Low-autonomy work and bad jobs in postfordist capitalism

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Abstract

In this article I present a critical reconstruction of the concept of postfordism, arguing for a regulation-theoretic approach that views Fordism and postfordism not in terms of production models based on a particular labor process but as institutional regimes of competition, within which there are one of four types of generic labor process: high autonomy, semiautonomous, tightly-constrained and unrationalized labor-intensive. I show that over one-third of US employment is in low-autonomy jobs and sketch an analytical framework for analyzing job quality. Contrasting the four labor process types with various measures of job quality produces 18 job types that reduce to one of three job quality categories: good jobs, bad jobs and decent jobs. The typology provides a framework for analyzing upgrading or downgrading of four aspects of employment quality within and across the four generic labor processes.

Keywords

Bad jobs, employment relations, labor process, low-wage work, Fordism, institutional logics, job quality, postfordism

Introduction

Income inequality in the United States declined from 1947 to the early 1970s, after which it began a continuous rise through to the present. The former period was characterized by strong growth in and convergence of family incomes, the latter by slow growth and divergence (Goldin and Katz, 2008). The standard economic explanation for rising inequality – skill-biased technical change – posits that demand for high-skilled workers has outpaced supply (see especially the extensive empirical analyses and debate between Card and DiNardo (2002) and Autor et al. (2008)). Within the same supply-and-demand model, Goldin and Katz (2008) emphasize the supply side, arguing that technical change over the 20th century has been continuous, but educational attainment began a long-term slowdown in the 1970s. While supply and technologically-driven demand are certainly an important part of the story on rising inequality, these economic arguments provide little explanatory leverage on wage variations within specific occupations (and are silent on other measures of job quality). Part of the reason is that such explanations abstract from the culturally- and politically-shaped, context-dependent decision-making processes of real managers in real organizations. Additionally, mainstream economic explanations elide a fundamental underlying problem: structural demand for low-autonomy jobs arising from the profit-driven social division of labor.

By 2005, fully 25% of the US workforce was working in a low-wage job (Mason and Salverda, 2010). Low-wage work is largely a question of low-autonomy work, which is low-skill, labor-intensive and subject to continuous downward pressure on wages due to structural unemployment in Marx's (1990 [1867]: 781) sense of 'the progressive production of a relative surplus population' under capitalism. Indeed, all of the low-wage

occupations in the US – sales, food preparation and serving, building maintenance and grounds cleaning, personal care and service, and healthcare support – are low-autonomy occupations.[1] Increasing education could reduce inequality in the upper half of the wage distribution, but it would have little effect on the problem of structural demand for low-autonomy work (for a complementary critique of human capital policies, see Lafer 2002).

Sociological and related institutional explanations for rising inequality, the growth of low-wage work, and jobs poor on other characteristics have focused on deunionization, internationalization and intensified competition, deregulation and financialization (Appelbaum and Schmitt, 2009; Kalleberg, 2011). Institutional scholars have also emphasized managerial choice regarding employment strategy, generally discussed in terms of high-road (quality/training/high wage) versus low-road (relentless cost cutting) strategy (e.g. Hunter, 2000; Appelbaum and Schmitt, 2009). Such institutional analyses have generated critical insights on job quality and labor market outcomes, but they remain highly descriptive and there has been little attempt to develop theoretical analysis of how disparate trends in job quality – including ongoing structural demand for low-autonomy labor – may be understood as part of the systematic, institutional transformation of capitalism. And while it has been noted that liberal-market institutional contexts like the US tend to encourage low-road strategies (Appelbaum and Schmitt, 2009) and shown that certain entry-level jobs, particularly in front-line services, may not be amenable to high-road upgrading (Bailey and Bernhardt, 1997), we still do not have a full understanding of why, within particular industries and occupations, if the high-road approach is viable and profitable, some managers take it but others do not? In order to provide further traction for a fuller answer to this question, I present here an analytical

framework for analyzing job quality based on a critically reconstructed regulation theory of Fordism and postfordism.

In order for the Fordism/postfordism framework to be robust, it must be extended beyond its traditional focus on the manufacturing labor process to account for variation across industries and occupations. To do so, I draw on Herzenberg et al.'s (1998) typology of four generic labor process types: high autonomy, semiautonomous, tightly-constrained and unrationalized labor-intensive. I then conceptualize Fordism and postfordism as institutional regimes of competition, each with its own dominant logic of employment relations, which accounts for dominant tendencies in job quality within generic labor process types, but allows for deviation by individual organizations. My analysis shows a slight decline from 1960 to 2005 in low-autonomy jobs (unrationalized labor-intensive jobs and tightly-constrained jobs) along with a corresponding rise in high-skill autonomous jobs. Yet, Wright and Dwyer (2003) found that low-wage work has made up an increasing proportion of total employment, accounting for 10% of total growth in full-time jobs in the 1960s, but 20% in the 1980s and 1990s. This raises a puzzle: If the proportion of low-autonomy jobs has declined, how can we explain the rising proportion of low-wage work in overall job growth? The answer proposed here is as follows. The Fordist regime provided the institutional conditions for many low-autonomy jobs to offer decent wages. But Fordism ultimately gave way to a postfordist regime of competition driven by the material transformations of internationalization and tertiarization (i.e. growing importance of service sectors), which gave rise to a dominant logic of employment externalization, resulting in a return to the market determination of wages and hence a greater percentage of low-autonomy jobs becoming low-wage.

The argument takes place in two stages. I first outline a critical reconstruction of the Fordism/postfordism framework focusing on a historical analysis of institutional dynamics of competition, with particular emphasis on institutional logics of employment relations regarding low-autonomy work. The second stage of the argument draws on the reconstructed theory to present a framework for analyzing historical and cross-sectional variation within and across generic labor process types.

Fordism and postfordism: A Marxist regulationist reconstruction

The concept of Fordism was developed by French regulation theorists as part of a broader research program rejecting the argument that markets are self-regulating, focusing instead on how the crisis-prone capitalist economy secures temporary institutional fixes to ensure expanded reproduction. Aglietta (2000 [1979]) argued that Fordism was a regime of accumulation combining a production model of Taylorist mass production with mass consumption, the latter achieved through the institutionalization of class compromise via unionization and the welfare state. Boyer (1979) introduced the concept of monopoly regulation as a form of regulation stabilizing the Fordist accumulation regime. Finally, Lipietz (1984) seems to have been the first to introduce the terminology of 'mode of regulation.' Together, these contributions established the standard regulationist growth model in which strong growth requires a mode of regulation that stabilizes and guides an accumulation regime. Elsewhere (Vidal, forthcoming-b), I have developed a Marxist theory of accumulation regimes that does not rely on the concept of a mode of regulation, which provides an unwarranted expectation of strong growth under capitalism, assumes a theoretically untenable level of coherence across institutional domains, and is based on an

unsound distinction between institutions and the underlying accumulation regime. Regulation theory does not need the concept of mode of regulation to continue examining settlements within and across institutional domains, including employment relations and forms of competition, on which I focus here, as well as money and credit, the state and the fit of national economies into the international system (Boyer and Saillard, 2002).

Many non-regulationist employment relations scholars adopted the concept of postfordism, which came to be widely viewed, with no small amount of speculation, as a model of flexible production based on a post-Taylorist labor process. Vallas (1999: 76) argued that postfordism is based on a 'single, unitary logic' that cannot make sense of the contradictory effects of corporate attempts to achieve flexibility on different groups of workers, while Thompson (2003) similarly noted that it assumes a degree of institutional coherence inconsistent with the empirical diversity of organizational arrangements. The critiques made by Vallas and Thompson are sound: a singular model of production based on a particular labor process does not provide a good basis for distinguishing between economic periods because there are multiple tendencies and broad organizational diversity. The problem is in large part a relic of the manufacturing-centric focus of these early debates. And while regulationists always emphasized the links between the labor process, wider institutions and the state, they too argued that there was a specifically Fordist production model and labor process – supply-driven mass production with Taylorism – and that postfordism would be rooted in a flexible production model based on either a neo-Taylorist or post-Taylorist labor process (Lipietz, 1987; Aglietta, 2000 [1979]; Boyer and Saillard, 2002). If a regulationist approach to postfordism is to be analytically valuable, it needs to be reconstructed to emphasize the differentiated

institutional contexts within which labor process strategy is developed, employment relations established, and forms of competition institutionalized.

The first step, then, is to distinguish between generic types of labor process – the particular configuration of physical technologies, task environments and authority relations. I draw on the typology of labor processes developed by Herzenberg and colleagues (1998), with some slight modifications in the definitions of the types. *High-skill autonomous* work (e.g. executives and professionals) typically requires university education and often postgraduate education; the task/authority environment allows significant discretion in decision making. *Semiautonomous* work (e.g. supervisors and secretaries) may be semi- or high-skilled, requiring either extensive job-specific, vocational and/or university training; the task/authority environment requires moderate levels of discretion, but still may be fairly standardized. *Tightly-constrained* work (e.g. machine operators and clerks) is low- or semi-skilled, requiring either job-specific or limited vocational training; the task environment is highly standardized and work is paced by machine technology, customer pressure, or flow of work. *Unrationalized labor-intensive* work (e.g. cooks and janitors) is low skill in terms of required vocational training or education; work is not susceptible to machine pacing or quality monitoring. The theory I develop in the next section does not yield predictions with regard to changes in the distribution of these generic labor process types over time; rather, the main thrust is to present a framework for analyzing variation of job quality within and across the labor process types, with particular emphasis on low-autonomy work (i.e. tightly-constrained and unrationalized labor-intensive labor processes).

Institutional dynamics of competition

Fordism was a unique period in that it allowed the taming of the market through a particular institutional regime. While this regime included state regulation, the more important point from a regulation theoretic perspective is the broader institutional context, which, allowed not only an interventionist Keynesian welfare state, but also a class compromise between capital and labor, creating oligopolistic competition, in which wages were indexed to productivity, in an economic core sufficiently large to generate an economy-wide rise in real median wages and a corresponding decline in income inequality (Vidal, forthcoming-a). This institutional conjuncture was made possible not through sheer political will but rather because it took place at a specific stage in development of the capitalist division of labor – a nationally-bound, mass production economy. In particular, labor markets were segmented along organizational lines with a core of large firms that were highly capitalized, technologically sophisticated and heavily unionized, and a periphery of smaller firms that were more labor-intensive, nonunion and subject to intensive price competition (Hodson, 1978; Kalleberg et al., 1981). The large core firms, in industries such as autos, steel, chemicals and banking, were vertically-integrated with internal labor markets, including detailed job ladders with well-defined training and promotion opportunities, and administratively-determined wages associated with positions rather than individuals (Osterman, 1984). While the core was dominated by large manufacturing firms, many large retail sales firms, such as Sears, adopted a 'welfare capitalism' model similar to manufacturing firms (Jacoby, 1997).

It is widely agreed, by nonmarxists (Harrison and Bluestone, 1988) as well as Marxists (Lipietz, 1987), that a severe decline in the profit rate beginning in the late

1960s set off a corporate scramble to restore profitability, which began to recover in the late 1980s, finally reaching pre-crisis levels by the late 1990s (Wolff, 2003). In response to the profit-rate crisis, core American corporations began to increasingly resist unions and turn to market-determined wages (Harrison and Bluestone, 1988), allowing the market to increasingly penetrate into core organizations (Cappelli, 1995; Hauptmeier, 2011). Additionally, the wave of restructuring accelerated the changing division of labor through global outsourcing and diversification of large corporations into a range of service sectors (Harrison and Bluestone, 1988), resulting in a shift in power from manufacturing firms toward large retailers controlling global supply chains (Gereffi, 1994). The profit rate was eventually recovered through organizational restructuring that generated stagnating wages and growing job polarization (Vidal, forthcoming-a). Key aspects of this organizational restructuring – the breakdown of training and promotion ladders in the move to flatter organizations, declining job security, and the rise of nonstandard work and performance-related wages – have been described broadly as employment externalization (Cappelli, 1995).

My argument here is that a cluster of closely-related and mutually-reinforcing material transformations – internationalization of production, domestic sectoral transformation toward a more service-based economy, and the ascendance of buyer-driven commodity chains – have given rise to a new dominant logic of externalized employment relations even within core firms. As I will explain momentarily, the concept of institutional logic provides a theory of the cultural institutionalization of the economic field and a framework for analyzing (restricted) managerial choice and dominant tendencies. But I first examine the underlying material changes. Table 1 shows the largest

major sectors of the economy in 1955 and 2005. Manufacturing declined from 26.1 to 10.6% of total nonfarm employment. The government, professional and business services and retail trade sectors increased enough that each individually now employs more workers than manufacturing, while leisure and hospitality nearly doubled, from 5.3 to 9.6%, and finance, insurance and real estate grew by over 50% from 3.7 to 6.1%. Table 1 also presents data (only available for 2005) on low-wage industries, showing that in 2005 26% of the entire nonfarm economy consisted of low-wage industries. It is not possible to make comparisons of growth of low-wage industries using only wage data on 2005 because we cannot be sure if what are low-wage industries in 2005 were low-wage industries in 1955, due to institutional transformations in wage setting. The evidence presented in the following section strongly suggests there are important differences in wage setting institutions across the two regimes.

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Regarding the core of the domestic economy, Table 2 shows the largest employers in 2011. Among the top 25 largest employers by employment, only two are manufacturing firms (GE, HP), while seven of these are general merchandisers and a further three are corporations that run eating and drinking establishments. In 1955 the top 10 by employment, in order, were GM, Exxon Mobil, US Steel, GE, Chrysler, Amoco, CBS, AT&T, Goodyear and Firestone.[2] This transformation in the complex division of labor has generated a concomitant shift in economic power, as control of increasingly global supply chains has shifted from manufacturing firms to large retailers (Gereffi, 1994). Consistent with this argument about the growing power of retailers, Table 2 also

lists the ranking of the top 25 employers by total revenue, showing that 15 of these top employers were among the top 50 US companies by total revenue, including five general retailers: Wal-Mart, Target, Home Depot, Best Buy and Lowe's.

While the sectoral transformation of the US economy provides the material basis for employment strategy, hard institutional context and incentive-based analysis cannot provide a full explanation of variations in job quality. For instance, while core service firms such as Wal-Mart are infamous for providing bad jobs in terms of wages, training and promotion opportunities, Wal-Mart has competitors that offer substantially higher wages, including the largely non-union Costco, which offered average wages 48% higher than Sam's Club in 2004 (Carré et al., 2011). A question that has plagued employment relations scholars advocating the high road is why more employers do not take it? If we are interested in better understanding how managers experience competitive pressures and make decisions in the face of these – hence variation in job quality over time and across organizations – then analysis must focus on more than hard institutions and incentives. To address the issue of employment strategy, I suggest using the concept of institutional logic, which refers to 'cultural beliefs and rules that structure cognition and guide decision making in a field' (Lounsbury, 2007: 289).

Research on institutional logics examines how technical concerns with organizational efficiency are embedded in broader institutional beliefs (Lounsbury, 2007). Institutional logics have both material and symbolic aspects, being embedded in the practice of prominent organizations and also elaborated as best practice in industry discourse. This approach offers a socio-cultural alternative to the economic approach: rather than assuming that a single maximizing economic logic always exists, and

studying organizations without talking to actual managers, the sociological institutionalist approach focuses on how institutional logics 'shape rational, mindful behavior' (Thornton and Ocasio, 2008: 100). Critically, where dominant institutional logics exist they tend to heavily restrict managerial choice; while any particular manager may deviate from or consciously reject a dominant logic, particularly when it is normative and does not have effective enforcement mechanisms (Greenwood et al., 2010), logics provide cultural resources for understanding concrete situations and tend to shape managerial understanding of best strategy. How managers react to institutional logics in particular situations is an empirical question, but the theoretical expectation is that where there is a dominant logic, it will widely shape practice.

In the Fordist context of a nationally-bound economy, American firms in the economic core organized employment relations according to a logic of internalization, under which best practice was understood to include internalizing activities and competencies and, in part due to pressure from unions, developing internal labor markets and protecting workers from market forces. Thus, under the Fordist logic of internalization, a large percentage of low-autonomy jobs, from assemblers to janitors to clerks, were given (i) security, (ii) decent wages, and (iii) opportunities for training and promotion. In the postfordist context of internationalization and a shift in the economic core from manufacturing to service firms, the dominant logic of employment relations has become externalization, in which managers now favor 'asset light' strategies, focusing on 'core competencies' and subjecting workers to market pressures (including deunionization). Under the postfordist logic of externalization, the theory suggests that there will be a strong tendency toward the degradation of low-autonomy work in terms of

all three of these aspects of job quality. I now turn to examine the empirical evidence on historical trends in employment externalization before presenting a detailed framework for analyzing externalization and job quality.

Employment externalization within postfordism

In Cappelli's (1995) early discussion of employment externalization, he emphasized a number of practices that appeared to constitute a shift away from the Fordist standard of internalizing employment, leading to the increased marketization of employment. Among the core practices were the three aspects of job quality noted in the foregoing section: wages (a shift from wages associated with positions to wages determined by performance), training and promotion opportunities, and job security. However, Jacoby (1999: 124) challenged the externalization thesis, arguing unequivocally that 'the welfare capitalist approach remains in place. Career-type employment practices – an amalgam that economists term "internal labor markets" – are still the norm ….' While Jacoby provided statistical evidence of overall stability in job tenures, and argued that household-name companies such as AT&T and Lowe's continue to provide 'career-type jobs,' he did not actually present any evidence on training and promotion opportunities, that is, internal labor markets. This is understandable because, as Cappelli noted, there is a lack of systematic, long-term quantitative data on internal labor markets. Nonetheless, Jacoby emphasized institutional stability to the neglect of important qualitative shifts in labor market institutions. In particular, as discussed by Cappelli (1999) and Kalleberg (2011), there is evidence of more outside hiring and less internal training (suggesting a decline in internal promotion), a shift from job-based to performance-based pay, and the

growth of flatter firm hierarchies (reducing the number of positions across which employees are able to move).

More recently, McGovern et al. (2007: 52, 60) presented data for the UK on the 'underlying continuity of the employment relationship,' showing that the proportion of full-time work remained stable vis-à-vis flexible and temporary forms. They also found that the percentage of employees who see their job as part of a 'recognized promotion or career ladder within their organization' increased from 44.4% in 1984 to 49.8% in 2000. This finding appears to contradict the externalization thesis, but it must be considered in terms of a wider range of evidence, which I present below. To anticipate my response: findings of aggregate changes hide divergent trends across industries, occupations and groups of workers. McGovern et al. also referred to a companion survey reported in White et al. (2004: 57) showing that two thirds of British employers 'say that they have career ladders which are open to most employees.' While this finding, particularly in combination with employee perceptions, does appear inconsistent with the externalization thesis, such figures are likely to be exaggerated by employers, and I reserve assessment until examining the objective evidence. Finally, White et al. argued that employers are expanding rather than decreasing job grades, but the change they refer to is measured over two years from 2000-2. This is surely a weak basis for triumphantly concluding that 'it seems that the move towards flatter organizations … has been short lived' (White et al., 2004: 61).

In response to these questions raised by Jacoby, McGovern, White and colleagues, I want to take each of the three main facets of externalization under consideration here and attempt to present a more nuanced understanding of long-term

trends. On security, Farber (2008: 12) found that between1973 and 2005 job tenure declined substantially for men in the private sector and remained unchanged for women in the private sector. In the public sector, there has been an overall increase in job tenures, which is particularly pronounced for women. He concluded that 'the overall pattern of results regarding mean job tenure and the incidence of long-term employment relationships suggests that there has been as substantial decline in long-term employment opportunities and a concomitant reduction in job security in the private sector,' but 'this decline has been offset for females by their increased attachment to the labor force.' Additionally, Bernhardt and Marcotte (2000) found that black workers have experienced the largest decline in job stability since the 1970s.

On the second issue, wages, the externalization thesis as formulated by Cappelli – an increase in performance-related pay – would suggest more variable pay within occupations. Data supporting this argument were presented in Bernhardt and colleagues' (2001) analysis of the National Longitudinal Surveys comparing two cohorts of young men, one which entered the labor market in the middle to late 1960s and another that entered in the early 1980s: increased earnings variably in the recent cohort. In my formulation, I argue for a more general move to market-determined wages, particularly for low-autonomy jobs, in which I expect to see a larger proportion of these being low-wage jobs in the postfordist period. Support for this expectation is provided by an analysis of CPS data on all full-time jobs by Wright and Dwyer (2003), in which they compared job growth during the 1960s to growth in the 1990s. They found that for the 1960s, 2% of job growth occurred in the lowest job-quality decile, 30% in the middle two deciles, and 40% in the top three deciles. In contrast, in the 1990s 17% of job growth

occurred in the lowest job-quality decile, 11% in the middle two deciles, and 50% in the top three deciles. This finding provides strong evidence in support of the argument that a large proportion of entry-level jobs, which tend to be low-autonomy jobs, were paid decent wages under Fordism, but are increasingly being paid bottom-level wages under postfordism. With regard to the question of compositional change versus a more general turn to market-determined wages, Bernhardt et al. (2001: 141, 158) presented evidence showing that compositional shifts away from manufacturing toward services did not account for most of the rise in low-wage work. Rather, the bulk of this growth was explained by 'changes in the pay structure within industries,' in particular, declining pay for those with less than a college degree.

Finally, the third facet of externalization under consideration is a proposed decline in internal training and promotion opportunities, for which there is very little direct, systematic evidence. In their cohort study, Bernhardt et al. (2001: 111, 150) examined individual wage growth of male workers from age 16 to 34, thus providing perhaps the only true measure of growth of low-wage careers in the US. They found 'a marked deterioration in upward mobility,' with median wage growth in the 1980s cohort 21% lower than the 1960s cohort. Remarkably, the percentage of male workers in low-wage careers across the two cohorts more than doubled, from 12.2 to 27.6%. This growth hit workers with a high school diploma or less the hardest, increasing from 14.4 to 35.3%, but even workers with a bachelor's degree or higher saw an increase in low-wage careers from 10.4 to 14.1%. While Bernhardt and colleagues' study is based on data for males, in a multi-country comparative study Mason and Salverda (2010: 48) found that in the US women are more likely than men to be in low-wage work and that the chances of upward

mobility for low-wage workers are limited, with a high risk of ‘cycling between low pay and no pay.’

While the foregoing provides fairly strong evidence of a rise in dead-end work under postfordist competition, this does not necessarily imply an overall decrease in training and promotion opportunities within firms. For instance, in their case study of the food service industry Lane et al. (2003) found that shifting subcontracting relations resulted in a decline and recomposition of internal labor markets, a change that improved opportunities for some workers but reduced internal advancement opportunities for the least educated workers. It may very well be that in certain industries or occupations, for certain types of workers, particularly more educated workers, firms are continuing to develop various opportunities for training and promotion. This may help explain the findings of McGovern and colleagues (White et al., 2004; McGovern et al., 2007); these data are for the UK, but the latter and the US are institutionally similar and it may be that internal labor markets in both countries are being maintained or reconstructed for the majority of workers, even if a substantial minority of workers at the bottom of the labor market have decreasing access to such opportunities. This interpretation is consistent with Bernhardt and Marcotte’s (2000: 35) review of research on internal labor markets, in which they found strong evidence indicating a decline in nonmarket restrictions on wage setting, concluding that ‘workers at the low end of the wage distribution have been the ones most affected by the restructuring of work.’ I now turn to examine the extent of demand for low-autonomy jobs in the postfordist US economy and provide a framework for analyzing variations within these types of jobs.

Labor processes, employment relations and competitive dynamics

Shifts in the distribution of generic labor processes

Herzenberg et al. (1998) coded 840 detailed occupations from CPS data into four generic labor process types and examined the changes from 1979-1996. I have slightly revised their coding and extended the analysis to the years 1960 and 2005, using IPUMS Census microdata (Ruggles et al., 2010). The tables in the data appendix list my revised coding along with changes I made to Herzenberg et al.'s coding.[3] Table 3 presents the employment share by labor process type and the average annual income for 1960 and 2005.[4] Based on my coding of the labor process types, averaging between the two point estimates, from 1960-2005 high-skill autonomous jobs increased from 30.5 to 38.5%, semiautonomous jobs decreased from 29 to 26.5%, tightly constrained jobs decreased from 8.5 to 6.5% and unrationalized labor-intensive jobs decreased from 32 to 28%. While the 26% increase in high-skill autonomous jobs over the 45 year period is consistent with the skill-biased technical change thesis, equally remarkable is the relative continuity across the low-autonomy labor process types. Low-autonomy jobs accounted for around 41% of total employment in 1960 but continue, after 45 years of technological progress, to account for fully 35% of total employment.

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Now, Autor and colleagues (2003) developed a 'task model' to add explanatory power to the SBTC thesis, and they innovatively constructed a unique data set matching Dictionary of Occupational Titles task measures with data on occupations from the Census and CPS. Their findings for 1960 to 1998 show a decline in nonroutine manual

tasks (measure: Eye-Hand-Foot coordination) by 8.7 centiles, a smaller but still substantial decline in routine cognitive tasks (Sets limits, Tolerances, or Standards) by 5.4 centiles, and a largely stable trend in routine manual tasks (Finger Dexterity), down just .8 centiles over the 38 year period. The first task measure is conceptually related to unrationalized labor-intensive occupations, the second two to tightly-constrained occupations. However, while this analysis does show a decrease in nonroutine manual and routine cognitive labor content across the entire economy, this is not the same as a decline in unrationalized labor-intensive or tightly-constrained *occupations*. Specifically, Autor et al.'s analysis measured the intensity of a specific task within each occupation and then averaged these intensities for each task across the entire economy. It thus shows a relative decline in occupations intensively requiring a given task, but it does not directly map on to the distribution of occupations as such. While there appears to have been an economywide decline in the task content requiring eye-hand foot coordination and setting of limits, tolerances and standards, this analysis does not directly address the extent of occupations that are primarily routine (tightly-constrained) or nonroutine manual (unrationalized labor-intensive). Autor et al. demonstrated a technologically-driven process of economywide upgrading in employment task content, and while some of this can be seen in my labor process findings – small declines in low-autonomy and semiautonomous work with a proportional increase in high-skill autonomous work – it did not translate into a substantial decline in low-autonomy occupations. To understand trends in job quality – both over time and across jobs – we need to examine whole jobs and how managers configure jobs within particular organizational, occupational and industrial contexts. I thus now present an analytical framework for analyzing job quality.

Generic labor processes and the quality of employment: An analytical framework

A number of recent studies present extensive discussions of measures of job quality. Clark (2005) used six measures: pay, hours of work, future prospects (promotion and job security), how hard or difficult the job is, job content (interest, prestige and independence), and interpersonal relationships. Green (2006) presented an in-depth discussion of various measures, focusing his analysis on six: skill, effort, discretion, pay, risks and security, and job satisfaction. Sengupta et al. (2009) used five: pay, security, the opportunity for training and promotion, the extent of work intensification or stress, and autonomy. Kalleberg (2011) examined four broad aspects: pay and fringe benefits (including flexible work time options and whether a job provides opportunities for increasing earnings over time), control over tasks, intrinsic rewards and time at work.

Job satisfaction is a multidimensional variable that is presumably the outcome of the other quality attributes. Skill, autonomy/discretion and interest/intrinsic rewards inhere in the labor process types themselves. But the other attributes are more variable aspects of the employment relationship, and the postfordist framework suggests that such variability is increasing, particularly for low-autonomy jobs. As discussed above, the theory suggests that under a dominant logic of externalization there will be a strong tendency toward reduced wages, security and opportunities for training and promotion in low-autonomy work. Additionally, to the extent that externalization is part of a broader push toward marketization of the employment relation under intensified competition, it would be expected to be associated with greater work intensification. I thus focus my analysis on these four aspects of employment quality that have a direct theoretical relation to externalization: pay, security, opportunity for training and promotion, and

work intensification (effort/pace). While interpersonal relationships are fundamentally important, I leave this aspect out because it does not have a clear relation to externalization.

Combining the four employment quality attributes with the four labor process types produces the typology of 18 job types presented in Table 4. This table is a heuristic meant to provide a framework for understanding the full range of possible job outcomes in terms of a given labor process and core aspects of employment quality. It is a heuristic because the table can be tailored for specific empirical uses: it is meant to stimulate research on various empirical questions and contexts, while allowing researchers to focus in on a particular part of the table. The values represent a typology of all feasible variations of job quality attributes within each labor process type, which are then ordered into one of three broad job quality types based on reasoning provided below. There are three main ways in which Table 4 can be read and used for analyzing job quality: in terms of the three broad job quality categories; how the employment quality indicators vary within generic labor process types, based on institutional context and managerial choice; and whether one type of generic labor process can be transformed into another through managerial choice.

First, taking the job quality categories, while the debate has largely focused on a dichotomy between good versus bad jobs, Sengupta et al. (2009) correctly noted that most jobs have mixes of good and bad characteristics. They propose a typology between good, bad and 'ordinary' jobs. Following Sengupta et al., Table 4 reduces down to three job quality categories.[5] *Good jobs* are those that offer some autonomy with relatively high wages and security or have low autonomy but offer relatively high wages, security

and opportunities for training and promotion (OTP). *Bad jobs* are those that are low-wage and dead-end (no OTP); relatively high wage but dead-end and insecure; or relatively high wage but dead-end and intense. *Decent jobs*, finally, include semiautonomous jobs that are relatively high wage and secure but without opportunities for promotion, and low autonomy jobs that are either relatively high wage and secure or low wage but secure with opportunities for promotion.

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Let me provide some more remarks on the distribution of work systems across the three job quality categories and the underlying assumptions. High-skill autonomous jobs only appear in the good jobs category because it is assumed that they will offer high-wages, that their incumbents will have security (which may be across rather than within organizations) and that they inherently offer intrinsic rewards, so therefore do not require additional training and promotion opportunities. These jobs may be intense but the workers that fill them, being at the top of the labor market, are likely to be able to voluntarily trade intense work for high-wages and intrinsically rewarding work. For similar reasons semiautonomous work is considered good if it has relatively high-wages and security; the framework assumes that this could be considered good work for some workers as such (depending on their work orientation), but others may desire even higher amounts of wage income and/or intrinsic rewards and hence if a semiautonomous job has relatively high wages and security but no OTP, it is classified as a decent job. Because semiautonomous work is assumed to offer fewer intrinsic rewards and lower wages than high-skill autonomous work, it is considered to be a bad job if subject to high levels of

intensification. Tightly-constrained and unrationalized labor-intensive jobs are both considered to be good jobs if they offer relatively high wages, security and OTP; they are considered to be decent jobs if they offer relatively high wages and security, but not OTP, or if they offer security and OTP but have low wages, under the assumption that OTP will lead to higher wages and more intrinsically rewarding work; they are bad jobs if they are intense, offer relatively high wages but no security or OTP, or if they have low-wages and no OTP.

Second, Table 4 may be used to examine how the employment quality indicators vary *within* generic labor process types. It could be used in this way for quantitative analysis of historical or cross-sectional trends in job quality within generic labor process types or qualitative research on the extent to which the logic of externalization (or some other employment logic) shapes managerial strategy. In particular how do managers conceive best practice regarding low-autonomy work, and why do some, perhaps most, externalize on these job quality attributes while other managers do not? It could also stimulate more focused research on particular types of occupations that are closely related in terms of generic labor process, and therefore Table 4 lists the top three or four detailed occupations within each labor process type and Table 5 lists the major occupations within each type.

Third, Table 4 may be used to focus on the question of upgrading or downgrading across labor process types. This is inherent in the conceptualization of the types, because as Herzenberg et al. (1998) noted, for certain types of tasks different management philosophies may lead to a task set being performed in different ways. They argued such changes are most likely between semiautonomous and unrationalized labor-intensive

work, and they use the example of nursing aides. Below I will provide a brief illustration with regard to manufacturing machine operators. On this assumption, in the coding many occupations are split between two or more generic labor process types, as shown in the appendix. Among the major detailed occupations that are in the semiautonomous category and at least one other category are clerks and cashiers, administrative support, computer equipment operators, assemblers and machine operators. There is fertile ground for research on such variation, and research could naturally add the other job quality attributes in Table 4 for further analytical leverage.

The research program for this framework, in my view, is to use Table 4 (as well as Table 5 on major occupations within generic labor process types) to document, interpret and theorize how variation in strategy is not simply a maximizing rational response to environmental incentives but a cultural and political process. For space reasons I can only provide the briefest of illustrations of how this research program might commence. My own research has focused on manufacturing work organization in the US, looking at cross-sectional variation across factories (Vidal, 2007b; Vidal, 2007a). While these analyses did not focus on the problem of externalization, I used an institutional logics approach to examine variation in managerial strategy among small- and mid-sized supplier firms I studied (Vidal, 2012). Although managers attempted to pursue rational strategies, they differed in a basic way regarding how they saw the role of employee involvement in lean production, a difference explained not by their production process, industry or location in the supply chain, but by their cultural framing of the situation. A normative logic of substantive employee involvement in decision-making and problem-solving has been widely adopted by high-profile factories, is pushed on suppliers by

industrial customers, industry associations and consultants, and was well-understood by all 47 of the managers and engineers I spoke with. Yet, management in only eight of 24 factories adopted this logic, under which they reduced their authority hierarchies and substantively changed the labor process. The remaining managers adopted a logic of consultative participation in which workers were asked to contribute ideas but within a traditional authority structure – a hybrid between the normative logic of substantive participation and the old dominant logic of Taylorism, whereby it is understood that workers cannot responsibly self-manage. In terms of Table 5 and institutional logics, my analysis showed how machine operator jobs can be turned into semiautonomous jobs (when management adopts a logic of substantive empowerment), but also why they are more likely to remain tightly-constrained: despite the normative logic being widely understood as 'best practice' and 'world class,' the majority of managers I observed deviated from this logic because they continued to understand their situation through the enduring cultural frame of Taylorism (Vidal, 2012). While physical work intensification was not an issue in the factories I visited, there is ample evidence that intensification is a common outcome under lean, particularly in auto assembly (Stewart et al., 2009; Rothstein, forthcoming). Future research could focus on why some managers use lean to intensify work but others do not, and to what extent there exists a logic of externalization explicitly shaping managerial understanding of the situation and hence driving intensification in some factories.

Finally, and even more briefly, the case of janitorial work illustrates how variation over time and across organizations could be studied focusing on political contestation within an unrationalized labor-intensive occupation in which the logic of externalization

– in particular, market-determined wages and lack of training and promotion opportunities – would appear to be clearly dominant. Received wisdom suggests that janitors used to be incorporated into vertically-integrated corporations, but were likely to have been one of the first roles to be outsourced to administrative support firms in the transition from Fordism. Historical research could examine the extent to which this is true, including whether janitors were part of a unionized, vertically-integrated firms that included decent wages or opportunities for training and promotion inside the firm. Turning to a cross-sectional (and historical) analysis and illustrating the role of politics, nonunion janitorial services firms paid $4.00 an hour in 1982 versus $12.00 an hour with full benefits for union firms (Waldinger et al., 1998). As the industry experienced intense deunionization in the 1980s, 'fringe benefits and job security evaporated along with the union wage premium' (Milkman, 2006: 80). However, the SEIU began its 'Justice for Janitors' campaign in Houston in the mid-1980s and by 2006 had organized workers in 29 cities, providing relatively high wages and job security for hundreds of thousands of workers (Vidal and Kusnet, 2009), turning unrationalized labor-intensive jobs from bad jobs into decent jobs. While these brief examples are only suggestive, the theoretical framework presented here could provide a powerful basis for examining the externalization thesis in more detail, in particular, the extent to which externalization is perceived by managers to be a dominant logic of employment relations and thus drives dominant tendencies.

Conclusion

I have presented a reconstructed regulation theory of postfordism that is able to help make sense of the expansion of the service sector, organizational diversity and the growth of low-wage work. Rather than using Fordism and postfordism as organization-level concepts, I use them to refer to institutional regimes of competition. The Fordist regime generated rising real wages with strong profits and relative economic stability. Because of the fundamental uniqueness of Fordism, I have argued that we should use the term postfordism to refer to the general institutional regime that has emerged since the erosion and transformation of Fordist institutions. Postfordism, then, refers to an institutional regime of competition characterized by highly-competitive, internationalized competition generating a growing core of service firms and a dominant logic of externalized employment relations, emphasizing lean organizational structures and market-mediated employment, where the latter includes market-determined wages, deunionization and increased competitive pressures on employee performance. In order to move beyond overly-stylized understandings, I introduced a complex typology of job quality, distinguishing between generic labor process types and more variable aspects of the employment relation.

The analysis shows that the postfordist regime continues to generate structural demand for low-autonomy work – which constitutes over one-third of the jobs – and provides evidence that it is increasingly unable to provide decent living standards for the workers who fill these positions. The institutions of Fordism were able to provide decent work and rising living standards for much of the low-skilled population, primarily through oligopolistic competition, strong unions and pattern bargaining inside the union sector, and a wage norm outside the union sector relatively close to the union wage. The

framework presented here can guide fine-grained, qualitative and quantitative analysis of changing employment relations within and across generic labor processes.

Perhaps the most pressing question is what can be done with regard to low-wage work in general, which I have argued is primarily a question of low-autonomy work. There are of course no easy answers, but Marxist regulation theory suggests that the problem extends beyond technical change, financialization or neoliberal politics; rather, it is a problem of the ascendance of the logic of employment externalization resulting from internationalized competition and pressures on the profit rate (Vidal, forthcoming-a). To the extent that regulation theory reclaims a Marxist pedigree, it assumes the economy is irreducibly social, that the social product is the outcome of vast amounts of coordinated labor and accumulated knowledge, and that productivity itself is collective. On this view there exists an underlying social relation connecting all workers, based on their mutual interdependence in the wage labor nexus and through which workers in different labor market/employment conditions are able to tap into a certain share of the collective product. The point of a concept like postfordism is that however disconnected key institutions may appear, the political economy is fundamentally interconnected and interdependent. Although high-skill autonomous jobs have increased and there has been a slight decrease in low-autonomy jobs, the postfordist regime still systematically generates a job structure with a large percentage of low-autonomy jobs and increasingly produces a stratum of long-term working poor, whose wages are kept low by the existence of various strata of a reserve army of under- and unemployed. To the extent that productivity is an outcome of collective labor in a complex division of labor, the productivity of autonomous and semiautonomous workers is based in part on routine and nonroutine

labor, which allows the former to focus on their specialization while benefitting from the cheap labor of others. The wage form continues to present interdependent relations – the banker and his maid, software developers and their janitors, creatives and their cheap goods and services – as independent market transactions. Some things, indeed, don't change.

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Notes

[1] Based on the standard criterion for low-wage work, jobs making less than two-thirds of the overall median, analysis of BLS OES data shows that these occupations, constituting 28.4% of the economy, were all below or near the cutoff for low wages in 2010 ($22,334). Those just above the cutoff were: building maintenance and grounds cleaning (67% of the median), sales and related (73% of the median), and healthcare support (74% of the median).

[2] http://money.cnn.com/magazines/fortune/fortune500_archive/full/1955/.

[3] I have created four tables listing the line-by-line differences between their codes and mine for each labor process type. These, along with my STATA datasets, coding programs and a text document with reasons for my changes are available upon request.

[4] As a consistency check I compared the distribution for 2005 based on my coding and that of Herzenberg et al. (1998). To do so I applied their coding to the 2005 data, and I report here the average between the two point estimates (one using observations with only non-zero income and another using all observations for which there were occupational data, including where income was listed as zero). There was little difference between the two estimates for high-skill autonomous (38.5 in my coding versus 39% in theirs), a slightly higher share in semiautonomous under my coding (26.5 versus 24.5), a slightly higher share in tightly-constrained (6.5 versus 5.5), and a lower share in unrationalized labor-intensive jobs (28 versus 31.5%). Thus, my coding changes did not produce a dramatically different outcome. In any case, I believe my coding is slightly more accurate.

[5] The notion of 'ordinary' has connotations of being commonplace or normal. With the clear trend toward job polarization, the middling jobs may not be the most common or the norm. At risk of being overly semantic, I want to suggest that a better description of the middling jobs is 'decent.'

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Table 1. Employment and wages in the largest sectors, USA, 1955, 2005

	Share of total nonfarm employment, 1955 (%)	Share of total nonfarm employment, 2005 (%)	Average annual wages, 2005 ($)	Median annual wages, 2005 ($)
Federal, state and local government	11.8	16.3	44,250	38,940
Health care and social assistance	15.6	10.9	45,430	33,190
Ambulatory health care services and hospitals	--	7.1	45,545	35,465
Nursing and residential care facilities	--	2.1	27,190	**22,350**
Social assistance	--	1.7	25,760	**21,400**
Professional and business services	5.6	12.7	48,167	38,113
Professional, scientific and technical services	--	6.1	58,560	46,890
Management of companies and enterprises	--	5.3	56,430	44,840
Administrative and support and waste management and remediation services	--	1.3	29,510	**22,610**
Retail trade	8.7	11.4	26,360	**20,480**
Leisure and hospitality	5.3	9.6	23,505	**18,410**
Manufacturing	26.1	10.6	39,240	31,850
Finance, insurance and real estate	3.7	6.1	42,025	31,635
Total	76.8	77.6	--	--
All sectors	--	--	37,870	29,430

Source: US Bureau of Labor Statistics, Current Employment Statistics, Occupational Employment Statistics.

Notes: Data are for total nonfarm employment. The year 2005 was chosen because it is before the recession began in December 2007. For 2005, the remaining nonfarm industries, all of which employ less than 6% of the total workforce are, in order from largest to smallest: construction, wholesale trade, other services, transportation and warehousing, information, educational services, mining, and utilities.

The OES only provide wage data back to 1997. Median wages in bold are for low-wage industries, defined as those making less than two-thirds of the overall median wage. This cutoff was $19,424 in 2005. I have also included four industries that are very near to this, specifically, retail trade (70% of the median), social assistance (75% of the median), nursing and residential care (76% of the median), administrative and support and waste management (77% of the median).

Table 2. Top 25 largest US companies by employment, 2011

	Firm	*Primary industry*	*Total empl. (1,000s)*	*Rank in Fortune 500 by total revenue*		*Firm*	*Primary industry*	*Total empl. (1,000s)*	*Rank in Fortune 500 by total revenue*
1	Wal-Mart	General Merch.	2,100	1	14	Fedex	Transp.	269.4	73
2	UPS	Transp.	400.6	48	15	AT&T	Telecom.	265.4	12
3	McDonald's	Eating & Drinking	400	Not in top 100	16	Citigroup	Banks	260	14
4	IBM	Software & comp. services	399.4	18	17	Walgreens	Food & drug retailers	244	23
5	Yum! Brands	Eating & Drinking	378	Not in top 100	18	Lowe's Companies	General Merch.	234	50
6	Target	General Merch.	355	33	19	Accenture	Comp. related services	204	Not in top 100
7	Kroger	Food & drug retailers	338	25	20	Verizon	Telecom.	194.4	16
8	Hewlett-Packard	Tech. hardware & equip.	324.6	11	21	Hospital Corp. of America	Hospitals	194	Not in top 100
9	Home Depot	General Merch.	321	30	22	Best Buy	General Merch.	180	47
10	PepsiCo	Beverages	294	43	23	Safeway	Food & drug retailers	180	60
11	General Electric	Electrical equip.	287	6	24	Darden Restaurants	Eating & Drinking	174	Not in top 100
12	CVS Caremark	Food & drug retailers	280	21	25	TJX Companies	General Merch.	166	Not in top 100
13	Sears Holdings	General Merch.	280	57					

Source: Financial Times 500 (employment), Fortune 500 (revenue).

Notes: These numbers are for worldwide employment, so this is only a proxy for the largest firms in the US. While some like Wal-Mart and McDonalds have significant international presence, some appear not to have any international presence, such as Krogers, CVS, Sears, Walgreens, Lowe's and TJX, and many others appear to have minimal international presence, including Target, Best Buy, Home Depot, Safeway.

Table 3. Employment by generic labor process type, 1960, 2005

	1960		2005	
	Share of total employment (%)	Average annual income (2005 dollars)*	Share of total employment (%)	Average annual income (2005 dollars)*
High-skill autonomous	**28**-33	$43,722	**38**-39	$67,080
Semiautonomous	28-**30**	$27,158	26-**27**	$32,673
Tightly-constrained	8-**9**	$23,484	6-**7**	$20,615
Unrationalized labor-intensive	31-**33**	$13,839	28	$17,046

Source: IPUMS-USA Census microdata (Ruggles et al., 2010), my calculations.
Notes: Data include total employment, excluding legislators and military. Two estimates of the share of total employment are included because there were a substantial amount of observations for employed individuals with a designated occupation but with a '0' (zero) for annual income. Estimates in bold include only those with a non-zero income (1960 N=515,390; 2005 N=1,234,855), whereas the other estimates include employed individuals with a designated occupation but '0' (zero) recorded for annual income (1960 N=611,593; 2005 N=1,330,590); where there is only one number, the two estimates were identical.
*Annual income is total pre-tax wage and salary income for the previous year, based on the estimates that only include individuals with a non-zero income. These data are reported only as a rough validity check on the coding of the labor process types within years and should not be taken as reliable indicators of changes in real income within labor process types across years, both because 16% of the 611,593 1960 observations with a designated occupation have income recorded as zero and because the variable for 'weeks worked last year' did not have real values in 1960, so there is no way to control of number of weeks (or hours) worked over the year. IPUMS-USA data do not have median wage.

Table 4. Eighteen job types

	Labor process	*Employment relations*				*Largest detailed occupations within labor process type*
		High wages	*Security*	*OTP*	*Intense*	
Good jobs						
1	High-skill autonomous	Y	Y			High-level managers; registered nurses; customer service reps, investigators and adjusters, except insurance.
2	Semiautonomous	Y	Y		-	Sales supervisors; sales persons; secretaries; primary school teachers.
3	Tightly constrained	Y	Y	Y	-	Assemblers & machine operators; clerks; cashiers.
4	Unrationalized labor-intensive	Y	Y	Y	-	Cooks; nursing aides, orderlies & attendants; janitors.
Decent jobs						
5	Semiautonomous	Y	Y	-	-	Sales supervisors; sales persons; secretaries; primary school teachers.
6	Tightly constrained	Y	Y	-	-	Assemblers & machine operators; clerks; cashiers.
7	Tightly constrained	-	Y	Y	-	Assemblers & machine operators; clerks; cashiers.
8	Unrationalized labor-intensive	Y	Y	-	-	Cooks; nursing aides, orderlies & attendants; janitors.
9	Unrationalized labor-intensive	-	Y	Y	-	Cooks; nursing aides, orderlies & attendants; janitors.
Bad jobs						
10	Semiautonomous	Y	Y	-	Y	Sales supervisors; sales persons; secretaries; primary school teachers.
11	Semiautonomous	Y	-	-		Sales supervisors; sales persons; secretaries; primary school teachers.
12	Semiautonomous	-		-		Sales supervisors; sales persons; secretaries; primary school teachers.
13	Tightly constrained	Y	Y	-	Y	Assemblers & machine operators; clerks; cashiers.
14	Tightly constrained	Y	-	-		Assemblers & machine operators; clerks; cashiers.
15	Tightly constrained	-		-		Assemblers & machine operators; clerks; cashiers.
16	Unrationalized labor-intensive	Y	Y	-	Y	Cooks; nursing aides, orderlies & attendants; janitors.
17	Unrationalized labor-intensive	Y	-	-		Cooks; nursing aides, orderlies & attendants; janitors.
18	Unrationalized labor-intensive	-		-		Cooks; nursing aides, orderlies & attendants; janitors.

Notes: High wages = living wage; Security may be job or occupational; OTP = opportunities for training and promotion; Intense = where work is or has been intensified to a degree not offset by high wages.

If a work system has a given practice, it is noted with a 'Y'. If it does not have the practice, it is noted with a '-'. If there is nothing in a cell, the work system may or may not have the practice. The typology is meant to be exhaustive of all possible combinations for which there is a conceivable really-existing job in the US.

Table 5. Major occupations within generic labor process types

1960	2005
High-skill autonomous work	
Precision production, craft & repair occupations (27.1%)	Executive, admin. & managerial occupations (29.4%)
Executive, admin. & managerial occupations (24.4%)	Professional specialty occupations (28.8%)
Professional specialty occupations (20.5%)	Precision production, craft & repair occupations (11.4%)
Retail and personal services sales (5.7%)	Therapists, primary & secondary teachers (7.3%)
Therapists, primary & secondary teachers (5.6%)	Accountants & auditors, insurance underwriters, other financial specialists & management analysts (5.9%)
Semiautonomous work	
Precision production, craft & repair occupations (25.5%)	Administrative support occupations (20.9%)
Administrative support occupations (24.8%)	Precision production, craft & repair occupations (18.6%)
Retail & personal services sales (16.2%)	Selected supervisors (16.3%)*
Assemblers & machine operators (10.2%)	Therapists, primary & secondary teachers (11.6%)
Truck, delivery & tractor drivers & bus drivers (6.6%)	Technologists and technicians & legal assistants (7.1%)
Therapists, primary & secondary teachers (5.5%)	Retail & personal services sales (5.9%)
	Truck, delivery & tractor drivers & bus drivers (5.7%)
Tightly-constrained work	
Assemblers & machine operators (71.2%)	Clerks & cashiers (51.0%)
Prod. inspectors, testers, samplers & weighers (10.7%)	Assemblers & machine operators (28.5%)
Phone operators, bank tellers & data entry keyers (9.8%)	Phone operators, bank tellers & data entry keyers (11.3%)
Clerks & cashiers (6.7%)	Prod. inspectors, testers, samplers & weighers (8.2%)
Unrationalized labor-intensive work	
Service occupations (28.6%)	Service occupations (42.2%)
Administrative support occupations (23.2%)	Administrative support occupations (20.5%)
Handlers, cleaners, helpers & laborers (16.4%)	Handlers, cleaners, helpers & laborers (12.5%)
Assemblers & machine operators (10.2%)	Truck, delivery & tractor drivers & bus drivers (5.9%)
Farming, forestry, and fishing occupations (6.1%)	
Truck, delivery & tractor drivers & bus drivers (5.9%)	

Source: IPUMS-USA Census microdata (Ruggles et al., 2010), my calculations.
Notes: All occupations accounting for more than 5% of a labor process type are shown.
*None of the codes for selected supervisors were used in the 1960 dataset; supervisors must have been classified within other occupations. The selected supervisor occupations account for 1.3% of all occupations.

Data appendix

Table A-1a. Classification of occupations

High-skill autonomous work
All executive, administrative, and managerial occupations (codes 003, 004-022); all accountants and auditors, insurance underwriters, other financial specialists and management analysts (codes 23-26) and highest-wage 25% of other management related occupations (codes 27-37); highest-wage 25% selected supervisors (codes 243, 303-307, 413-415, 433, 448, 456, 503, 553-558, 613, 633, 803, 828, 843 and 863); select professional specialty occupations (codes 43-097, 113-154, 164-199); highest-wage 50% select professional specialty occupations (codes 098-106, 155-163); all airplane pilots and navigators and air traffic controllers (226-227); highest-wage 75% of science technicians (223-225) and technicians (228, 229, 233, 235); highest-wage 25% of technologists and technicians (203-218) and legal assistants (234); all sales representatives for finance and business services (codes 253-257); all sales representatives for commodities, excluding retail (codes 258-259); highest-wage 25% of retail and personal services sales workers (codes 263-274); all adjusters and investigators (codes 375-376); highest-wage 50% of computer equipment operators (codes 308-309); all fire fighting and police occupations (codes 417-418); highest-wage 25% of sheriffs, bailiffs, correctional institution officers (423); highest-wage 25% of barbers, hairdressers, and cosmetologists (codes 457-458); all farm operators and managers (codes 473-476); highest-wage 50% of precision production, craft, and repair occupations excluding carpet installers and drywall installers (codes 503-699, excluding 566 and 573); all printing machine operators (codes 734-737); highest-wage 50% of rail transportation occupations (codes 823-826); highest-wage 25% of water transportation occupations (codes 828-834); highest-wage 50% of material-moving equipment operators (codes 843-859).
Semiautonomous work
Lowest-wage 75% of management related occupations, excluding accountants and auditors, underwriters, and management analysts (codes 23-37, excluding 023, 024 and 026); lowest-wage 75% selected supervisors (codes 243, 303-307, 413-415, 433, 448, 456, 503, 553-558, 613, 633, 803, 828, 843 and 863); lowest-wage 50% select professional specialty occupations (codes 098-106, 155-163); lowest-wage 25% of science technicians (223-225) and technicians (228, 229, 233, 235); lowest-wage 75% of technologists and technicians (203-218) and legal assistants (234); lowest-wage 75% of retail and personal services sales workers in codes 263-274; highest-wage 25% of sales counter clerks and cashiers (codes 275-276); highest-wage 50% of sales-related occupations (codes 283-285); highest-wage 50% of administrative support occupations (codes 303-389) except adjusters and investigators in codes 375-376, computer equipment operators (codes 308-309), telephone operators (code 348), bank tellers (code 383), and data entry keyers (code 385); lowest-wage 50% of computer equipment operators (codes 308-309); middle-wage 50% of barbers, hairdressers, and cosmetologists (codes 457-458); highest-wage 25% of farming, forestry, and fishing occupations (codes 473-499) except farm operators and managers (codes 473-476) and captains and other officers of fishing vessels (code 497); lowest-wage 50% of precision production, craft, and repair occupations, excluding carpet installers, drywall installers and painters, construction and maintenance (codes 503-699, excluding 566, 573 and 579); highest-wage 25% of assemblers (code 785) and machine operators (codes 703-733, 738-779); highest-wage 25% of fabricators and hand-working occupations (codes 783-784 and 786-795); highest-wage 50% of selected motor vehicle operators (codes 804, 808); lowest-wage 50% of material-moving equipment operators (codes 843-859); lowest-wage 50% of rail transportation occupations (codes 823-826); highest-wage 25% of water transportation occupations (codes 828-834); highest-wage 50% of material-moving equipment operators (codes 843-859).

Note: Herzenberg and colleagues (1998) used CPS data. I use Census data because they go back farther in time.

Table A-1b. Classification of occupations

Tightly-constrained work
Lowest-wage 75% of sales counter clerks and cashiers (codes 275-276); all telephone operators (code 348); all bank tellers (code 383); all data entry keyers (code 385); middle two wage-quartiles of assemblers (code 785); middle-two wage quartiles of assemblers (code 785) and machine operators (codes 703-733, 738-779); all production inspectors, testers, samplers, and weighers (codes 796-799); second-highest quartile of fabricators and hand-working occupations (codes 783-784 and 786-795);
Unrationalized labor-intensive work
All street and door-to-door sales workers (code 277); all news vendors (code 278); lowest-wage 50% of administrative support occupations (codes 303-389) except adjusters and investigators in codes 375-376, computer equipment operators (codes 308-309), telephone operators (code 348), bank tellers (code 383), and data entry keyers (code 385); all private household occupations (codes 403-407); all crossing guards and bridge tenders, guards, watchmen, doorkeepers, and protective services, n.e.c. (codes 425-427) and lowest-wage 75% of sheriffs, bailiffs, correctional institution officers (423); all service occupations (codes 433-469) except barbers, hairdressers, and cosmetologists (codes 457-458); lowest-wage 25% of barbers, hairdressers, and cosmetologists (codes 457-458); lowest-wage 75% of farming, forestry, and fishing occupations (codes 473-499) except farm operators and managers (codes 473-476) and captains and other officers of fishing vessels (code 497); all masons, tilers, and carpet installers (code 563); all drywall installers (code 573); lowest-wage 50% of painters (code 579); lowest-wage 25% of assemblers (code 785) and machine operators (codes 703-733, 738-779); lowest-wage 50% of fabricators and hand-working occupations (codes 783-784 and 786-795); lowest-wage 50% of selected motor vehicle operators (codes 804, 808); all taxi cab drivers and chauffeurs and parking lot attendants (codes 809, 813); all handlers, equipment cleaners, helpers, and laborers (codes 864-889); all dental assistants (code 445).

Table A-2. Revisions to the Herzenberg et al. (1998) labor process coding

High-skill autonomous
Include all of Executive, administrative, and managerial occupations (rather than only highest-wage 25%).
Drop lowest-wage 50% of selected professional specialty occupations (therapists, primary and secondary teachers; codes 098-106, 155-163) into semiautonomous category.
Include all airplane pilots and navigators and air traffic controllers (226-227); and only highest-wage 25% of selected technologist occupations (203-218, 234) (rather than highest-wage 75%).
CPS codes distinguish Sheriffs, bailiffs, and other law enforcement officers from Correctional institution officers, but the IPUMS Census codes do not; thus, the highest-wage 25% of sheriffs, bailiffs, correctional institution officers were coded as high-skill autonomous.
Include highest-wage 50% of selected precision production, craft, and repair occupations (rather than all).
All inspectors, testers, samplers, and weighers moved to tightly-constrained (rather than top 25% here).
Semiautonomous
Include lowest 50% of codes select professional specialty occupations (codes 098-106, 155-163).
Include lowest-wage 75% of selected technologist occupations (rather than lowest-wage 25%).
Include highest-wage 50% (rather than 75%) of select administrative support occupations (codes 303-389).
All dental assistants (code 445) moved to unrationalized labor intensive (rather than all here).
Include only highest-wage 25% (rather than 50%) of machine operators (codes 703-733, 738-779).
Include only highest-wage 25% (rather than 50%) of fabricators & hand-working occ. (783-784, 786-795).
Taxi cab drivers and chauffeurs and parking lot attendants moved to unrationalized labor-intensive.
Include 50% of precision production, craft, and repair occupations (rather than none).
All inspectors, testers, samplers, and weighers moved to tightly-constrained (rather than bottom 50% here).
All taxi cab drivers & chauffeurs & parking lot attendants (809, 813) moved to unrationalized labor-intens.
Tightly-constrained
Include middle-two wage quartiles of machine operators (rather than second-lowest wage quartile).
Include second-highest quartile of fabricators and hand-working occupations.
Include all production inspectors, testers, samplers, and weighers (rather than only second-highest quartile).
Unrationalized labor-intensive
Included lowest-wage 50% (rather than 25%) of select administrative support occupations (codes 303-389).
Included lowest-wage 75% of sheriffs, bailiffs, correctional institution officers.
Include all taxi cab drivers and chauffeurs and parking lot attendants (rather than only bottom 50%).
Include all dental assistants (code 445).

Note: A text document explaining reasons for my changes can be supplied on request.

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