



Topic overview

## Work

*Ethics, Science, Technology, and Engineering: A Global Resource*

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Full Text:

Page 543

## Work

Historical Background

Thinking about Work Normatively

Work, Slavery, and Unemp Loyment

Job Opportunities in a Global Workp Lace

Work in the Future

Bibliography

Work done by human beings is purposeful activity aimed at achieving a result. This activity may be primarily mental or primarily physical. The latter, often repetitive or arduous, is called *labor*. The design of either may originate from persons other than those actually doing the work. Associated with work are many related usages, including effort expended (also called *toil*); the result of that effort (a work of art); and one's job or employment, workplace, trade, occupation, or profession. In all these senses, work is subject to technological modification, scientific and literary study, and ethical reflection.

## Historical Background

Over time, societies have adopted various attitudes and expectations regarding work. In early civilized societies, the kind of work people did often depended on their class. The elite would have slaves do whatever they considered demeaning—for example, if it involved physical exertion. Certain religious attitudes perpetuated this devaluation. Some Buddhist and Christian monks, for instance, associate physical inactivity with the highest spiritual states. By contrast, monks in medieval Europe came to view a combination of prayer and work (*ora et labora*) as a more fully human expression of spirituality. Government despoliation of monasteries during the Reformation reduced the feasibility of a life devoted primarily to prayer. Comparable lifestyles are still possible, but the Industrial Revolution tied most workers' survivability to employer-provided employment.

Complicating this dependence on employment is the introduction of vast technological changes in the production, marketing, and distribution of goods and services. This, in turn, has led scholars to look for socially appropriate



arrangements for workers. For example, the young Karl Marx (1818–1883) believed history points toward an egalitarian society in which every worker will freely choose which activities to engage in. A century later, Hannah Arendt (1906–1975) proffered instead a socially stratified society (Arendt 1958), as in ancient Athens, where a knowledgeable few engage in (political) action, while others work (produce something) or labor (exert themselves physically).

Such speculations aside, work-related activities are now routinely viewed in economic terms. In particular, all types of paid activity are identified as labor (skilled and unskilled), and labor costs are largely determined by supply and demand. The supply of labor affects its cost; its comparative cost incentivizes globalization; and, as labor costs rise, manufacturers increasingly seek technological substitutes. In this context, work is conceptualized as remunerative employment and is commodified. Indeed, in the early twenty-first century, most people associate work with earning a living and, for the career-oriented, enhancing social status. Frequently, though, personal career aspirations exceed what is attainable under the prevailing economic system—whence arise a number of ethical issues.

These ethical issues include the following: Should the character of work be determined solely by the market? Who is obliged to work? Under what circumstances? Should remuneration provide a decent living for the worker (a living wage) and for the worker's family (a family wage)? Which, if any, institution(s) should provide or assure employment, humane working conditions, even meaningful and satisfying work? Are those unable to find employment entitled to subsistence? The social effects of scientific and technological change increase the salience of these issues.

## Thinking about Work Normatively

Practical approaches to such questions involve both ethical determinations and public policies. These, in turn, draw on research findings in such disciplines as history, economics, sociology, psychology, and jurisprudence, most of which have tended to reinforce socially favored attitudes toward work.

Work viewed as a commodity may be a service or a product. Employers decide which services or products to offer or generate in a given locale, and employ workers accordingly. Workers' remuneration is partly a function of their productivity in their economic environment. This productivity, in turn, is measured by subtracting overhead—that is, the expenses incurred by conducting a business on-site—from revenue received for services or products. Because a large part of overhead is labor costs, management strives to keep these to a competitive minimum, and may therefore resort to workforce downsizing, technological displacement, or workplace relocation. From these practices arise many ethical issues directed to fostering cross-cultural fairness in every aspect of the employment relationship, but especially those having to do with hiring, remuneration, working conditions, and retention. Counterbalancing this complex of employer responsibilities is the much touted concept of a work ethic.

Page 544 |

A work ethic is meant to inspire a worker to make his or her work a key measure of personal success (Rose 1985; Beder 2000). Industrial-era capitalists fostered a work ethic to maintain a sufficient supply of willing workers. But workplace rationalization and globalization (see below) have rendered the work ethic an unreliable incentive. Some theorists nonetheless still call for meaningful work (Schwartz 1982; Byrne 1990, ch. 5; Gini 2000) and a right to work. The latter expression sometimes signifies individualist opposition to unionization (Dickman 1987) and sometimes, gainful employment as such (Harvey 2004; Skocpol 1990). In either sense, it is stymied by cost-cutting strategies that replace higher- with lower-paid workers and human beings with machines.

Since the Great Depression in the 1930s, governments have assumed some responsibility for this problem by funding systems of unemployment compensation: twenty-two countries had done so by 1949, and sixty-eight countries by 2004. Some scholars argue that any structurally unemployed person is entitled to subsistence income. But governments increasingly require a claimant for unemployment compensation (as distinguished from generic welfare support) to have been employed or be actively seeking employment. Some countries, notably in Europe, have come to see that this approach fails to address the underlying reasons for unemployment and are introducing alternative programs (see below).

Many factors enter into a society's prevailing attitude regarding the appropriate connection between work and compensation. Key among these is the availability of employment for which compensation can be provided. Where such availability is limited, a society is likely to distinguish potential workers on the basis of their social and political affiliations (especially where corruption is endemic) and their class, gender, race, national origin, and so on. For example, work done by women is sometimes labeled differently from men's work to justify paying women less (Wright et al. 1987; Mohanty 2003). Indeed, in one society women might be excluded from the workforce, whereas in another (predominantly agrarian) society they may largely constitute the workforce. In short, the attitudes toward work that a society fosters reflect the



number and kinds of jobs that society is able to generate. These may vary depending on the society's level of development or indebtedness. That is, local factors tend to be less determinative of the appropriate size of a society's workforce the more the workforce becomes functionally global in scope.

Large corporations that dominate worldwide employment seldom assume full responsibility for the negative consequences of their decisions regarding workforce size or location. Even in the face of automation (Byrne 1990 , ch. 8) and globalization (Goudzwaard 1979 ), less socially disruptive strategies are possible. These are supported by calls for decent working conditions and a living wage (for example, the United Nations' Universal Declaration of Human Rights [1948], arts. 23 and 24; John Paul II 1981 ). Such declarations, though, forestall few if any downsizing decisions. Moreover, the unemployed are often stigmatized and considered personally responsible for their situation, even as governments dismantle programs that would mitigate the effects of unemployment (Beder 2000 ). These conflicting attitudes about work suggest that the norms whereby work has traditionally been assessed are no longer adequate to the challenges now emerging.

## Work, Slavery, and Unemp Loyment

The premodern fusion of work and life associated with primitives and studied by cultural anthropologists is now rare. The modern fusion of work and compensation is coming undone as the availability of jobs depends only partly on individual skills or personal dedication and partly on strategic workplace or workforce selections that contribute to profit maximization. In short, the industrial-age problem of worker displacement engendered by rationalization of process is now being compounded by globalization. Past analyses of work-related problems remain relevant, but need to be reviewed through new lenses if a humane approach to work is to be enhanced.

Already in the eighteenth century, some theorists began speculating about work opportunities in view of the inroads of mechanization. Building on earlier utopian visions, some social planners proposed founding communes that would use technologies selectively (Manuel and Manuel 1979 ). But classical economists, including Adam Smith (1723–1790) and David Ricardo (1772–1823), believed that an unfettered market would achieve “full employment equilibrium.” As explained by the French economist Jean-Baptiste Say (1767–1832), for example, supply creates its own demand, and this engenders full employment. This “law of markets,” or Say's law, predicts that as laborsaving devices replace workers, more products become available at prices more consumers can afford, thereby creating a need for additional workers. On this theory, unemployment is not structural (inevitable given system priorities), because a machine-challenged workforce will accept lower wages, which in turn diminishes the need for more expensive machinery (Gini 2000 ). The mature Marx predicted instead that capitalists' continued recourse to laborsaving devices would engender a great mass of marginalized and potentially insubordinate poor. This prediction has challenged theorists and politicians ever since.

Page 545 |

In the nineteenth and early twentieth centuries, laborers were assumed to have minimal intelligence, which Taylorization and Fordism sought to exploit. But such workplace strategies destroy job satisfaction, lowering productivity. So during much of the twentieth century, social scientists were recruited to improve workplace *human relations* and *quality of work life*, in large part to forestall unionization. In this vein, industrialist Henry Ford (1863–1947) once raised his workers' wages above then-current rates so his employees could afford to buy his automobiles. Still others, from John Stuart Mill (1806–1873) to Franklin D. Roosevelt (1882–1945), worried about what the British economist John Maynard Keynes (1883–1946) called *technological unemployment* (Gini 2000 ; Goudzwaard 1979 ). Contemporary defenders of Say's law do not share these concerns. Their *trickle-down economics*, however, do not address the emerging phenomenon of companies “churning” a literally global workforce to cut costs.

The problem, in brief, is how to accommodate the tendency (a) of employers to pursue the least costly means of production, and (b) of employees to seek the most advantageous compensation. In the Age of Discovery, made possible by the development of reliable ships, employers combined on-site production with slave labor. In the industrial era, employers welcomed wage laborers to their fixed-site factories. Now in the age of computers and electronic telecommunications, it is possible to locate supplies, employees, equipment, product, and vendors in whatever mix most favors a particular business. Enslavement is now a violation of human rights under international law, but, regrettably, it still constitutes a thriving illicit business that afflicts many vulnerable individuals, mostly from developing countries. Sometimes, transnational corporations or their subsidiaries mimic slave conditions in their factories (e.g., in China) and will continue doing so until prohibited under international law (Moran 2002 ) or until consumers assume responsibility (Young 2003 , 2004, 2006). For corporations gain monetary, trade, tax, and other advantages by locating facilities and employees so as to minimize total labor costs and maximize return on capital. Adding these strategies to automation, capitalist management strives to control workers, as did communist managers (Shaiken 1985 ). Control of the work process now depends, however, not just on routinizing a task but on where and by whom that task is most profitably carried out.



Most workers need to use tools, including highly complex machines that sometimes replace the workers themselves. Thus the availability of employment depends in part on the mix of technology and operators available or planned. Accordingly, contemporary experts, like their forebears, debate whether introducing new technologies expands or contracts job opportunities (Aronowitz and DiFazio 1994; Bix 2000 ). In fact, it does both, either by requiring additional workers, as did the assembly line, or by rendering skills previously in demand obsolete. Both containerization and automated manufacturing processes eliminated some jobs and created others, as have the computer and the Internet. The US Department of Defense's funding of science and engineering since World War II (1939–1945) has severely skewed educational and hiring priorities in many technical fields (Standler 2004 ). And computer-based network technology generally reduces complex layers of jobs to comparatively few, thereby rendering many employees superfluous.

Some laid-off workers can be retrained for new jobs (e.g., via such programs as that of the US Workforce Investment Act of 1998, which has had no authorized funding since 2003). These jobs, however, are often temporary or part-time, with no employer-provided benefits. In this context, company loyalty is less important than acquiring heightened skills for placement elsewhere. But unless these new skills are targeted to accessible market needs, retrained persons may be deemed *overqualified*. In any event, they are in a global labor pool that includes many others, some no less skilled, some in countries where compensation is substantially lower. Partly because of this cost-based redeployment of jobs, unemployment is much lower in many developing countries, especially in the Asia-Pacific region, than in some developed countries, especially in Europe. This situation remains subject, however, to profit-maximizing strategies, which are ever under review. So however work is distributed around the world, it will enhance a globalized buyer's market that primarily benefits corporate executives and investors.

Economic growth does tend to lower unemployment, albeit not precisely in accord with Okun's law (a 1 percent increase in the rate of economic growth lowers the unemployment rate by 0.3 percent). Lower unemployment, though, is not inconsistent with job obsolescence. Even as new service-sector jobs are being created in some countries, mainly for high-skill workers, this sector is itself being transformed by the same network technology that has reduced the number of jobs in manufacturing. As a result, skeptics predict, future job openings will be mainly in professions purportedly not replaceable by computers, such as retail sales, fast food, and truck driving.

Page 546 |

## Job Opportunities in a Global Workp Lace

The global marketplace harbors pressing ethical issues regarding workers' rights. But workers' rights are difficult to enforce in many countries. So business ethicists recommend codes of ethics that can be applied cross-culturally. These still tend to favor management, but public awareness of corporate executives' malfeasance and disproportionate compensation enhances support for tighter external regulation of business practices. The decades-old debate about corporate responsibility now takes into account stakeholder theories, which extend property rights to groups other than shareholders and management, such as plant-location cities, suppliers, and customers. But such theorizing is difficult to apply to consolidated professional services, such as health care, or to transnational combinations in industries, such as finance and telecommunications. In any event, market-conscious government and corporate leaders extol increases in productivity, however achieved, but they prefer not to relate this to downsizing (Beder 2000 ). Such politically motivated selectivity fails to address people's growing sense that the globalized marketplace is limiting their employment opportunities.

Global employment strategies that are advantageous to an employer disadvantage some potential employees more than others. Protective tariffs may be imposed to safeguard jobs tied to goods not produced at competitive costs. But the availability of substantially cheaper labor in or from developing countries disfavors retention of higher-paid employees in developed countries. Thus, by the year 2015, the US electronics industry will have transferred some three million jobs to India, and possibly no fewer to China. Comparable moves are planned in Europe, even in the face of austerity measures in place to counter the EU fiscal crisis. Meanwhile, China now produces four times as many apples as the United States, so that only growers in the state of Washington can still compete without tariff protections. Similarly, a high US tariff on orange juice keeps Brazil's product (48 percent of the world market versus the United States' 37 percent in 2006) from capturing the US market and enables Florida's protected orange growers to continue hiring Mexican migrant workers. By contrast, the recent collapse of major banks has led to the elimination of many thousands of high-paying jobs (100,000 in Europe and 10,000 in New York City from 2006 to 2012). To counter this endemic instability of employment opportunities, continued touting of a work ethic is not helpful. A better response would be to somehow apply Marx's maxim: from each according to ability, to each according to need (as the South African government has proposed). This ideal, however, is not easily introduced into the corporation-dominated global economy.

Economists who study the effects of globalization disagree about their ultimate ramifications. Some retain the optimism of



Say's law by arguing that the global economy as a whole improves whenever something is produced where it can be done efficiently and at a substantially lower cost than elsewhere. This thesis, which economists explain in terms of *comparative advantage*, needs to be modified to take into account both international monetary exchange rates and the losses incurred by displaced workers. Moreover, if the comparative advantage depends on exploiting workers (for example, in sweatshops) or engaging in illegal activities (such as money laundering), it is subject to additional ethical objections. To address such distortions of global fairness, both the International Labour Organization and its parent body, the United Nations, have identified certain core labor standards with which all employers should comply. Subscribed to by many UN member nations, these standards favor workers' right to organize and condemn forced or compulsory labor, child labor, and discrimination in employment or occupation. Much debated is whether the inclusion of these core labor standards in trade agreements would mostly benefit third world workers or first world corporations (Basu et al. 2003 ).

## Work in the Future

In the wake of the early twenty-first-century recession, many books, articles, and think-tank projects have examined "The Future of Work." This interest arises out of awareness that today's labor force of 2.9 billion (in 2012) will grow to 3.5 billion by 2030, and the gross mismatch now discernible among people's needs, job availability, and skill levels may persist.

This mismatch is presently addressed piecemeal rather than comprehensively. In the United States, for example, research shows that recent job growth is concentrated in a few select fields, such as energy and Internet communications (Wright 2012 ). In India, uneducated poor people barely survive by laboring in construction while oblivious of government benefits available to them (Kazmin 2012 ). In China, many skilled workers are leaving for countries where the political situation is more stable (Johnson 2012 ), and manufacturers, anticipating a scarcity of workers, are resorting to ever more innovative automation, even in factories where thousands of workers are presently employed (Jacob and Mishkin 2012 ). Likewise in developed countries, projects are underway to hand over a wide range of work activities to robots and other forms of automation (Regalado 2012 ).

Page 547 |

In short, unconstrained capitalism in and of itself has not responded well to the uneven availability of needed workers around the world. Neither outsourcing nor automation without more can correct this imbalance. For, so long as only economic aspects of the employment market are given serious consideration, narrowly appropriate business decisions will, however inadvertently, exacerbate the global job-scarcity problems that human beings increasingly face. This can be seen more clearly by considering three massive work-related problems that are not only economic but also social, political, and ethical.

First, workforce planners maintain that employability in the future will increasingly depend on the level of one's education and the type of degrees pursued. By 2020, ninety to ninety-five million low-skill workers (2.6 percent of the global workforce) will not be needed. By then also, forty-five million mid-skill workers (with secondary school and vocational training) and thirty-eight to forty million high-skill workers (college-educated) will be needed (Dobbs et al. 2012 ). In particular, there will be a growing need for STEM (science, technology, engineering, mathematics) professionals. College graduates in some countries are heavily concentrated in these fields: China (42 percent of graduates), South Korea (35 percent), and Germany (28 percent). Only 14 percent of American graduates are currently in STEM fields, but the United States will need many more of these workers in the years ahead. One program designed to address this need is Great Minds in STEM, which is steering Hispanic students into these fields (Dobbs et al. 2012 , 46, 66).

Second, in some countries, including the United States, funding levels for education and the education level of the workforce is declining (Mishel et al. 2012 ). Only 15.8 percent of the US workforce has completed four years of college, and fewer than 5 percent have advanced degrees. The growth rate of researchers in the United States is a third less than the rate for all OECD countries. Meanwhile, US science and engineering professionals are increasingly foreign born, including 37 percent of PhD scientists and engineers employed in the United States in 2000, 50 percent of US engineering faculty in 2004, 55 percent of US science and engineering PhD students in 2004, and 33 percent of PhD degree recipients in 2004. Each year, upwards of 100,000 high-skill scholars are admitted temporarily to the United States under the H-1B visa program. Green energy projects could greatly increase job opportunities (Pollin et al. 2008 ), but vested interests continue to block such moves. The task of matching workers' aspirations and workforce requirements calls for political and social inventiveness that comparatively few countries have yet displayed.

Third, the level of unemployment is very unevenly distributed around the world due to complex problems faced in different places (estimates are from *The CIA World Factbook* [2007–2011], unless noted otherwise). Unemployment estimates in



some countries (e.g., Djibouti, Turkmenistan, and Zimbabwe [2004 estimates]) are as high as 59 to 95 percent. Other countries struggle with unemployment rates of 21 to 46 percent (e.g., Afghanistan, Bosnia and Herzegovina, Gaza Strip, Kosovo, Nepal, Nigeria, Serbia, Spain, and Yemen [2003 estimates]). Still other countries have unemployment rates at or under 6 percent (e.g., Australia, Bangladesh, Germany, Laos, Malaysia, Norway, Pakistan, South Korea, and the United Arab Emirates). Successful projects that counter the unemployment problem in developing countries include shifting exports from raw materials to finished goods—for example, tires from China and processed cocoa from Côte d'Ivoire and Ghana (Dobbs et al. 2012 , 63).

In conclusion, profound ethical problems arise from the ever more globalized and technologically challenged workforce. If these problems are to be solved equitably and humanely, governments and civil societies will need to revise not only long-standing economic but also social and political assumptions. For their solution requires moving beyond the modern tendencies to divinize private property rights and base people's income eligibility almost exclusively on their work. Such issues are rarely considered in the United States or in the United Kingdom, where, however, programs are being developed to achieve a better work/life balance. In some places, though, such as Alaska, the Nordic countries, and Saudi Arabia, resource-based wealth has been distributed to all citizens, even those not participating directly in the generation of that wealth. Expanding such communitarian arrangements and devising others not directly dependent on the market are projects well worth considering (Offe and Heinze 1992 ), but their actualization will remain rare so long as such traditional capitalist values as property rights and the work ethic remain dominant. For the foreseeable future, then, few people in the world apart from the independently wealthy will be able to live decent lives without engaging in wage work. Their ability to find such work indefinitely is not assured.

**See Also** *Affluence ; Automation ; Business Ethics ; Capitalism ; Class ; Critical Social Theory ; Efficiency, Technical ; Entrepreneurship ; Globalization ; Industrial Revolution ; Levi, Primo ; Management, Models ; Marx, Karl ; Money ; Poverty .*

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Page 548 |

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Page 549 |

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