated the relationship between job characteristics and outcomes. These meta-analytic findings - based mostly on studies with cross-sectional research designs - are supported by longitudinal and quasi-experimental studies showing positive effects of job enrichment on attitudes and affective reactions (Parker & Wall, 1998). As an example, Griffin's (1991) quasi-experimental study showed an increase in bank tellers' job satisfaction and commitment as a result of job enrichment. Longitudinal studies also show that the work characteristics of low autonomy and low support increase absence (e.g., Rentch & Steel, 1998), and that job enrichment interventions can reduce employee turnover (McEvoy & Cascio, 1985).

The meta analyses noted above also show clear links between work characteristics and subjective job performance, although when objective job performance is considered, only job autonomy is important (Humphrey et al. 2007). Several quasi-experimental and longitudinal studies also show positive performance effects of motivating work characteristics (e.g., Griffin, 1991; Campion & McClelland, 1993), although a smaller set of other studies have failed to show performance effects (Kopelman, 2006), suggesting the relationship between enrichment and performance is moderated, as I discuss later.

An issue that has long dogged the JCM has been the use of job incumbents' perceptions to assess job characteristics (Roberts & Glick, 1981). For example, Salancik & Pfeffer (1978) argued that individuals' perceptions of their job characteristics are constructions that arise from social influences, such as the attitudes of peers, and might thus be unrelated to objective job conditions. Evidence confirms that social cues affect perceptions of work characteristics, although the effects are weaker than those of objective job features (Taber & Taylor, 1990). Studies also show that there is a strong convergence between employee self-ratings of their jobs and ratings from external observers (Fried & Ferris, 1987). Overall, although non-perceptual measures can be preferable in some situations (Daniels, 2006), using perceptions to assess job characteristics is often valid.

Elaborated job characteristics approaches. An important development has been to expand the JCM's core elements (e.g., Morgeson & Campion, 2003; Humphrey et al. 2007). In their Elaborated

Job Characteristics Model, Parker et al. (2001) advocated considering an expanded set of work characteristics, moderators, outcomes, mechanisms, and antecedents.

First, the JCM includes just five core job characteristics, yet it is clear that there are additional important job features. Capturing social characteristics, Kiggundu (1981) showed that task interdependence shapes important outcomes. Further job characteristics have become salient as a result of broader changes in work organization (Parker et al. 2001). For example, the rise of dual working parents highlights the need to consider autonomy over working hours, the growth in service work has led to a focus on emotional job demands, the rise of individuals working from home highlights the role of social contact at work, and changes in career structures bring to the fore opportunities for skill development. Showing the range of work characteristics that have been considered, in their Work Design Questionnaire, Morgeson & Humphrey (2006) distinguished 21 job characteristics across four categories: task motivation (i.e., the five JCM characteristics), knowledge motivation (e.g., problem solving demands), social (e.g., social support), and contextual (e.g., work conditions). In Humphrey et al.'s meta-analysis, motivational work characteristics explained 34% of the variance in job satisfaction, with social and contextual characteristics explaining a further 17% and 4%, respectively. As well as expanding what work characteristics are considered, it is important to consider interactions between them, such as the balance between individual and group autonomy (Langfred 2000).

A second extension is to consider outcomes of work design beyond those specified in the JCM (see Parker et al. 2001). In part, these extend JCM outcomes, such as going beyond increased effort and productivity as key indicators of performance to examine performance outcomes like customer satisfaction and creativity. In part, these extensions reflect changes in the nature of work and the workforce. For example, given increased women in the work place, and increasing time pressure in many jobs, it is important to consider how work design affects family functioning (e.g., Kelly et al. 2011). Likewise, enhanced societal interest in social responsibility raises questions about how poor quality work might lead individuals to seek out enriching volunteering opportunities (Grant 2012a). I return to additional outcomes of work design in the second part of this article.

Third, scholars have identified mechanisms by which work design might affect job attitudes and behaviours beyond the critical psychological states identified in the JCM. Some of these expanded mechanisms are motivationally-oriented, such as the argument that job enrichment promotes employees' self-efficacy (Parker, 1998). Psychological empowerment is also a motivational mediator of work design (see review by Maynard et al. 2012), although as argued elsewhere (Morgeson & Campion 2003; Parker et al. 2001), there is strong overlap between psychological empowerment and the critical psychological states. Other mechanisms are non-motivational. For example, a quick response mechanism refers to employees with autonomy being able to respond to problems faster than specialists (Wall et al. 1990). In a similar vein, job incumbents can often make higher quality decisions than supervisors because they have access to unique information that is only available to those actually doing the work (Langfred & Moye, 2004). Job enrichment can also promote learning, suggesting knowledge-based mechanisms, and can buffer against demands, suggesting strain-based mechanisms; both of which I discuss in the Part 2 of this article.

Fourth, scholars have considered an elaborated set of moderators of the effect of work characteristics on outcomes. When it comes to individual differences, the findings are rather inconsistent (Morgeson & Campion, 2003). However, there is no basis for expecting that any single individual difference variable will moderate all work characteristic-outcome relationships since the processes underpinning these links will vary according to the work characteristic and the outcome. For example, Parker & Sprigg (1999) showed that proactive personality moderated the effect of job control on strain, arguing that, for job control to mitigate strain, individuals need to make use of that control, which they are more likely to do if they are proactive. Likewise, emotional competence reduced the negative effect of emotional demands on service employees' well-being (Giardini & Frese 2006), presumably because emotional competency facilitates more effective coping with emotional demands. A more theoretical approach will help move this area forward, such as Raja & John's (2010) study that drew on trait activation theory (which predicts that people behaviorally express their traits in situations which cue those traits) to understand the link between personality, job scope, and performance.

When it comes to the moderating effects of context, job enrichment appears to most enhance performance when operational uncertainty is high (Wall, et al. 1990). This is probably because, in unpredictable situations, knowledge is incomplete and flexible responses are required, with autonomy facilitating both the speed and quality of decision-making. Similar arguments have been made in more macro organizational theory research (Burns & Stalker, 1961). Time is also a potentially important moderator. For example, Fried et al. (2007) proposed that engaging in simplified jobs might not cause adverse effects if one sees this engagement as a stepping stone for future enriched jobs, and Parker et al. (in press,b) discuss how, as a result of adaptation and learning, the effects of work characteristics can change over time. Scholars have also argued that enriched work design will be most effective when it aligns with broader organizational and human resource systems (Cordery & Parker 2007). This alignment perspective is consistent with the high performance work systems approach in which bundles of aligned practices are argued to enhance organizational performance (e.g., Combs et al. 2006), but it is inconsistent with Morgeson et al.'s (2006) finding that autonomous work groups were only effective when reward, feedback, and information systems were poor. Studies have also considered national cultural influences on work design (e.g., Roberts et al. 2000), although there is no overall clear picture. A fifth elaboration of the job characteristics model has been to consider individual and contextual factors that shape, influence, and/or constrain work characteristics (Parker & Wall 2001). Regarding individual factors, job incumbents can proactively craft and shape their own job designs (see 'proactive perspectives' section). Regarding contextual factors, variables such as organizational design, leadership, resource availability, and market uncertainty can directly affect or generate work characteristics, or exert a cross-level influence on work characteristics. For example, the greater the level of organizational formalization and centralization, the lower the job autonomy, variety, and task identity (Rousseau 1978). An implication of these broader influences on work design is that work can be 'redesigned' in ways other than the direct manipulation of job characteristics, such as by removing demarcation barriers or by developing empowering leaders. Work design can also be shaped by organizational practices, such as structural empowerment, lean production, temporary employment contracts, downsizing, and teleworking

(e.g., Parker 2003), which in turn means that work design can be a mediating process by which these practices have their effects. Unfortunately work design issues are often neglected when new practices, technological, and strategies are introduced, which can contribute to their lack of effectiveness (Dean & Snell 1991). Occupations can also shape or constrain work characteristics (Dierdorff & Morgeson in press), and the relationship between broader practices and work design can be reciprocal, such as when a positive leader-member exchange relationship between a manager and incumbent contributes to more enriched work that, in turn, maintains and promotes high leader-member exchange relationships (Clegg & Spencer 2007).

Group work design. Group work design is appropriate when individual roles are interdependent and there is a need for collective working. Sociotechnical systems principles were early influences on the theory and practice of group work design. Hackman (1987) and other scholars (e.g., Campion et al. 1993) extended these ideas, proposing input, process, output models of team effectiveness. Inputs include group-level work design contextual influences and group composition; processes include intermediary group states or attributes such as group norms; and outputs include team-level performance and team-member affective reactions. Subsequent team research expanded these models in various ways, although the work design characteristics focused on have largely remained group-level versions of the JCM, with the additional inclusion of interdependence.

Most attention has been given to group autonomy, which is when team members are allocated collective responsibility for their work. Taking together studies of autonomous work groups, team effectiveness, and team empowerment, there is encouragingly consistent evidence regarding the importance of group autonomy for positive job attitudes and reactions, such as job satisfaction and organizational commitment (Cohen & Bailey 1997; Parker & Wall 1998; Maynard et al. 2012). One dent in this overall positive picture is whether team autonomy can operate as an insidious form of control. Barker's (1993) ethnographic study showed that self-managing teams, in conjunction with a strong vision, resulted in workers imposing values on themselves in an increasingly rigid way such that initially

enthusiastic participants became “strained and burdened” (p. 432). Whether these findings hold in other contexts has yet to be established.

Just as with individual-level work design and performance, the story is more complex when it comes to performance and behavioral outcomes of group autonomy (Cohen & Bailey 1997). Reviews indicate that group autonomy predicts team performance via team psychological empowerment (Maynard et al. 2012), although most team empowerment studies have cross-sectional research designs. When one turns to the more rigorous research on autonomous work groups, the evidence is a little more mixed. Certainly many reviews and meta-analyses identify positive performance and behavioral effects (e.g., Cohen & Bailey 1997; Macy & Izumi 1993), but at least a few studies have shown non-significant or mixed effects. For example, in studies of self-managing teams, Cordery et al. (1991) reported benefits for job attitudes but higher absenteeism, and Wall et al. (1986) showed benefits for job satisfaction but were unable to conclude positive performance effects.

These mixed effects might be partly explained by a mismatch between group autonomy and team member task interdependence. As noted above, group work does not make sense if team members have low task interdependence. Consistent with this premise, Langfred (2005) reported that teams with high task interdependence performed better with high levels of team autonomy, whereas low interdependence teams performed better with high levels of individual autonomy. Similarly, in a wire making company, team working only benefited employee well-being when team member interdependence was high and not when it was low (Sprigg et al. 2000). Likewise, a meta-analysis by Burke et al. (2006) showed empowering leadership predicted team productivity most strongly when interdependence in the team was high rather than low. Thus evidence generally supports a positive synergy between group autonomy and team member interdependence.

Beyond interdependence, other moderators have been identified. Self-managing teams have more positive performance effects when team members’ feel positive about collaboration (Kirkman & Shapiro 2001), when team members are not isolated from external influences (Haas 2010), when task uncertainty is high (Cordery et al. 2010), and when teams engage in conceptual tasks where the means-

ends are not clear rather than more simple behavioral tasks (Stewart & Barrick 2000). Virtuality also appears important: Kirkman et al. (2004) showed that team empowerment was a stronger predictor of team effectiveness when teams met face to face less often, which they explained in terms of empowerment being especially important for facilitating learning within a challenging virtual context.

Another issue is that autonomous group work design can enhance intra-team performance whilst also hampering inter-team co-ordination because of the high team ownership experienced by team members (Ingvaldsen & Rolfsen 2012). Consistent with this finding, in a simulation study, decentralized planning was associated with increased team member proactivity and aspiration, but also with co-ordination problems across teams, resulting in net negative effects on multi-system performance (Lanaj et al. 2012). These studies highlight the importance of examining organization-level outcomes of team work practices.

Interdependence can also be considered as a work characteristic in and of itself. Wageman (1995) reported that, for maintenance technicians, teams with either very high or very low levels of interdependence had the most positive interactions amongst members and performed best. Stewart & Barrick (2000) found a similar u-shaped pattern of interdependence, but only for teams working on conceptual tasks. Overall, little attention has been given to other team work characteristics, such as team-level feedback or team task complexity.

A broader literature on concepts like high performance work systems (HPWSs) typically considers self-managing teams as one of the important practices, alongside other elements such as incentive compensation and extensive training. HPWSs are associated with organizational performance, and the link is stronger when a system of practices is considered rather than one single practice (Combs et al. 2006). One would anticipate that these positive organizational-level effects are partly accounted for by the positive effects of individual or group work design at lower levels of analysis, although most studies have not examined these pathways.

Expanded Motivational Theories: Proactive, Prosocial, and Other Motivational Perspectives

In this section, I discuss extensions to work design theory that maintain a focus of motivation, but that go beyond intrinsic motivation, the dominant perspective in the work discussed so far.

Proactive perspectives on work design. One critique of the JCM is that it is relatively passive in terms the type of outcomes and presumed causes of work design. Regarding outcomes, job satisfaction is one of the most popular outcomes of work design, yet satisfaction can be experienced as a form of resigned and passive contentment. Likewise, task performance concerns carrying out expected tasks well, but more active types of performance such as using one's initiative and proactively introducing improvements are considered increasingly important in today's dynamic workplaces. Consequently, in recent times, scholars have increasingly been concerned with how work design can facilitate more proactive attitudes and behaviors (Frese & Fay 2001; Parker et al. 2010). A meta-analysis by Tornau & Frese (2012) highlighted the importance of job control and (to a lesser extent) social support in predicting proactive work behavior.

Work design is argued to promote 'can do', 'reason to', and 'energized to' motivational states that in turn stimulate proactivity (Parker et al. 2009). Having varied and challenging tasks provides employees the opportunity for enactive mastery which, in turn, cultivates self-efficacy that they 'can' take charge of their environment (Parker 1998). Social characteristics like social support can help employees to believe they can be proactive by fostering a sense of psychological safety (Parker et al. in press, b). Enriched jobs also enhance individuals' reason to' be proactive, such as by giving individuals a better appreciation of the impact of their work (Grant 2007) and by promoting flexible role orientations in which individuals feel ownership for broader work goals (Parker et al. 1997). Interestingly, time pressure and situational constraints – which are typically considered to be stressors in work settings – can also generate a reason to be proactive. From a control theory perspective, these stressors signal a mismatch between a desired and an actual situation, which stimulates employees to want to proactively rectify the situation (Fay & Sonnentag 2002). Finally enriched jobs can promote 'energized to' states, such as feelings of enthusiasm and vigor (Parker et al. 2009).

A second proactive perspective relates to the causes of work design. The traditional work design approach assumes that others (e.g., managers) design jobs, or that work design derives from broader organizational and technological choices. Yet scholars have long observed that individuals mold their work characteristics to fit their individual abilities or personalities (Kulik et al. 1987). In recent times, more attention has been given to how individuals redesign their own work, such as through job crafting (Wrzesniewski & Dutton 2001) or obtaining personalized employment arrangements ('idiosyncratic deals', Rousseau et al. 2006). Groups can also initiate work design change (e.g., Leana et al. 2009). Training individuals to proactively craft their work might increase the effectiveness of top-down work redesign efforts by equipping job incumbents with the skills and attitudes to realize the opportunities offered (Wageman 2001). Knowledge and professional workers might particularly benefit from redesigning their own work because these individuals typically have more autonomy, higher education levels, and higher aspiration for career progression, yet are also increasingly subjected to excessive work demands that require crafting to manage (see later). Theoretically, although scholars recognize that individuals' proactivity can shape their work design, attention needs to be given to the processes by which this occurs (Grant & Parker 2009).

The above proactive perspectives come together with the idea of a positive spiral in which work design promotes proactive attitudes and behaviors that, in turn, lead individuals to shape their work design, ad infinitum. In support of such a spiral, Frese et al. (2007) showed that autonomy and job complexity predicted control orientation (a motivational state including aspects such as self-efficacy) which predicted personal initiative, which in turn predicted later perceptions of autonomy and complexity. One issue to explore further is how work design might, via such positive spirals, result in organizational-level innovation or even corporate entrepreneurship.

Prosocial motivation and relational work design. Attention to social aspects of work design has gathered pace in recent times (Grant & Parker 2009), in part because of shifts in practice, such as a greater level of collaboration across intra- and inter-organizational boundaries (Barley & Kunda 2001). One of the most important advances is the relational job design perspective that focuses on how work

structures can provide more or less opportunities for employees to interact with others, which in turn affects their motivation, attitudes, and job performance (Grant 2007). In an extension of research on task significance, Grant (2007) argued that when jobs are structured to provide incumbents with contact with those who benefit from the work (or 'beneficiaries', such as clients, customers, and patients), job incumbents' empathize with these beneficiaries and want to help them, which, in turn encourages higher persistence and helping. An early study by Parker & Axtell (2001) was consistent with these ideas, showing that when production employees had greater connection with their internal suppliers, they were more likely to see the perspective of these suppliers and therefore to help them.

A series of studies by Grant and colleagues has supported and extended these ideas. In a field experiment in a call centre, callers 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 next month, and vastly 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 experienced an increase in prosocial motivation and assembled more kits (Belle 2013). This positive effect of relational work design was even stronger for individuals high in prosocial motivation at the outset (see Grant 2008 for similar findings), and is boosted by transformational leadership (Grant 2012b).

A key contribution of the relational perspective is that it shows that work design can activate employees' prosocial motivation, or their desire to bring benefit to others. This contrasts to the traditional emphasis on designing work to enhance employees' intrinsic interest in the job. In particular, relational work design can be a path for increasing work meaning when enriched types of work redesign are impossible or politically untenable. It is also likely that different forms of relational work design might suit different contexts. For a sample of doctors who already have frequent contact with patients, Parker et al.,

(in press, b) showed that structural support is an powerful relational work design, albeit one focused on relationships amongst employees rather than between employees and their beneficiaries.

Self-determination theory, regulatory focus, and goal regulation. Parker & Ohly (2007) incorporated recent developments in motivation theory into work design theorizing. One contribution of their model derives from the application of self-determination theory (SDT, see Gagné & Deci 2005) to work design. From a SDT perspective, an individual can experience an unenjoyable task (or non-intrinsically motivating task) as meaningful because the task is seen as important (identified motivation) and/or because the task is congruent with the individual's values (integrated regulation). Integrated and identified motivation occur when individuals 'take in' external values or regulations through a process of internalization, which is in turn aided by individuals' needs for relatedness and social processes (Gagné & Deci 2005). Parker & Ohly (2008) argued that work designs such as self-managing teams and relational work design likely have some of their performance effects via identified and integrated motivation, yet such processes have not been explicitly considered. A further important issue relates to the meaning of autonomy. From a SDT, autonomy means having a 'sense' of choice as a result of internalization processes (Gagne & Deci, 2005), which contrasts to the JCM's conceptualization of autonomy as having freedom of choice and discretion (Hackman & Oldham 1976). As I discuss later (see enabling bureaucracies), consistent with the SDT view point, some scholars argue that employees can be motivated even if they lack job autonomy so long as they have other positive job features and an enabling context.

Parker and Ohly (2007) also proposed several further neglected motivational pathways by which work design might have its effects, such as that work design can shape or activate individuals' regulatory focus (Higgins 1998) or their goal orientation (Dweck 1986), which might explain why work design can lead to outcomes like proactivity and creativity. For example, enriched work design increases feelings of control, which enhances the salience of internal forces of behavior and activates a promotion focus, which in turn is associated with creativity (Meyer et al. 2004). Parker & Ohly (2007) also elaborated how work design can affect the goals people choose and plan for (goal generation) as well as how they

regulate effort during goal pursuit (goal striving; Kanfer 1990). As an example, job enrichment might promote individuals' generating more difficult goals (e.g., job enrichment enhances commitment, which leads to setting more challenging goals; see Lanaj et al. 2012), more creative goals (e.g., job enrichment increases positive affect, which broadens creative thinking), or more long-term goals (e.g., feedback from a customer promotes internalization of customer goals, resulting in setting goals for customer satisfaction).

Likewise goal striving involves several processes that can be affected by work design. For example, staying on track with a goal requires resolving discrepancies between current performance and the desired goal state (Kanfer 1990); a process that occurs only if individuals see factors that affect their performance as controllable, which in turn is aided by job enrichment. Successful self-regulation is also aided by having a task with 'attentional pull', or a task that feels important or interesting (Beal et al. 2006), which again is aided by job enrichment.

A further and rather unexplored possibility is that goal generation and striving processes are potentially affected by work design via unconscious mechanisms (Parker & Ohly 2007). When goal-directed behaviors are repeated frequently and consistently in a similar situation, with positive reinforcement, they can become habitual (Bargh & Chartrand, 1999). For example, a job with little discretion and a controlling supervisor might reduce self-efficacy and promote a prevention focus, which ultimately leads an individual to avoid difficult goals. Over time, avoiding difficult goals might become a habitual response that involves little conscious processing. Thus work characteristics can create situational cues, which people respond to in habitual ways or with automatic routines.

Motivational Work Design in Practice

Listening to the rhetoric about highly skilled jobs in the knowledge economy, one could be forgiven for assuming that most jobs these days are complex and enriching. Certainly this is true for some sectors and some jobs. However, there also continues to be a large (and in some cases growing) number of low wage, low quality jobs in advanced and developing economies (Osterman & Shulman 2011).

Indeed, evidence in the US suggests an increasingly polarization of job quality, with both more 'good jobs' and more 'bad jobs' and a growing gap between them (Kalleberg 2011). In Europe, the 5th European Working Conditions Survey, conducted in 2010, of 44,000 workers across 34 European countries identified over one fifth of jobs as being poor quality, or low on intrinsic job quality, prospects, and earnings, with employees in these job having low levels of health, well-being, and meaning. In stark contrast to the rhetoric, in some countries, the intrinsic quality of jobs had even declined compared to earlier surveys. Examples of poor contemporary work design abound. For example, new 'weatherization' jobs in the USA (making houses more energy efficient) have mostly been designed as low wage, poor quality jobs with little opportunity for development (Osterman & Shulman, 2011).

Why do poor quality work designs continue to exist when there is clear evidence about the negative human consequences of job simplification, as well as considerable evidence about negative consequences for performance, absence and turnover? One could argue that deskilled jobs are the best option in industries in which efficiency and cost effectiveness are key. Enriched jobs have increased compensation and training requirements (Parker & Wall, 1998). However whether deskilled jobs are the optimal economic option in these industries is highly debatable, especially taking into account turnover, absenteeism, and other such costs. Moreover, as noted by Osterman & Shuman (2011 p. 144) the long-run social and health costs of these jobs "are real and quantifiable, and they are paid by families and communities".

The forces that perpetuate job simplification and poor quality work reside at many levels, suggesting that changing the situation will also needs insights and action from multiple levels. Globally, poor quality jobs are being driven by changes in technology and other macro-economic and social forces (Davis, 2010). For example, increased competitive pressure coupled with the decline of unions means organizations can use outsourcing and contingent contracts to design work in ways they might not otherwise have been able to (Osterman & Shulman 2011). Likewise technology has eradicated many middle-level jobs, leaving low skilled jobs that can't be computerized.

Work design is also affected by national policies, regulation, and institutions. In regard to the weatherization jobs referred to above, although various advocacy groups pushed for quality jobs, this goal was held back by other stakeholders' competing goals as well as complex political and institutional pressures. In this vein, Payne & Keep (2003) argued that the UK has adopted a "low road" set of competitive strategies, such as low cost production, that are not conducive to enriched job designs with high level skill use. In contrast, the Nordic countries are considered world-leaders in supporting high quality work designs, as shown by them having the best quality jobs in the 5th European Working Conditions Survey. Norway has a long history of industrial democracy, underpinned by a long-term agreement between the key employers' organization and the key trade union. Likewise, whereas low wage retail jobs exist in Germany, compared to the US, these jobs are broader and more interesting as a result of Germany's strong vocational training system (Osterman & Shulman 2011). Thus, although unions, business associations, academics, and community groups can help to influence job quality, changing work designs to any significant degree is likely to require government intervention. Government needs to "force firms in another direction while simultaneously assisting them in reaping the performance gains that can flow from such a move" (Osterman & Shulman 2011, p. 69). The Norway model of involving social scientists in changing practice might enable academics to play a more active role in shaping future work design policy. Policy would also be aided by systematic tracking of work characteristics at a national level, such as the large scale European work survey.

At the level of the organization, poor quality work design sometimes represents a continuation of traditional practice, with insufficient knowledge or motivation on the part of CEOs, managers, engineers, or other job designers to create better jobs (similar issues apply to the take up of high performance work systems). Guest (2001) observed that senior executives are often unclear what job design meant. These scholars concluded "*providing firms with evidence that job redesign can deliver benefits ...is unlikely to change the way many organizations approach work organization, given that this runs counter to many senior managers' own ingrained beliefs and prejudices*" (p. 66). Even if organizations attempt work redesign, there is no guarantee of success. Davis (2010) drew on New Institution Theory to suggest that

organizations copy what others are doing in order to reduce uncertainty, but whether an initiative works or is well-implemented is of less concern, with the result that business fads come and go. At the organizational level, Davis (2010) urged scholars to investigate organizations' motives for work redesign prior to evaluating the change, such as whether it is mimicry, coercion, legitimacy, as this likely affects success. Work redesign is also difficult to copy relative to other interventions like technology or training because work redesign involves the redistribution of power, and challenges implicit assumptions about control and leadership (Parker & Wall, 1998). From this perspective, it is important to develop evidence-based tools, case studies, processes, and guidance to help practitioners and managers to analyze and successfully redesign work.

Considering the level of the individual work designer, I urge scholars to revisit why those responsible for work design tend to naturally simplified jobs, including the role of human biases that might perpetuate job simplification and the role of low managerial capability. Campion & Stevens (1994) study of naïve job designers (MBA students) showed that there is a dominant logic of work design focused around simplification and efficiency, although this logic can be changed with training. We need more research to understand why this logic exists and how it can be altered.

PART 2: EXPANDED WORK DESIGN PERSPECTIVES

Motivational theories of work design have dominated psychological approaches. A continued focus by psychologists on motivation is justified given the continued prevalence of demotivating jobs, as noted above. However, there is increased heterogeneity in work design practice (Bloom & Van Reenan 2007). Advances in technology, a growth in knowledge work, and other such forces mean that many jobs are becoming more complex. For example, there has been a growth in abstract tasks, or jobs that are difficult to computerize, as well as rising expectation for job quality and flexibility as a result of a more educated workforce, more women in the work place, and changing expectations of young people (Kalleberg 2011).

This heterogeneity in practice needs to be matched by theoretical heterogeneity. We need to expand the criterion space beyond motivation, not just by adding extra dependent variables to empirical studies, but by exploring when, why, and how work design can help to achieve different purposes. In this section, I propose that - to address the increased complexity in many work contexts - we need to design work to achieve three key outcomes. First, work design as a vehicle for learning and development is important because we need individuals to be as cognitively, emotionally, behaviorally, and morally as complex as the environments they operate in. Second, the level of demands and pace of change, combined with pressures of dual career families, mean we need to bring to the foreground the role of work design in promoting health and well-being. Third, the pressure of organizations to meet the needs of multiple stakeholders requires that scholars consider how to design work that promotes dual outcomes, such as exploration and exploitation, or ambidexterity.

Designing Work for Learning and Development

The idea that work design affects individual development is a long-standing one. In 1957, Argyris argued that bureaucratic jobs can result in adults becoming more infant-like; being overly passive, dependent on others, and focused only on the short-term. Since then, scholars have argued that enriched job designs promote positive forms of development in which an individual "changes the world through work actions and thereby changes him or herself" (Frese & Zapf 1994, p. 86). Nevertheless, the role of work design as a vehicle for learning and development has mostly been advanced by industrial sociologists or European-based organizational researchers. The time is ripe for this perspective to become more main stream.

At a global level, as a result of technological and economic change, there is an increasing premium on highly skilled employees (Manyika et al. 2012). The traditional solution to this challenge is to improve the supply of skills, such as via better education. But scholars in the UK (Payne & Keep 2003) and the USA (Osterman & Shulman 2011) argue attention must be given to the demand side, and that organizations need to be encouraged to design work that both requires greater skill utilization and that

facilitate skill development. Work design as a vehicle for promoting learning and development is also important at the individual level. Scholars (Lord et al. 2011) have argued that individuals need to develop sufficient cognitive, self, social, and affective complexity in order to interact adaptively in dynamic and unpredictable environments.

In this section, I consider how work design might promote job incumbents' learning and development (see sidebar). I suggest that work design can shape cognitive, identity, and moral processes in the short term, and these effects can accumulate and aggregate to result in cognitive, identity, and moral development in the longer term. Work design can also speed up individuals' learning and development.

***Sidebar:** Development is distinct from learning or change in that it involves structural transformation, or moving to a qualitatively distinct state that is progressive as well as internally-directed (Moshman, 1998). For example, acquiring knowledge about a topic is cognitive change or learning, whereas increased structural complexity in the organization of knowledge is cognitive development. Obviously much development occurs in childhood as a result of biology and maturation, but development also occurs in adulthood as a result of experience, including work.*

Cognitive processes and development. Influenced by the German action theory principle that all actions involve goal setting, planning, decision making, monitoring, and feedback, Frese & Zapf (1994 p. 43) argued that lower levels of job control and lower job complexity inhibit learning because individuals engage in an incomplete action sequence. From this perspective job control is important - not because it is motivating - but because control means it is possible to choose adequate strategies to deal with the situation, resulting in feedback and learning. Some degree of complexity in a job also promotes learning because, although work on a challenging task must initially be regulated at the highest intellectual level, with practice the actions become more automatized and can be regulated at lower, less conscious levels. Over time, new skills become routinized, freeing up resources for learning yet more skills. For example, if a job frequently involves long-range goal setting, individuals will increasingly routinize this meta-cognitive skill.

In a similar vein, Wall and colleagues in the UK argued that when individuals have the autonomy to control variance at the source, they obtain immediate feedback about the effects of their actions, which promotes elaborated mental models (Wall & Jackson 1995). In addition, when problem rectification is under their control, individuals can observe cause and effect, and thus develop anticipatory knowledge that enables them to prevent problems. In support of these ideas, a series of innovative studies have shown that job autonomy reduces machine downtime because operators learn to prevent faults (e.g., Leach et al. 2003). Similar studies have shown that job autonomy predicts employees' broader understanding about the system (Parker & Axtell 2001) and that job rotation predicts increased self-reported business knowledge (Campion et al. 1994). Learning effects of work design are stronger for individuals who are better able to control their attention via psychological flexibility (Bond & Flaxman 2006).

Over the longer term, work design might promote changes in the structure and organization of knowledge, or cognitive development. Building on earlier work, Schooler et al. (2004) reported that, controlling for levels of these variables assessed twenty years prior, having complex work with low supervision predicted employees' later intellectual flexibility, such as their ability to deal with complex cognitive problems, as well as their self-directed orientation. Although these findings are not lagged effects, this study supports the premise that enriched work design affects adult cognitive development. Related evidence comes from studies showing that complex intellectually-demanding occupations are associated with better cognitive functioning in later life (Karp et al. 2009). Indeed, a study of over 10,000 twins concluded that "greater complexity of work, and particularly complex work with people, may reduce the risk of Alzheimer's disease" (Andel et al., 2005).

Moshman (1998) argued that one critical cognitive aspect that can develop during adulthood is epistemic cognition, or how one thinks about knowledge. Development of epistemic cognition involves moving from a dualist, objectivist view of knowledge to a more relativist and contextualised view, such as by being less black and white in one's thinking. One pathway by which enriched jobs might promote epistemic cognition is through increasing individuals' tendency to adopt others' perspectives (Parker &

Axtell, 2001). Another pathway is via work design affecting epistemic motivation, or the desire to hold well-informed conclusions about the world, which in turn affects epistemic cognition. Epistemic motivation is reduced by time pressure and fatigue (Kruglanski & Webster 1996) but enhanced by accountability (Tetlock 1985), suggesting a role for autonomous jobs that are not overly pressured.

Identity processes and development. It is unsurprising that work affects individuals' role identity as well their occupational identity. For example, the introduction of new technology reduced purchasers' job autonomy and their opportunity to interact with suppliers, which damaged their sense of professional identity (Eriksson-Zetterquist et al., Johns, 2010). Perhaps more intriguing is that there is evidence that work design affects individuals' personal identity, or aspects of the self that are often seen as rather stable (see sidebar). For example, long term poor quality work designs result in the development of extrinsic orientations towards one's work (Argyris 1957), whereas enriched work designs have been shown to enhance individuals' aspiration for promotion (Wall & Clegg, 1981), increase women's desire for participation outside of work (Crouter 1984), boost individuals' propensity to use their initiative (Brousseau 1978), and increase individuals' propensity to be self-directed (Frese et al. 2007; Schooler et al. 2004).

Sidebar *Personal identity is about one's self-concept, or how one perceives the entirety of oneself in relation to the environment, such as one's goals, traits, and characteristics (Oyserman 2001). An identity can be seen as dynamic; it includes the notion of a working self-concept, or the portion of one's identity that is activated within a particular situation. An identity is also multidimensional, involving an amalgamation of selves or sub-identities. Although views differ on what is meant by identity development, the classic perspective is that a coherent sense of self arises from exploration of identities, and the resolution of identity crises (Erickson 1950). From a constructivist approach, identity development involves creating and revising identity through feedback from the social environment, with successful development occurring when one's identity has pragmatic value (Berzonsky 1990). As such, the development of personality attributes such as locus of control and self-esteem constitute identity*

development. The constructivist approach assumes that individuals have an active role to play in identity development and also that the social environment is vital.

To understand how work design shapes identity, it is useful to consider Bosma & Kuunen (2001). These scholars identified three facilitators of identity development, all of which are potentially affected by work design: opportunities for growth, successful development experiences, and openness to experience. It is obvious that challenging, enriched jobs provide opportunities for growth. Assuming there is support for this growth, such jobs result in enactive mastery and self-efficacy development (Parker 1998). Aggregated over long periods, the positive effect on work design on self-efficacy potentially translates into individuals becoming more open to experience.

One potential mechanism underpinning the link between work design and identity development is that enriched jobs allow individuals to explore and experiment with different identities, or try out what Ibarra (1999) refers to as 'provisional selves' (Hall & Heras 2010). For example, in self-managing teams, members have the opportunity to try out supervisory tasks that are distributed amongst the team, and to potentially develop a leader identity. Once individuals have a leader identity, they behave in identity-congruent actions which leads them to engage in yet more leadership activities (Oyserman 2001). A further mechanism is need fulfillment. From a self-determination perspective, autonomy-supporting and need-satisfying environments satisfy one's basic needs of autonomy, relatedness and achievement, and thereby promote identity development (Grolnick et al. 1997). In contrast, controlling social environments, such as overly bureaucratic job structures, detract from internalization, or the process by which identity-relevant explorations are brought into alignment with the self. Thwarted needs also fosters a fragile self-esteem, which is less conducive to growth, whereas meeting basic needs fosters a secure self-esteem in which individuals like, accept themselves "warts and all" (Kernis 2000).

Work design likely also potentially facilitates a particular form of identity development argued to be important for effective leadership, which is a shift in focus from an individual (me) to relational (you and me) to collective (all of us) identity (Lord & Hall 2005). For example, members of self-managing teams have shared accountability for team-level outcomes. The outcome dependencies, as well as the

need for co-operation in self-managing teams, motivate team members to engage in intra-team perspective taking, which likely fosters a stronger relational identity orientation.

All together there is sufficient theory and evidence to take seriously the role of work design in facilitating the development of individuals' personal identity. In this vein, Hall & Heras (2010, p. 455) made a compelling case for closer links between work design and career research, and called for an emphasis on designing 'smart jobs' that "*contribute to an enhancement of the adaptive capabilities and self-identity of the employee*".

Moral processes and development. I propose that work design can affect moral processes in the short term, as well as moral development in the long term.

In terms of moral processes, Rest et al. (1999) proposed a sequential model involving recognizing a moral issue, engaging in moral reasoning to identify the ideal behavior, being motivated to focus on moral concerns, and then carrying out the chosen moral action. Individuals in narrow, deskilled jobs might not identify an issue as a moral concern, the first step in this process, because they lack an understanding of the bigger picture and/or are unable to see the perspectives of others. Their restricted job might mean they have little understanding of the consequences of their actions, not even realizing ethical implications. Individuals with poor job designs might also lack the motivation to focus on moral concerns. That is, even if they recognize a moral concern and are able identify what should be done, moral temptations exist that require an individual to have the self-regulatory capacity to resist one action in favor of another action (Hannah et al. 2011). Deskilled jobs result in narrow 'not-my-job role orientations, reduced perspective taking, and lowered self-efficacy, suggesting that employees in narrow jobs will often lack ownership of, and self-efficacy for, addressing moral issues.

Sidebar: Kohlberg's (1976) cognitive-developmental perspective is the most well established theory regarding moral development. Kohlberg proposed that moral reasoning develops sequentially in stages from a self-interested perspective to an emphasis on social rules and expectations to an emphasis on broader moral principles and shared ideals. Rest et al. (1999) neo-Kohlbergian approach similarly proposes people develop increasingly complex and flexible moral schemas. Both theories assume that

individuals develop morally over their life span, with any progression in the later stages (if it occurs) occurring mostly in adulthood.

As an example, in the well-known Aircraft Brake Scandal in which brakes designed by Goodrich engineers subsequently failed, an employee noted in regard to diagrams that he knew had been falsified: “after all, we’re just drawing some curves and what happens to them after they leave here – well we’re not responsible for that” (Vandivier 1972; cited in Jones & Ryan 1998, p. 438). Jones & Ryan attributed this attitude to excessive bureaucracy and overly narrow jobs which resulted in diffused responsibility with no individuals taking ownership of the decisions. These scholars further speculated that work designs that keep group members isolated from other members cause individuals to be isolated from the ‘big picture’ and therefore unable to ‘compare notes’ on moral problems. As such, creating cross functional work teams that give individuals access to information from multiple parties can reduce feelings of isolation and increase their self-efficacy about what to do.

Even when an individual has recognized a moral issue, and is motivated to act ethically, they still need to take action. Moral action is affected by self-regulation. Thus, unethical behaviors are more likely when individual’s self-regulatory resources are depleted after mentally taxing activities (Gino et al. 2011), suggesting the need to carefully manage the level of work demands in any jobs with significant moral temptation. In addition, moral action is likely to be affected by autonomy. Like all behavior, the implementation of moral action is likely to be constrained in low autonomy situations because of the lack of opportunity to act. However, this also means that if an individual is motivated to behave unethically, autonomy allows them the latitude to do so, such as in the cases of rogue traders. Thus autonomy might be an important moderator of the effects of moral motivation on action.

One important fact that shapes whether an individual is likely to behave unethically is their level of moral reasoning. Trevino (1986) argued that individuals at higher stages of moral development will be less susceptible to external temptations and pressures, and will be more likely to take moral action or to self-select out of unethical situations. This brings us to the potential role of work design in fostering moral development [see sidebar]. Similar to cognitive development, the development of moral reasoning is

facilitated by exposure to new situations that cannot be understood using existing schemas, thereby necessitating the development of new schemas. Social experiences involving role taking are especially powerful: *“faced with the ‘unique’ other, the individual is constantly challenged to rise to a more general perspective that preserves the unique perspectives of both self and other”* (p. 32 Wilson, et al. 1992). This explains why education promotes moral reasoning development, because of the broadened exposure to social experiences and different value frameworks. From a similar stance, Trevino (1986) proposed that jobs in which individuals are required to engage in complex role taking, such as democratic leadership roles in which the leader needs to be sensitive to others’ views, can help to develop advanced moral reasoning. As an illustration, self-managing team members described make complex decisions, manage colleagues’ poor performance, and engage in a other self-directed activities; all of which involve employees consulting with peers and navigating dynamic hierarchies of influence. Such complex role taking should, over time, expand moral reasoning complexity.

To date, there is little or no empirical work linking job design to moral reasoning development, although Wilson, et al., (1992) reported that, over and above occupational and educational attainment, individuals’ career fulfillment predicted moral reasoning development in a ten year longitudinal study. These authors’ recommended further consideration of work variables in promoting moral reasoning. The role of autonomy is especially intriguing. As noted above, on the one hand, autonomy allows individuals who want to act unethically the opportunity to do so (autonomy as a moderator) but on the other hand, autonomy in conjunction with other enriched work design features might facilitate the recognition and ownership of moral issues as well as, in the longer term, more principled moral reasoning (autonomy as an antecedent).

Accelerating learning and development. In the field of leadership development, experiences that accelerate learning include assessment, challenge, and support (Day et al. 2009). Assessment provides feedback which motivates closing skill gaps; challenge motivates trying new behaviors; and support helps individuals to cope setbacks. Work design is a powerful source of assessment, challenge, and support because these elements can be embedded into the work design, yielding continuous rather

than single development opportunities. In contrast, challenge in leadership programs is often achieved via participation in temporary stretch projects. Theories of learned industriousness and adaption-level theory suggest that having a sustained opportunity to adapt to high demands can promote the development of resources to aid in self-regulation. Converse and DeShon (2009) showed that being exposed to two demanding tasks can lead to adaption effects, whereas exposure to one demanding task instead results in depletion. One would predict that work design allows more adaptation, and potentially enhanced self-regulatory capacity, relative to one-off project opportunities.

Evidence also suggests that learning is accelerated when challenge occurs within an individual's 'zone of proximal development' rather than adopting a sink or swim approach (Day et al, 2009, p. 29). Work redesign is recommended to be incremental; with job enrichment expanding as the capability of the individual or team grows (Parker & Wall 1998). Social support also increases an individual's zone of proximal development (Day et al. 2009). Finally, an important facilitator of accelerated learning is developmental readiness, or individuals' receptiveness to challenge, feedback and support, which is shaped by a learning orientation, self-efficacy, and meta-cognitive ability interacting together (Day, et al. 2009). As already discussed, work design can influence these elements, so enriched work design potentially facilitates developmentally-ready employees.

Designing Work for Mental and Physical Health

The World Health Organization (WHO) defined health as a "state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO, 1948). Consistent with this definition, Parker et al. (2003) showed that work design affects distress, strain, and injury, as well as indicators of active mental health, such as competence, aspiration, self-efficacy, engagement, and safe working. Because outcomes related to active mental health have already been covered in this article, I focus here on designing work to prevent or mitigate strain and other negative health outcomes.

The effect of work design on employee strain and associated outcomes has been long observed. In 1947, Fraser observed a link between job simplification and neurotic illness amongst factory workers.

The relevance of the topic today is indicated by its incorporation into policy in some countries. For example, Sweden has explicitly built work design principles into occupational health statutes. Nevertheless, the increased complexity in many jobs, pressures associated with dual-parent working, shifts in societal expectations, and heightened concerns in many societies about health issues, all highlight the need to give more attention to the design of healthy work. As observed in the 5th European Working Conditions Survey, the average level of work intensity of jobs has increased, with almost half of jobs being identified as potentially unhealthy due to their poor intrinsic quality (20% of jobs) and/or their poor working time quality (29%).

Strain arises as a result of an individual's interaction with the work environment. Individuals monitor the external environment, appraising situations and events that might affect them. According to Spector (1998), if situations and events are appraised as a threat (a stressor), negative emotions arise that can then lead to psychological strain (e.g., anxiety), physical strain (e.g., heart disease), and/or behavioral strain (e.g., smoking). Reverse paths can also occur. For example, an individual already feeling anxious is more likely to appraise a situation as threatening, and an individual's experience of strain can shape the environment (e.g. poor performance from a strained individual might prompt a rebuke from a supervisor). Individual differences such as coping style also affect paths in this model. For example, different individuals place themselves into different environments, appraise different events as stressors, and respond differently when negative emotions arise (Spector 1998).

Job demands-control model. Work characteristics are an important feature of the external environment that are appraised by individuals. The two most work characteristics from a health perspective are demands and control (or autonomy), as introduced in the influential demand-control model (Karasek, 1979). This model proposes that high job demands and low job control cause psychological strain, and, in the long-term, stress-related illnesses such as heart disease. A unique element of the model is the idea of a buffering role of job control. The interaction hypothesis is that high job demands cause strain when also accompanied by low decision latitude (i.e., low job control and low skill discretion), but if demands occur in the presence of high decision latitude, a so-called active job, then

strain will not accrue. Specifically, an active job 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 (Karasek & Theorell 1990).

Like the JCM, there have been many criticisms of the demand-control model, including its focus on a narrow set of work characteristics. Nevertheless, also like the JCM, the demand-control model has spurred much research. Support for the model is strongest in regard to the negative strain effects of excess job demands (Warr 2007). For example, Lee & Ashforth (1996) found in a meta-analysis that work load and work pressure are associated with depersonalization and emotional exhaustion and, focusing on nineteen longitudinal studies, de Lange et al. 2003 reported that two thirds of them showed negative strain effects of high job demands, especially for psychological well-being and sickness/absence. Nevertheless, the effects of demand on absence are complex; there is some evidence that higher demands result in lower absence, perhaps because these individuals have more pressure to attend or higher attendance motivation (Smulders & Nijhuis 1999) or perhaps because the demands are experienced as a challenge (see next).

High demands and low control together also have been shown to affect cardiovascular disease in a series of rigorous studies, particularly for men (Belkic et al. 2004), with explanations for this effect including that these jobs promote psychological strain, hypertension, and/or physical risk factors (eg smoking), which increase the likelihood of heart disease. A handful of intervention studies support these conclusions. For instance, a Swedish study (Orth-Gomer et al. 1994) showed that employees in sites with individual counseling and work re-organization had improved physiological functioning relative to those in non-intervention sites (although the effects of work re-organization could not be separated from the individual counseling). Excess job demands can also reduce safety (Nahrang et al. 2011). For example, when employees face undue work demands, such as heightened production goals, there is a risk that safety procedures are ignored or forgotten to get the job done

When it comes to the health effects of job control, job control can directly affect the strain process. Thus scholars have argued that individuals have a need for control, so if this need is unfulfilled,

negative strain effects arise (Gagne & Deci 2005). Control has can also have positive effects on health via mitigating the effects of demands. If individuals have control, they can reduce or eradicate stressful demands. Even if they can't change the demands, job control can help to alleviate their negative effects, such as control allowing the person to carry out their most stressful tasks when they feel most able to cope. Control also promotes coping, which leads to learning and mastery are increased, and associated positive health effects (Karasek 1979).

Empirically, many cross-sectional studies show a lack of perceived job control relates to strain outcomes like anxiety, depression, burnout, and excess alcohol consumption. Job autonomy has also been consistently shown to predict active mental health outcomes like self-efficacy, and there is evidence it predicts active safety outcomes, such as proactive and discretionary safety behaviors (see Parker et al. 2003). However, the results are mixed when focusing on longitudinal studies focused on strain-related outcomes. Thus, in a review, de Lange et al. (2003) reported that just under half of the longitudinal studies linked job control to subsequent health outcomes. It is unclear, however, how much these non-significant findings are due to a misspecification of the timing of effects. A further explanation for inconsistent strain-reducing effects of job autonomy is that the effects depend on individual differences. As an example, job enrichment for police and fire employees was negatively associated with cardiovascular morbidity for employees low on Type A, but was positively associated with it for those high on Type A, likely because the latter individuals are over-stimulated by enriched jobs (Schaubroeck et al. 1994). There can be also contextual moderators, such as indicated in a study showing that high noise exposure can result in negative health effects of job complexity (Melamed, et al., 2004).

Turning now to the issue of whether the negative strain effects of demand can be buffered by high job control, as implied in the demand-control model and as demonstrated in laboratory studies (Karasek, 1979). The specific interaction hypothesis in the demand-control model is of practical value since it suggests that high demands are not negative for health so long as they are accompanied by high control. Multiple reviews have concluded that support for this interaction effect is not convincing (e.g., de Lange et al. 2003; Van der Doef & Maes 1999). Although one might be tempted to move on from looking

at the buffering hypothesis, conceptual and methodological imprecision may have obscured the detection of interactive effects (Sonnentag & Frese 2003). For example, interactions have been observed when an unconfounded measure of job control is used (Wall et al. 1996); using multi-level approaches (Van Yperen & Snijders 2000); and when moderators are taken into account, such as proactive personality (Parker & Sprigg 1999). Multi-level studies might be especially important as they allow the opportunity to separate the variance of job demands and job control into individual-level and group-level components. Future studies need take account of these issues, as well as pay more attention to mechanisms and their timing. For example, if the positive effects of control depend on an individual learning how to use this control to cope with the demands, this means the positive effects of control will only be realized after sufficient time (Sonnentag & Frese 2003) .

Extensions to the demand-control model. There are further models of strain that relate to work design (see Sonnentag & Frese 1993 for a review). The job demands-resources model (Bakker & Demerouti 2007) identifies a broader set of resources beyond autonomy and skill discretion that might affect health. Resources are defined as aspects of the job that are functional in achieving work goals, promoting development, and/or reducing job demands. One of the most important resources is social support (as recognized in the expanded 'demand-control-support' model of strain, Karasek & Theorell, 1990). Much evidence suggests that receiving social support from supervisors and peers matters for employees' health (Van de Doerf & Maes 2000; de Lange et al. 2003). Intriguingly, providing support also appears to have important health benefits (e.g., Brown et al., 2003), likely because of the positive affect that helping tends to generate, suggesting that structuring jobs so that individuals have the opportunity to help others could facilitate health effects.

Conservation of resources theory (Hobfoll 1989) extends thinking about resources to suggest that resource loss is especially salient, prompting two distinct strategies by which individuals seek to maintain or secure resources. When an individual's psychological resources are threatened with loss, the recovery of lost resources becomes a central motivating force so individuals use external resources to protect themselves (a protection mechanism). In contrast when individuals are not threatened by

resource loss, they are motivated to use external resources in order to further “enrich their resource pool” (an accumulation mechanism). In a quasi-experimental study of junior doctors, Parker et al., (in press) showed that social support (in the form of an advanced practice nurse role) led to reduced work load for those doctors experiencing high resource loss, or suffering from anxiety and depression, consistent with a protection mechanism. In contrast, support boosted proactivity and skill development for doctors not experiencing resource loss, or not suffering from anxiety and depression, consistent with an accumulation mechanism. This study suggests support matters for health, although how it is mobilized and used will depend on individual differences in resources.

In a further extension of the demand-control model, scholars have argued it is important to differentiate challenge demands from hindrance demands. Challenge demands create the opportunity for development and achievement, such as time pressure and job scope, whereas hindrance demands are seen as obstacles to achievement and growth, such as role ambiguity, job insecurity, and constraints. Multiple meta-analyses (e.g., Crawford et al. 2010) support this distinction, and have shown that whilst both types of demands are associated with strain, hindrance stressors additionally are also associated with turnover and withdrawal whereas challenge stressors are positively related to motivation and performance. Crawford et al. explained these findings by suggesting that all job demands activate an energy depletion process (hence cause strain), but hindrance demands additionally trigger negative emotions and passive coping whereas challenge demands additionally trigger positive emotions and cognitions as well as active coping styles. This stream of research is consistent with studies reviewed in this article so far that show that demands can sometimes promote active health outcomes (such as time pressure predicting proactive behavior at work).

The challenge-hindrance approach provides a more nuanced approach to demands, which is important because demands can differ in very profound ways. However, rather than categorizing some demands as challenging and others as a hindrance, it might be more fruitful to assess how demands are actually appraised by the individual. This approach would allow more insight into what is it that leads someone to perceive a particular demand as a challenge whereas someone else, or the same person at

a different moment or in a different situation, perceiving that same demand as a hindrance. An example is the study by Ohly & Fritz (2009), which showed that job control and time pressure are appraised as challenging, which in turns leads to creativity and proactivity. One could consider primary appraisals of the demand (such as whether it is irrelevant, benign, or harmful), attributions about the demand (such as whether it is seen as controllable or not), and secondary appraisals about one's ability to cope. This approach would also allow examination of how appraisals change within people over time. Affective events theory proposes that work characteristics have their effect by predisposing more or less frequent occurrence of particular types of real-time work events that affect momentary moods and emotions. Momentary moods and emotions accumulate to shape behavior and attitudes such as job satisfaction and well-being (Wiess & Cropanzano, 1996). Studies support these predictions (e.g., Fisher, 2002).

Even with 'challenge stressors' there might be a tipping point at which excess levels, or high levels over a long time, become damaging for mental health and well-being. In John's words, jobs can be too rich, at least for some individuals. Scholars have observed u-shaped relationships between, for example, job scope and emotional exhaustion (Xie & Johns, 1995) and job scope and cardiovascular disease for Type A/high hostility individuals (Schaubroeck et al., 1994). Bunderson and Thompson (2009, p. 50) reported how zookeepers who conceptualized their work as a calling experienced that work as a source of meaning and identity but also "unbending duty, sacrifice, and vigilance".

The practice of designing healthy work. Strategies for designing healthy work flow from the above analysis. The most obvious is to directly change work characteristics, such as by reducing strain-inducing demands and/or increasing work characteristics that function as resources, notably job control and social support. This strategy is a primary stress intervention because it involves adapting the environment to remove or reduce the source of stress. As examples, a reduction in objective work load for UK driving test examiners led to reduced anxiety and increased job satisfaction (Parkes 1995); and increased scheduling control over work hours and location led to improved work-family fit (Kelly et al. 2011). Changes in work organization as well as in the composition of the work force mean it is important to continue to develop and evaluate work redesigns to support the health of employees in a range of

situations, such as working from home, working virtually across national boundaries, and working on temporary employment contracts (Parker et al., 2001).

A further primary intervention strategy is to design jobs in such a way as to prevent or minimize the emergence of strain-inducing demands in the first place. For example, consider a situation in which customers get angry due to slow service. If work redesign improves the speed of service (such as allowing customer service agents the authority to deal with complaints on the spot), this would also reduce employees' need to deal with angry customers. Dealing with angry customers likely needs considerable emotional effort on the part of the employee to control their own anger, with such self-control being highly depleting of one's regulatory resources (Muraven & Baumeister, 2000). A related strategy is to design work in a way that enables and motivates individuals to proactively reduce job demands and/or increase job resources. For example, Elsbach & Hargadon (2006) proposed that, to avoid professional work becoming "relentlessly mindful and stress inducing" (p. 471), each work day should be designed with scheduled bouts of undemanding tasks inserted between challenging tasks. Having autonomy over when one does tasks allows individuals to implement this type of strategy, or indeed any other coping strategy one finds valuable.

In the stress literature, a secondary intervention approach to stress is to change how individuals' perceive and react to the external environment, such as via stress management training, or coaching in active problem solving. Although work redesign is typically considered a primary intervention, in fact, as we have argued, work design can shape individual's motivation (e.g., self-efficacy), behavior (e.g., proactivity), and their emotional and cognitive capabilities (e.g., cognitive complexity); all of which can affect how individuals perceive and react to stressors in the work environment. For example, self-efficacious individuals are likely to perceive demands as less threatening, as well as be more likely to take up any proactive job crafting opportunities that reduce demands or increase resources, as suggested above (see also Parker & Sprigg, 1999). A further variant of this strategy is to design jobs that promote positive feelings and meaning which might counteract stress reactions, such as designing jobs with an opportunity to help others.

A third strategy is a tertiary prevention, which is concerned with treatment, rehabilitation and recovery processes for individuals who are experiencing strain, such as via counseling. Yet again, work design might play a role here. Scholars have examined how work design can promote recovery inside and outside of work. For example, individuals who have high levels of control in their job, and lower demands, feel less need for recovery in the evening (Sonnentag & Zijlstra, 2006) which, in turn, positively affects their well-being. Jobs can also be designed to enhance regulatory resources and their replenishment, such as by allowing autonomy over work timing allowing employees to rest when required.

Both secondary and tertiary interventions are often more popular than primary interventions because 'changing the individual' is seen as easier and more palatable than 'changing the environment'. However, secondary and tertiary interventions can be short-term in their effects because they do not deal with the cause of strain. It might be that work design is a powerful intervention precisely because it changes both the environment via reducing root causes of strain and the individual via equipping employees with the confidence and proactivity to deal with emergent demands.

Designing Work for Ambidexterity and Related Dual Outcomes

To date the focus in this article has been on work design for separate outcomes such as motivation, learning or health. However multiple, yet seemingly unrelated, outcomes are often desired at the same time, such as safety and production or exploitation and exploration. As observed by Johns (2010), the features of work design that promote multiple outcomes might be distinct than those that promote a single outcome.

In the organization design literature, much attention has been given to the challenge of achieving the dual outcomes of efficiency and flexibility (March, 1991). For example, whilst bureaucratic controls like standardization and hierarchy enable efficiency, such controls also impede the opportunity for mutual adjustment that enables flexibility. Similar challenges have been observed in regard to achieving control vs creativity and innovation, and exploitation vs exploration. In the work design literature, this tension plays out in terms of scholars observing flexibility, creativity and other benefits of autonomy whilst at the

same time seeing the drawbacks of autonomy for efficiency and co-ordination (e.g., Lanaj et al., 2012). Biron & Bamberger's (2010, p. 168) captured a key challenge of structural empowerment as reconciling "the potential loss of control inherent in sharing authority with the potential motivation and productivity benefits that often accompany empowerment". The difficulty of balancing outcomes like control and creativity is especially salient in large scale collaborative creativity activities, such as the design of a new aircraft involving several thousand engineers, where the tasks are complex and interdependent, requiring control, but also uncertain, requiring creativity (Adler & Chen, 2011).

The contingency theory solution to this tension is that bureaucratic structures (emphasizing control, efficiency, and exploitation) should be in place if tasks are stable, whereas organic structures (emphasizing flexibility, creativity, exploration) should be opted for in dynamic, uncertain situations (Burns & Stalker, 1961). Nevertheless, it is increasingly recognized that effectiveness comes from both efficiency *and* flexibility. Likewise, increasingly popular paradox perspectives assume that it is possible and desirable to achieve multiple outcomes simultaneously (Smith & Lewis, 2011). In this section, I discuss three perspectives relevant to achieving multiple outcomes and consider the implications of each for work design.

Ambidexterity for exploration and exploitation. Scholars have argued that successful organizations are ambidextrous: they exploit existing capabilities and manage today's demands whilst also exploring new possibilities and adapting to change in the environment (O'Reilly & Tushman, 2007). Although external strategies for achieving these dual outcomes have been suggested (such as outsourcing), ambidextrous organizations achieve a focus on exploration and exploitation simultaneously through internal strategies (Raisch & Birkinshaw, 2008).

One internal approach is a structural solution in which different business units carry out different activities, such as one unit focusing on innovation and one focusing on manufacture (O'Reilly & Tushman, 2007). The work design implications of structural solutions have rarely been discussed, but one would expect that business units pursuing exploration would tend to have job enrichment in order to stimulate creativity and innovation, whereas units pursuing exploitation would tend to be more

bureaucratic in design with lower job enrichment. Nevertheless questions arise. For example, is some degree of autonomy important for units designed to exploit capabilities? Research reviewed in this article suggests at least a moderate degree of enrichment appears preferable for most outcomes. Maybe some types of autonomy (over when/ how to do things) is appropriate for exploitation units whereas members of exploration units should additionally have autonomy over 'what to do'? Some work design features might be important for both exploration and exploitation (such as feedback), whereas others might be more important for exploration (such as connection to end-users might enhance innovation). In addition, how does one co-ordinate across these different types of units? Members of the top management team need to balance the conflicting activities (O'Reilly & Tushman, 2007), but perhaps there are work design options that can also facilitate better integration?

A second solution for ambidexterity is a contextual one in which leaders create a supportive context that builds the whole business unit's capacity to be ambidextrous, thereby alleviating the coordination issues between subunits that can exist with structural solutions (Gibson & Birkenshaw, 2004). Individual or group work design is central to this strategy of contextual ambidexterity because it is achieved by individuals being empowered to judge for themselves how to best divide their time between the conflicting demands of exploration and exploitation (Gibson & Birkenshaw, p 211). As well as a high level of what tasks one chooses to do when, work characteristics one might expect to see in contextually ambidextrous organizations include: greater task variety (employees engage in exploration and exploitation tasks), greater task identity (employees don't just execute tasks but also they improve them), and greater task significance (employees can have more impact through implementing improvements). Such an enriched work design is likely to promote not only creativity as a result of intrinsic motivation, but also proactivity and citizenship behavior, as well as employee learning and development; all outcomes that should support the dual goals of exploration and exploitation. In addition, Gibson and Birkinshaw (2004) argued that individuals working in ambidextrous contexts need high levels of behavioral and cognitive complexity, which I have argued can be facilitated by enriched jobs with challenge, feedback,

and support. Altogether, it appears that enriched work design potentially plays a central role in achieving exploration and exploitation simultaneously, although this proposition is untested.

Enriched work design nevertheless likely needs to be complemented with forms of control in order to ensure alignment, albeit not necessarily traditional forms of control such as standardization and monitoring. Informal and cultural forms of control, such as leadership and culture, appear most important. Mills and Ungson (2003) proposed the importance of cultural values and norms that help employees work out the right way to behave without stifling their behavior, and highlighted the need for trust because of the incomplete information arising from conditions of uncertainty. Likewise, Gibson and Birkinshaw (2004) argued that contextual ambidexterity requires behaviorally complex leaders and a shared vision which, together with job enrichment, provide the support that inspires employees to “do what it takes” to deliver results, the discipline to meet standards, and the stretch to induce ambitious goals. Similarly highlighting the importance of leadership for ambidexterity, Bledow et al., (2009) proposed that the intellectual stimulation and individual consideration of transformational leaders stimulates creativity and exploration, whereas leader vision and inspirational motivation assists in alignment and integration. In a similar vein, Adler & Chen (2011) argued that robust trust and a strong commitment to a shared goal is vital to ambidexterity. Careful selection, training, and compensation practices can also be used to limit opportunistic behavior on the part of enriched employee.

Additional work design features beyond enrichment might be important in enabling organizational-level and team-level ambidexterity. For example, connecting individuals with the end-users/ beneficiaries potentially provides an important source of external information that can stimulate innovation. At the team level, Haas (2010) showed teams high in both group autonomy and external knowledge were most effective for achieving both operational and strategic performance, although only when knowledge content was scarce and the source of knowledge was non-organizational. Switching from exploration to exploitation tasks is also likely to be demanding; scholars have observed these processes require very distinct learning processes (March 1991). One would therefore expect high levels of cognitive demands in jobs in ambidextrous organizations, giving rise to a need to consider how to

support effective self-regulation and protect against health risks. A further issue, unresolved in the literature on contextual ambidexterity, is exactly how much individual-level autonomy job incumbents should have; an issue I turn to next.

Enabling bureaucracy for control and flexibility. A different approach for reconciling the tension between control and flexibility is that put forward by Adler and colleagues. Rather than establishing cultural and informal controls to balance job autonomy, these scholars advocate limiting job autonomy and instead combining employee participation with motivating formal control systems. The result is enabling bureaucracy; a classic example of which is NUMMI, a Toyota car manufacturing facility in California (Adler & Borys 1996). At NUMMI, rather than separating repair and improvement from routine production as one would see in a Tayloristic manufacturing plant, employees can repair and solve breakdowns. And rather than following set procedures designed by engineers, NUMMI workers can help to design and standardize their own work methods. Adler and Borys (1996) characterized such practices as participative centralization: participation in so far as employees can contribute to important decisions; centralization in the form of standardization and hierarchical authority.

Importantly, in this system, it is argued that motivation does not come from job autonomy, but rather employees are motivated by participative leadership, extensive training, employment security, engagement in continuous improvement, and other such positive features of the work context. In addition, it is proposed that the enabling context, combined with a clear understanding of the organization's mission, results in employees' experiencing identified motivation, or the internalization of values (Adler & Borys 1996; p. 80). A strong level of identification means that employees see formal controls such as standardized procedures as an effective way of achieving valued goals rather than as a coercive control mechanism. Clear organizational goals and values, enabling rules and procedures, and high trust are also argued to help foster interdependent self-concepts amongst employees, rather than solely independent self-concepts, which further aids co-ordination (Adler & Chen 2011).

In an analysis of lean production, Treville and Antonakis (2006) similarly argued that a lack of autonomy over work timing and methods can be compensated for by other positive aspects of work

design, including high levels of accountability and responsibility (because employees can influence decisions), high skill variety and task identity (because employees are involved in repair and improvement), high levels of feedback (because enabling bureaucracy involves information transparency) and high work facilitation (because of lean production's emphasis on the removal of obstacles to help performance). These authors draw on ideas of gestalt cognition, which suggests that individuals store, process, and recall information in a configural or schematic form (Fiske & Taylor 1991), to suggest that employees working in lean systems experience motivation not by "summing their isolated evaluations of individual practices" but that they "make a complex and holistic evaluation by giving each job characteristic meaning from the other practices with which it occurs". In essence, they propose that the overall positive work design configurations under lean production can be motivating, even though job autonomy is lower.

Altogether, these perspectives raise an intriguing set of questions about the job design consequences of enabling bureaucracy and the associated motivational implications. Across several case studies, Adler has suggested that these systems are motivating, although in a study of enabling bureaucracy amongst software developers, Adler (2006) showed that some developers embraced the approach (*"in this business, you've got to be exact, and the process ensures that we are. You have to get out of hacker mode!"*) whereas other developers felt alienated by the bureaucracy (*"programmers like to program. They never like to document"*). More research is needed to understand whether, how, or which employees are motivated under enabling bureaucracy forms, or whether and how creativity, proactivity and other outcomes are jeopardized by the high level of formal control in these systems. Studies of lean production have shown varied results, from mixed effects on work design and with net impact on strain (Jackson & Mullarkey, 2000) to outright negative effects on both work design and strain (Parker, 2003). No clear conclusions can be drawn, but the question is a critical one.

High reliability organizing. Yet another way for resolving the tension between control and flexibility is highlighted in the literature on high reliability organizing. Effective high reliability organizations (HROs) are those that exhibit continuous, nearly error free operations in complex, hazardous

environments where the avoidance of failure is critical. Classic examples are nuclear power plants, air traffic control systems, and space shuttles. Like ambidextrous organizations, HROs pursue multiple objectives, such as safety and service.

Scholars have identified various elements that are essential for effective HROs, such as a strategic focus on safety, careful attention to procedures, limited trial- and-error learning, continuous training, and strong safety cultures (e.g., Roberts 1990). From a work design perspective, Weick et al. (1999) proposed the importance of the under-specification of structures. This means the subordination of hierarchical authority structures during critical events, such that the decisions can be made by whoever has the expertise rather than whoever is the highest rank. For example, on the flight deck of an aircraft carrier out at sea, when an aircraft is landing or departing, any person on the deck “can call it foul” and make decisions (Roberts et al. 1994, p. 622).

A further example of HRO is the design of effective incident command systems in which public safety professionals like fire fighters and police manage the temporary control systems for dealing with emergencies (Bigley & Roberts 2001). These systems are highly bureaucratic, with extensive rules and procedures, functional division of labor, specialized job roles, and a clear hierarchy of positions. The incident commander is the highest ranking position, and the person in this role is responsible for all activities that take place at an incident. Nevertheless the system can be extremely flexible and enable reliable performance under challenging circumstances. One aspect that enables flexibility is that the structure develops at the scene. The incident commander is the first person to arrive, and this individual then builds the structure from that point. In the words of one chief *“I go in. I’ve got my hat on. I’m the incident commander. I’m also the operations chief and also the division supervisors. And until that thing gets big enough to where I’m dividing it, I wear all those hats”* (p. 1287). The structure can then change over time as higher-ranking officers arrive. In addition, because roles are clear and well-defined, it is easy to transfer individuals amongst roles and engage in role switching according to needs during an incident.

A further element that supports flexibility is that supervisors transfer authority to those with the expertise, and allow individuals with sufficient experience to improvise or depart from standard operating

procedures when required. Essential to these structural and improvisational aspects is that members of high reliability systems also require shared mental models. Serious dysfunction can occur when individuals are empowered to improvise yet lack the knowledge or concern for bigger picture perspectives. Bigley & Roberts (2001) suggested these ideas can be applied to the design of temporary systems in a range of contexts, such as technological sabotage, hostile takeover attempts, product failure, or other catastrophic scenarios.

Ultimately, understanding the role of work design in achieving the dual outcomes of efficiency and flexibility (or control and creativity) is likely to become even more important given an increase in bureaucracy in sectors previously resistant, such as professional services and health-care delivery. Indeed, in a recent commentary on work design, Oldham & Hackman (2010) asserted that “they got it wrong” because they predicted that the prospects for enriching front line work were grim, whereas in fact it is professional jobs that “appear to be shrinking, which is perverse because professionals are the people we rely on to make wise decisions in uncertain circumstances” (p X). In Davis’s (2010) words: (p. 306), “the provision of health care has increasingly come to look like the drive-through window at a fast food chain”. Examples of simplification principles being introduced into professional work includes detailed guidelines that specify sentences judges should impose, protocols for doctors, and specification of content and pedagogies for teachers (Davis 2010). Is it possible to introduce these controls and retain high levels of job enrichment with its associated positive outcomes? Or might it be optimal to reduce job autonomy but compensate this with other positive work design and an enabling context? These types of questions may be some of the most important that work design scholars face.

METHODOLOGICAL DIRECTIONS

A strength of research in this field is that quasi- and field- experiments have often been used to evaluate work redesign. Rigorous evaluation studies continue to be important for informing practice and policy (Payne & Keep 2003): it is one thing to demonstrate a causal relationship between variables, and another to show that work redesign can be successfully implemented with positive outcomes. Also

important are 'true' longitudinal studies (in which all variables are assessed at each time wave) to investigate reverse causality, reciprocal effects, and the timing of processes. The latter is a neglected issue in work design (Parker et al. in press,a). To understand whether work design has consequences for individual development, very long term studies are required.

Thus far, multi-level processes have not been well articulated or investigated in the work design literature (or, indeed in the wider stress domain). From a measurement perspective, aggregating perceived work characteristics across job incumbents in the same job can help to reduce idiosyncratic individual influences on job perceptions. From a modeling perspective, we need to routinely consider the effects of work design at higher levels to assess impact, as well as to identify possible unintended consequences (Johns, 2010). For example, as noted, studies that examine the effect of group work design tend to examine outcomes at the team level, but rarely how these effects aggregate to the organizational level. Related to this point is the need to understand the potential role of work design in facilitating higher-level organizing, such as organizational ambidexterity. Examining the top down processes by which individuals' perceptions of work characteristics are formed, allows the opportunity to better understand the role of context.

A configuration approach is also a fruitful avenue (Treville & Antonakis 2006; Johns 2010). From this perspective, work designs can be understood as bundles of interconnected work characteristics that cause particular outcomes rather than as discrete job aspects. The assumption is that the bundle accounts for more variance (and possibly different outcomes) than independent main effects, perhaps because the elements operate in meaningful ways together or perhaps because individuals perceive work design in a holistic way rather than as separate elements. Regression approaches do not allow for the possibility that job characteristics might have different meaning depending on what attributes they co-occur with. For example, high significance-low autonomy configurations might occur because autonomy is reduced because the job is so important and the cost of error so high, such as occurs when firewalls are introduced to stop employees having direct contact with customers (Johns 2010). Configurational approaches also allow for the possibility of equifinality; for example, work design research has tended to

assume there is one optimal sociotechnical systems design - the self-managing team - but it might be that different configurations of social and technical systems are compatible with different types of organisations. Finally, a configuration approach might be a more fruitful way to examine work organization archetypes (combinations of work design and broader organizational systems; Cordery & Parker 2007).

I recommend exploring a different unit of analysis than a whole 'job'. As we have discussed, individuals might be able to change their work design on a daily basis in order to aid recovery and work design might be different during critical events vs. routine work (such as the high reliability organizing approach). A project-level of analysis might also make sense, such as for employees on temporary contracts. Finally, I concur with Barley & Kunda (2001) who argued we lack data on what people actually do in their work. Ethnographic studies, participant observation, and rich qualitative studies that provide detailed contextualized accounts of work in situ are likely to be especially helpful in understanding what is actually happening in contemporary jobs.

SUMMARY AND CONCLUSION

Work design as a field of theoretical enquiry was largely a response to the technically-oriented design of demotivating and alienating jobs during the Industrial Revolution. As such, it is unsurprising that work design research has predominantly focused on motivation. Indeed the JCM was first articulated in a paper entitled "Motivation Through the Design of Work" (Hackman & Oldham, 1976). Work design continues to feature in the motivation section of articles (for example, job design is labeled as a 'first generation motivation theory' in Miner's review of organizational theories). There have been important extensions to motivational work design theory, as I have outlined here, such as adopting more proactive and relational approaches to designing work (Grant & Parker, 2009). I outlined several ways to further develop motivationally-oriented work design theory, such as to give more serious attention to how work design might affect regulatory traits and self-regulation processes. Importantly, beyond refining

motivational work design theory, I have suggested we need to do more to get the core principles of motivational work design put into policy and practice.

Nevertheless, in the context of globalization and rapid technological change, we are also seeing an increase in jobs characterized by greater challenge and complexity. In the second part of this article, I therefore argued that designing work for motivation is necessary but insufficient, and that we need to give more attention to how work design can support individuals' cognitive, identity, and moral development. This analysis hopefully illustrates the untapped potential of work design. The nature and organization of individuals' work roles potentially have rather profound consequences, maybe even as extreme as reducing individuals' chance of dementia or, at the aggregate level, of helping nations to meet projected skill gaps. I also argued that, although considering work design from a health perspective has a long history, we need to extend this perspective given the pressures employees increasingly face in the work setting. There might be more ways that work design can promote health than hitherto considered, such as by considering work design not only as a primary prevention strategy but also as a vehicle for enhancing employees' coping effectiveness.

I also considered how we might design work for ambidexterity and other dual outcomes. My brief analysis suggested different possibilities, from having enriched work designs in conjunction with informal control mechanisms (contextual ambidexterity), to having low job autonomy in conjunction with other compensating positive work characteristics, participation, and an enabling context (enabling bureaucracy), to having work designs embedded in a bureaucratic structure yet which can be flexibly deployed and dynamically altered (high reliability organizing). It is clear that work design plays a central role in all of these perspectives, although what are the work design options and their consequences has had little conceptual attention and almost no empirical attention. Ultimately, understanding how best to design jobs to achieve the dual outcomes of efficiency and flexibility (or control and creativity) is likely to become even more important given the extended application of enabling bureaucracy principles into professional settings such as health.

Work design research has a long and important history. It also has a bright future, but we need to by beyond the dominant motivational paradigm.

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