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THE CHANGING NATURE OF TECHNOLOGY, WORK AND SOCIAL RELATIONS

RISA L. LIEBERWITZ

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THE CHANGING NATURE OF TECHNOLOGY, WORK AND SOCIAL RELATIONS

*LA NATURALEZA CAMBIANTE DE LA TECNOLOGÍA,
EL TRABAJO Y LAS RELACIONES SOCIALES*

RISA L. LIEBERWITZ

*Professor of Labor and Employment Law
School of Industrial and Labor Relations
Cornell University*

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SUMMARY: 1. INTRODUCTION. 2. NEW TECHNOLOGY AS A “CONTESTED TERRAIN” FOR EMPLOYERS AND LABOR. 3. AUTOMATION AND ROBOTICS IN SERVICE INDUSTRIES: THE IMPACT ON LABOR AND THE PUBLIC. A. Economic impact: Loss of Jobs. B. Social costs to Employees and the Public. 4. UNIONIZATION AND COLLECTIVE BARGAINING ABOUT TECHNOLOGY. A. Political, social, and economic conditions: The shift to a service economy and the decline in union density. B. Legal Obstacles to Effective Collective Bargaining. 5. CONCLUSION.

ABSTRACT: This paper analyzes automation and robotics in service industries, examining the social and economic forces that influence the development and use of technology and its intersection with law and public policy. It will be analyzed the power and responsibility of the government in order to ensure that technology serves the public good by advancing the health and welfare of the community, including employees.

RESUMEN: Este artículo analiza la automatización y la robótica en las industrias de servicios, considerando las fuerzas económicas y sociales que influyen en el desarrollo y uso de la tecnología y su unión con la ley y la política pública. Se analizará el poder y la responsabilidad del gobierno para asegurar que la tecnología actúa en beneficio de la población mejorando la salud y bienestar de la comunidad, incluyendo a los empleados.

KEYWORDS: New Technology, digital worker, welfare, work and social relations, automation, robotics, bill of rights.

PALABRAS CLAVE: Nuevas tecnologías, trabajadores digitales, bienestar, relaciones laborales y sociales, automatización, robótica, declaración de derechos.

1. INTRODUCTION

The research and analysis for this article originated in a conference presentation in Spain in January 2020. I recall hearing the news at that time about a new coronavirus that had appeared in China. However, like most people outside the health care industry, I did not anticipate the global pandemic that ensued and the devastating impact it would have on our lives – including our work lives. Thus, while this article is based on pre-pandemic research and analysis, it has been strongly influenced by the labor and technology issues raised by the Covid-19 pandemic.

All countries have struggled with ways to combat the pandemic and to maintain their economy. In this context, the impact on employment depends to a great extent on the nature of the work in the employment sector. Many employees working in office settings have been able to work from home. However, in many service industries, which is the focus of this chapter, telecommuting is not an option. Moreover, the impact of the pandemic will differ greatly across the many types of service occupations. The effects range from retaining or losing employment to working under an increased level of health risks. Many restaurant and hotel employees have been laid off or discharged, while health care employees are considered “essential” but may face life-threatening working conditions.

Technology plays an important role in addressing workplace conditions during the pandemic. While the context of a pandemic creates high stakes crisis conditions, the underlying issues concerning the development and use of technology remain the same. As critiques of “technological determinism”¹ have long noted, technology is not a neutral phenomenon, but rather, is created as a means to advance certain social and economic goals. In the Covid-19 pandemic, technology has been developed and used to further positive social and economic goals. Face masks, ventilators, and other medical technology have protected the health of the public and employees. Web-based meetings, computers, and webcams have enabled workplaces to continue functioning through telecommuting. At the same time, technology may be used in ways that undermine the health and welfare of the public, including employees. In the context of “disaster capitalism,”² employers may

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1 DAVID F. NOBLE, *FORCES OF PRODUCTION: A SOCIAL HISTORY OF INDUSTRIAL AUTOMATION* (1984).

2 NAOMI KLEIN, *THE SHOCK DOCTRINE: THE RISE OF DISASTER CAPITALISM* (2007).

seek to further their class-based goals such as reducing workforces, rupturing employment relationships, and limiting the power of unions. From this perspective, technology such as robotics may advance important goals of protecting health through reduced human contact, but may have long-term effects of reducing employment and collective labor action.

This chapter analyzes automation and robotics in service industries, examining the social and economic forces that influence the development and use of technology. This analysis intersects with law and public policy. Given the social and economic impact of technological choices, government has the power and responsibility to ensure that technology serves the public good by advancing the health and welfare of the community, including employees.³ Thus, law and policy relating to technology can and should be aimed at furthering these public goals through means such as public subsidies, regulatory requirements, or legal restrictions.

2. NEW TECHNOLOGY AS A “CONTESTED TERRAIN” FOR EMPLOYERS AND LABOR

The development and implementation of technology in the workplace is carried out on “contested terrain,” as described in the groundbreaking work by economist Richard C. Edwards.⁴ The workplace and the employment relationship are sites of class-based power struggles between employers and labor that are implicated in all choices about the labor process. Technology has always been part of the choices that affect the power dynamics between employers and employees. One of the most significant technological choices that enabled employers to increase their power during industrialization was the automation of production on the assembly line. By standardizing work and giving each employee one repetitive job on the assembly line, the employer created replaceable employees who would produce replaceable parts. Thus, the assembly line advanced two goals central to capitalists: control over the workforce and retention of the lion share of the profits. Not only did the assembly line alienate workers from the product, but it eliminated workers’ control over their own time, as employers could control the pace of production by speeding up the assembly line.⁵

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3 See, generally, Martha Albertson Fineman, *The Vulnerable Subject and the Responsive State*, 60 EMORY L. J. 251 (2010).

4 RICHARD C. EDWARDS, *CONTESTED TERRAIN: THE TRANSFORMATION OF THE WORKPLACE IN THE TWENTIETH CENTURY* (1979).

5 *Id.* at 115-29.

The example of the assembly line reveals that choices about technology are neither neutral nor inevitable. As historian David F. Noble made clear in his critique of “technological determinism,”⁶ choices about technological change cannot be understood independently from social and economic forces. Rather, technological change is a means to advance social and economic goals, including class-based goals of employers.⁷ As Noble states, “Technology is itself political. You should look at it and say, Who’s sponsoring it? What are their interests? Who do they represent? What are they trying to do?”⁸ Posing these questions reveals that automation of production was not a “neutral” effort to improve efficiency, but rather a powerful means to achieve values and interests of capital.⁹ Thus, science and technology should be analyzed “as social relations and as socially constructed.”¹⁰ As philosophy of technology scholar Andrew Feenberg explains, social “context is not merely external to technology but actually penetrates its rationality, carrying social requirements into the very workings of the device. Thus, the ‘rational society’ is not the ‘one best way’ but contingent on values and interests.”¹¹

Although employers used the assembly line as a means of production to increase their power over workers, the workplace terrain is not a one-sided contest. Workers could use the assembly line as a means for collective labor action to subvert employer power. Assembly line production relies on the perpetual motion of the workers on the line, which creates the potential for collective labor resistance in support of labor goals. Even a small group of workers can disrupt the entire production process by shutting down their machines or work stations.¹²

Even as technology at the workplace has become more sophisticated, the same underlying questions remain regarding the social construction of technology and the way it advances certain interests and shapes social relations. Given the degree of power residing in employers, they are able to adopt technological change at the workplace to advance their interests in maintaining control and profits. The impact on workers will be the by-product of these choices, in some cases improving their working conditions, in other cases increasing employer control over workers, and in others resulting in job loss. For example,

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6 NOBLE, *supra* note 1.

7 In his critique, Noble describes technological determinism as being an “impoverished version of the Enlightenment notion of progress.” *Id.* at xii.

8 Jeffrey R. Young, *David Noble’s Battle to Defend the ‘Sacred Space’ of the Classroom*, *Chronicle of Higher Education* (Mar. 31, 2000), p. A47.

9 *Id.* NOBLE, *supra* note 1; DAVID F. NOBLE, *AMERICA BY DESIGN: SCIENCE, TECHNOLOGY, AND THE RISE OF CORPORATE CAPITALISM* (1977).

10 Frank Pasquale and Arthur J. Cockfield, *Beyond Instrumentalism: A Substantive Perspective on Law, Technology, and the Digital Persona*, 2018 MICH. ST. L. REV. 821, 851 (2018), quoting WENDA K. BAUCHSPIES, JENNIFER CROISSANT, AND SAL RESTIVO, *SCIENCE, TECHNOLOGY, AND SOCIETY: A SOCIOLOGICAL APPROACH 1* (2006).

11 Andrew Feenberg, *A Critical Theory of Technology*, in *THE HANDBOOK OF SCIENCE AND TECHNOLOGY STUDIES* 640 (Ulrike Felt, Rayvon Fouché, Clark A. Miller, and Laurel Smith-Doerr, eds. 2016).

12 EDWARDS, *supra* note 4, at 115-29.

robotic technology may be used to perform dangerous or monotonous manufacturing work, but employers may also use it to replace and lay off employees. The use of computers increases the ability of clerical workers to work efficiently, but also makes them subject to employer speed ups and surveillance.

Rather than leaving workers' interests in the employer's hands, a more equitable approach would include labor's interests in the decision-making process about technological change. A more democratic process of decision-making would expand the goals of technological innovation to improve both the work product and employees' work experience. Robotics could not only free workers from monotonous or dangerous tasks, but also free workers to use their worktime for more creative and safe work. Using computers could provide additional time for workers to innovate and to produce high quality work, rather than increasing the pressure on employees to work more quickly. Incorporating labor's interests in these ways would expand the goals of technology to enhance employees' autonomy and work satisfaction. Inclusion of labor's interests would not replace employers' interests, but would eliminate employers' unilateral power to choose technology to serve only their goals.

Just as the underlying social issues of technology are not new, neither are the questions of how to bring democratic decision-making into the workplace. Technology and workplaces are both socially constructed to achieve certain goals. A capitalist economic structure places unilateral power in employers to control workforce hiring, firing, and working conditions. In the contested terrain of the workplace, such unilateral employer power will be curtailed primarily through labor organizing and collective action. Government, even in a capitalist economy, may enhance labor rights through regulation of employer conduct and working conditions. In particular, laws creating and enforcing employees' right to unionize brings democracy into the workplace by reducing the inequality between employers and employees, including through collective bargaining over wages, hours, and terms and conditions of employment. Collective bargaining provides a democratic means to bring unions into decision-making about whether to adopt workplace technologies, how they should be used, and how employees' interests can be fully considered.

3. AUTOMATION AND ROBOTICS IN SERVICE INDUSTRIES: THE IMPACT ON LABOR AND THE PUBLIC

Before delving further into the collective bargaining process, the following section of this chapter analyzes the nature of technological change in service industries and its

impact on employees and the public. In particular, this section examines recent technological innovations in robotics in service industries such as hotels and restaurants and the human and social costs of such changes, which unions may bring to the table in collective bargaining.

A. Economic impact: Loss of Jobs

The impact on employees of automation, including robotics, often concerns the loss of jobs, as employees are replaced by machines that can work in ways that employers consider to be more efficient. From the employer's perspective, "efficiency" will usually mean that automation saves labor costs and increases employer control over the work process. Labor cost savings include the elimination of wages and benefits, and avoiding expenses related to injuries and human error. A robot may be able to do the work more quickly and without breaks other than for machine maintenance. Further, the robot does not have personal problems of illness or family concerns that may interfere with work. Labor cost savings also intersect with employers' increased control over the work process. Robots do not complain or make demands about working conditions, either individually or collectively with other employees. Nor do robots unionize or go on strike to build collective power to further their demands.¹³

While automation may be labor saving devices, there are human costs. Automation is often accompanied by job loss, as in the steel industry, where automation and digitalization has resulted in job loss, even as it changes the skills needed in the workforce.¹⁴ Automation, including robots, has been used across the manufacturing and service sectors, from automobile plants to restaurants.¹⁵ In the hospitality and retail sectors, computers and the Internet have enabled employees to engage in work at central locations, such as call centers to make customer reservations or respond to customer inquiries, which may reduce the number of employees needed in multiple locations.¹⁶ Such changes can also lower labor costs as work is shifted to countries where wages are lower. This affects all sorts

13 See, Cynthia Estlund, *What Should We Do After Work? Automation and Employment Law*, 128 *YALE L.J.* 254, 284-95 (2018).

14 See, Teresa Annunziata Branca, Barbara Fornai, Valentina Colla, Maria Maddalena Murri, Eliana Streppa, and Antonius Johannes Schröder, *The Challenge of Digitalization in the Steel Sector*, 10 *METALS* 288 (2020), <https://www.mdpi.com/2075-4701/10/2/288/htm>.

15 James L. Atkinson, *Automating the Workplace: Mandatory Bargaining Under Otis II*, 1989 *U. ILL. L. REV.* 435, 437-41 (1989).

16 Nancy B. Schess, *Then and Now: How Technology Has Changed the Workplace*, 30 *HOFSTRA LAB. & EMP. L.J.* 435, 450 (2013); Vikas Bajaj, *A New Capital of Call Centers*, *NEW YORK TIMES* (Nov. 25, 2011), at <http://www.nytimes.com/2011/11/26/business/philippines-overtakes-india-as-hub-of-call-centers.html?pagewanted=all&action=click&module=Search®ion=searchResults%230&version=&url=http%3A%2F%2Fquery.nytimes.com%2Fsearch%2Fsite%2Fsearch%2F%3Faction%3Dclick%26contentCollection%3DU.S.%26region%3DTopBar%26module%3DSearchSubmit%26pgtype%3Darticle%23%2Fcall%2520centers%2520india>.

of employees, including professionals¹⁷ such as radiologists who can receive and read X-rays at any location.¹⁸

Job losses result not only by using new technology as a means to outsource work to low-wage employees. The workforce is reduced, as well, by shifting the work to consumers who make their own airline, hotel, and restaurant reservations, shop for all sorts of products online, and use online sources to get help with a product. Even where a customer prefers to talk with an actual employee, the business often makes this more difficult or impossible through automated telephone responses that force customers into a maze of required steps, involve long wait times on the telephone, and direct customers to the business website. More recently, service industries have shifted the work to consumers at the business site, such as hotels that have replaced front desk employees with automated check-in¹⁹ or restaurants that require customers to order their meals on a computer program from their table.²⁰

A recent innovation in the service sector has been the use of robots to replace service employees. Some of these changes are in the experimentation or pilot phase, such as Hilton Hotel's introduction of a robot concierge developed in collaboration with IBM. The robot is called "Connie," named after the hotel company's founder, Conrad Hilton.²¹ Unlike industrial robots used in the manufacturing sector, robots in the service sector are designed to have a humanoid and friendly appearance to facilitate their interaction with customers.²² Connie has been described as not replacing "human hotel staff," but rather "to somewhat lighten the load, assisting with visitor requests, personalizing the guest experience, and empowering travelers with the information they need to fully plan and enjoy their trips."²³ The IBM artificial intelligence programming enables Connie to learn through experience of interacting with hotel guests. Another humanoid robot, named "Pepper," has been used as a concierge in Marriott Hotels and Mandarin Oriental Hotels. Pepper has facial recognition technology that enables it to identify and respond to guests based on their gender, age, and mood, including telling jokes.²⁴

17 Erika Kinetz, *Business: Who Wins and Who Loses as Jobs Move Overseas*, NEW YORK TIMES (Dec. 7, 2003) at <http://www.nytimes.com/2003/12/07/business/business-who-wins-and-who-loses-as-jobs-move-overseas.html?action=click&module=Search®ion=searchResults%230&version=&url=http%3A%2F%2Fquery.nytimes.com%2Fsearch%2Fsite%2F%23%2Foutsourcing%2Bprofessional%2Bjobs%2F>.

18 Andrew Pollack, *Who's Reading Your X-Ray?*, NEW YORK TIMES (Nov. 16, 2003).

19 See, Julie Weed, *Speedy Check-In Lets Hotel Guests Bypass Front Desk*, NEW YORK TIMES (Mar. 18, 2013).

20 Anna Wolfe, *3 Reasons Automation is Redefining Restaurants*, HOSPITALITY TECHNOLOGY (Oct. 18, 2019) <https://hospitalitytech.com/3-reasons-automation-redefining-restaurants>.

21 Lulu Chang, *Call Him Connie, but Hilton's new robot receptionist is powered by IBM's Watson*, DIGITAL TRENDS (March 9, 2016), <https://www.digitaltrends.com/cool-tech/hilton-connie-concierge/> accessed November 29, 2020.

22 Todd Werkhoven, *Robots Everywhere: The Promise of Humanoid Robots*, DIGITAL TRENDS (July 24, 2020), <https://www.digitaltrends.com/cool-tech/robots-everywhere-episode-4/>.

23 Chang, *supra* note 21.

24 Nora Walsh, *The Next Time You Order Room Service, It May Come by Robot*, New York Times (Jan. 29,

Airports have introduced robots to assist customers by providing information, guiding them to their gate or other location, or even to provide entertainment to customers.²⁵ Restaurants in China, Germany, and other countries have introduced robots as wait staff²⁶ and bartenders.²⁷ Hotels have used non-humanoid robots to deliver towels and other products to customers in hotel rooms.²⁸

B. Social costs to Employees and the Public

Beyond the devastating economic impact on employees whose jobs are changed or even replaced by automation and robots, there are social costs to employees and the public. Automation and other technological developments not only change the nature of employees' work, but often increase the employer's control over employees. Employers can monitor and record employees' calls on employer-owned telephones; count keystrokes of employees typing on employer-owned computers; videotape employees in work areas and non-work areas; track employee locations through employer-issued electronic devices; monitor employee e-mail on employer-owned e-mail systems; and monitor employees' social media accounts, such as Facebook.²⁹ The reach of the technology enables employers to monitor and control employees without the employer being physically present. This places increased pressure on employees to conform to work standards as dictated by the employer, including speed of work, production quotas, and uniform scripts in communicating with customers. The level of monitoring becomes continually more invasive with new measures such as wearable tracking technology.³⁰ Such control by employers extends beyond the workplace as employees engage in telework or after hours work on computers

2018) <https://www.nytimes.com/2018/01/29/travel/the-next-time-you-order-room-service-it-may-come-by-robot.html>; *Pepper at Courtyard by Marriott: Impact Story*, https://www.youtube.com/watch?v=ocmiCmHS1_c accessed November 29, 2020.

25 Bill Read, *Rise of the Airport Robots*, Royal Aeronautical Society (Aug. 15, 2017), <https://www.aerosociety.com/news/rise-of-the-airport-robots/>.

26 Josy Forsdike, *I, robot-waiter: inside the Robot Restaurant - in pictures*, THE GUARDIAN (Jan. 12, 2013) <https://www.theguardian.com/technology/gallery/2013/jan/12/robot-restaurant-in-pictures>; Qingxiao Yu, Can Yuan, Z. Fu and Yanzheng Zhao, *An Autonomous Restaurant Service Robot with High Positioning Accuracy*, 39 INDUSTRIAL ROBOT: AN INT'L J. 271 (2012).

27 *Vorsprung Durch Tech Drink! Carl the Robot Bartender Serves Customers at German Bar*, DAILY MAIL (July 27, 2013) <https://www.dailymail.co.uk/news/article-2379966/Carl-robot-bartender-pours-drinks-customers-German-bar.html>.

28 Walsh, *supra* note 24.

29 See, Schess, *supra* note 16; William A. Herbert, *Can't Escape From the Memory: Social Media and Public Sector Labor Law*, 40 N. KY. L. REV. 427 (2013). One survey of 300 firms reported that 43 percent of employers monitor employee e-mail; 66 percent monitor website connections by employees; and 45 percent monitor employee time spent, content or keystrokes entered on computers. Pauline T. Kim, *Electronic Privacy and Employee Speech*, 87 CHI.-KENT L. REV. 901, 913-14 (2012).

30 Ifeoma Ajunwa, *Algorithms at Work: Productivity Monitoring Platforms and Wearable Technology as the New Data-centric Research Agenda for Employment and Labor Law*, 63 ST. LOUIS U. L.J. 21 (2019).

and other electronic devices at home.³¹ The growth in employer monitoring and surveillance through electronic technology affects employees' relationships with each other. As employers become virtually omnipresent, employees may hesitate to communicate with each other about the possibilities of unionization or other collective action.

The chilling effect on union activities will be deepened by employees' fears of layoffs due to automation, including the use of robots to replace employees. Further, the use of robots has the effect of undermining social relationships that are so important to employee organizing and unionization. Whether in manufacturing or service work, robots objectify the work by removing the human element from the work process and breaking down the job into mechanical tasks. Regardless of the nature of the industry, the use of robots will reduce the number of employees and the daily human interactions at the workplace. In the service industry, the effects may be even more pronounced, given the social nature of the work. In service industries such as hotels, restaurants, and airports, employees work together to serve the public. They may coordinate their work, ask each other for assistance and advice, and interact with each in carrying out daily activities and dealing with unexpected events. These interactions build relationships as employees get to know each other professionally and personally. Expanding the use of robots to replicate service work objectifies and commodifies the work, removing the human element that enables employees to make their work better and more meaningful. The human quality of the work is individual for each employee and collective as employees work together.

The social costs of automation and robots in the service industry extend to customers who face the dehumanizing nature of increasing interactions with websites, automated service on telephone calls, and electronic-only service in hotels and restaurants. The customer is also dehumanized to some extent. For example, in response to automated questions on a telephone call, the customer begins talking more like a robot. While such "labor-saving" technologies may be more convenient for customers in many cases, they are frustrating and alienating when a customer needs service beyond the automated and rigid menu of choices. Further, the technology increases the business's control over employees and consumers by limiting the options available for service delivery, restricting availability of information, and reducing the discretion of employees to find ways to assist consumers.

Reducing the social interaction between employees and customers may have a negative effect on labor organizing. During unionization and collective bargaining campaigns, public support for employees can put pressure on employers to cease engaging in anti-union tactics and to reach an agreement with the union. In the service industry, one example is the public support for United Parcel Service (UPS) drivers during the Teamsters

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31 See, Schess, *supra* note 16, at 442-43 (discussing telecommuting).

Union strike in 1997. This public support was based in how much customers liked and appreciated the drivers they had gotten to know over the years of their deliveries. These social relationships, together with the customers' sympathy with the Teamsters' fight against part-time work and low wages, created the foundation for the public's solidarity with the strikers.³² Conversely, employers benefit from reducing public support for labor campaigns. It may seem ironic that employers in service industries express concern about the difficulty of "humanizing" robots to improve their interactions with customers. After all, there is an easy solution to the problem, as employers could humanize the interaction with the public by hiring people to do the work. The irony disappears, however, when the employer "benefit" of eliminating labor is factored into the search for "human-like" robots. Human-like robots will not unionize and will not develop relationships with the public that will support them in labor campaigns.

Using robots in service industries may also reinforce social biases based on racial, gender, and other forms of stereotypes.³³ It might seem that robots could be used to eliminate such biases that result from social inequalities. However, the efforts to create human-like robots include choices about whether robots should appear to be a certain gender, race, ethnicity, or age. Most robots are white, which reflects stereotypes concerning positive responses by customers to white employees. Further, programming the robot to speak and respond includes the nature of the language and syntax, levels of formality, humor, and whether responses should reflect certain norms and expectations. All of these choices involve the potential for reinforcing social norms, biases, and inequalities.

4. UNIONIZATION AND COLLECTIVE BARGAINING ABOUT TECHNOLOGY

Given the economic and social impact of technology in the workplace, decision-making about technological change should include the collective interests of employees. This is consistent with US labor law, which requires employers to bargain with unions over working conditions for the employees in the bargaining unit represented by

32 Joe Allen, *The UPS Strike Two Decades Later*, JACOBIN (Aug. 4, 2017). [HTTPS://WWW.JACOBINMAG.COM/2017/08/UPS-STRIKE-TEAMSTERS-LOGISTICS-LABOR-UNIONS-WORK](https://www.jacobinmag.com/2017/08/UPS-STRIKE-TEAMSTERS-LOGISTICS-LABOR-UNIONS-WORK).

33 See, Christoph Bartneck, Kumar Yogeeswaran, Qi Min Ser, Graeme Woodward, Robert Sparrow, Siheng Wang, Friederike Eyssel, *Robots and Racism*, Session We-1B: Societal Issues: Abuse, Trust, Racism, HRI'18, March 5-8, 2018, Chicago, IL, USA, <https://ewh.ieee.org/soc/ras/conf/financiallycosponsored/hri/2018/humanrobotinteraction.org/2018/proceedings/index.html>.

the union. However, employees in the US face political, economic and legal obstacles in union organizational campaigns and in collective bargaining.

A. Political, social, and economic conditions: The shift to a service economy and the decline in union density

Deeply entrenched political, legal, and social structures in the US create barriers to redistribution of wealth and power to the working class. The US has relied more on the market than the State to provide for basic needs such as health care, paid sick leave, and retirement benefits. Further, under the common law doctrine of “employment-at-will,”³⁴ employers have unilateral power and control over hiring, firing, and working conditions, unless limited by statutes or contract. Therefore, individuals’ ability to meet their needs, whether through wages, benefits, or job security depends primarily on unionization and collective bargaining.

After World War II, the 35 percent private sector unionization rate created a strong base for collective bargaining for higher wages and benefits.³⁵ However, multiple factors have contributed to the decline in union density, leading to the current private sector unionization rate at less than 7 percent.³⁶ Increased capital mobility in the 1970s and 1980s moved manufacturing facilities to the anti-union southern states and then to low-wage developing countries.³⁷ This resulted in job losses in highly unionized sectors such as the steel and automobile industries as the US shifted to a largely non-union service economy with many low-wage jobs.³⁸ About three-fifths of all employees paid at or below the federal minimum wage work in the leisure and hospitality industry, almost entirely in restaurants and other food services.³⁹

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34 Deborah A. Ballam, *Exploding the Original Myth Regarding Employment-At-Will: The True Origins of the Doctrine*, 17 BERKELEY J. EMP. & LAB. L. 91, 93-98 (1996) (arguing that the employment-at-will doctrine has been part of U.S. common law since the earlier colonial period).

35 Unionized employees, on average, have 11.2 percent higher wages than comparable employee in nonunionized workplaces. Further, collective bargaining helps close wage gaps for women, Black and Hispanic workers. 94 percent of unionized employees have access to employer-sponsored health benefits, while only 68 percent of non-union workers have benefits; 91% of unionized employees, but only 73 percent of nonunion employees, have access to paid sick days. Celine McNicholas, Lynn Rhinehart, Margaret, Poydock, Heidi Shierholz, and Daniel Perez, *Why Unions are Good for Workers—Especially in a Crisis like COVID-19*, ECONOMIC POLICY INSTITUTE (Aug. 25, 2020), <https://www.epi.org/publication/why-unions-are-good-for-workers-especially-in-a-crisis-like-covid-19-12-policies-that-would-boost-worker-rights-safety-and-wages/>

36 In 2019, the union membership rate was 10.3 percent overall, with 33.6 percent unionization of public sector workers, but only 6.2 percent unionization of private sector workers. U.S. Bureau of Labor Statistics, “Union Members Summary,” (Jan. 22, 2020), <https://www.bls.gov/news.release/union2.nr0.htm>.

37 BEVERLY J. SILVER, *FORCES OF LABOR: WORKERS’ MOVEMENTS AND GLOBALIZATION SINCE 1870*, 137-38, 154-55 (2003).

38 Nancy K. Cauthen, *Improving work supports: Closing the financial gap for low-wage workers and their families*. EPI Briefing Paper #198, 1 (Oct. 2, 2007). <http://www.sharedprosperity.org/bp198.html>. As Cauthen notes: “[S]uch jobs typically offer few of the employer-sponsored benefits – such as health insurance, paid sick leave, retirement plans, and the flexibility to deal with family needs – that higher-income workers often take for granted” *Id.*

39 U.S. Bureau of Labor Statistics, “Characteristics of Minimum Wage Workers,” (Apr. 2020), <https://www.bls.gov/opub/reports/minimum-wage/2019/home.htm>.

Unionization would significantly improve wages, benefits, and working conditions in the low-wage service economy, which covers a wide range of businesses including retail stores, hospitals, nursing homes, hotels, and restaurants. However, service industry employers have actively opposed union organizational campaigns. Moreover, employers have taken actions to restructure the employment relationship in ways that create additional obstacles to unionization. In the 1990s, employers increasingly hired part-time or temporary employees, whose insecure job status makes it more difficult to unionize.⁴⁰ These tactics also seek to distance or remove the employer from the employment relationship. Temporary employees are often “leased” through temporary employment agencies.⁴¹ More recently, in the “gig economy,” which includes work through the technology of online platforms, employers have denied that they have an employment relationship by labeling workers as independent contractors.⁴² This is often a misclassification that frees the employer from legal obligations such as payroll taxes, health insurance, and workers compensation for job-related injuries.⁴³ Moreover, independent contractors are excluded from rights to unionize under the National Labor Relations Act.⁴⁴ In this context, employers’ use of robotic technology can be seen as another tactic that ruptures or eliminates the employment relationship.

B. Legal Obstacles to Effective Collective Bargaining

Against this background, employees in service industries face an uphill battle in any efforts to unionize. In some service industries, union density has increased, including the hotel industry in large cities such as New York and Las Vegas.⁴⁵ This industry has been hit hard by major job losses during the Covid-19 pandemic.⁴⁶ In this context, technology that replaces human labor may be an issue in the post-pandemic future. However, U.S. labor law creates obstacles to collective bargaining over business decisions that could result in employee job loss, including technological change.

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40 Frances Raday, *The Insider-Outsider Politics of Labor-Only Contracting*, 20 COMP. LAB. L. & POL’Y J. 413, 418-20 (1998-1999).

41 Risa L. Lieberwitz, *Contingent Labor: Ideology in Practice*, in *Feminism Confronts Homo Economicus* (pp. 324-337) (M. Fineman & T. Dougherty, eds. 2005).

42 See, Ileen DeVault, Maria Figueroa, Fred B. Kotler, Michael Maffie, and John Wu, *On-Demand Platform Workers in New York State: The Challenges for Public Policy*, ILR Worker Institute (April 30, 2019), <https://www.ilr.cornell.edu/node/293371>.

43 *Id.* at 20, 29-30.

44 29 U.S.C. §152(3).

45 See, Robert Kuttner, *The Union Difference*, THE AMERICAN PROSPECT (Sept. 7, 2020), <https://prospect.org/labor/the-union-difference-new-york-hotel-pandemic/>; James Bandler, *Inside the Union Where Coronavirus Put 98% of Members Out of Work*, PROPUBLICA (April 9, 2020), <https://www.propublica.org/article/inside-the-union-where-coronavirus-puts-98--of-members-out-of-work>.

46 *Id.*

Under the NLRA, union representation is done at the level of the firm. The union elected by a majority of employees in a bargaining unit (described by job titles) becomes the exclusive bargaining representative of all the employees in that unit. The employer has a duty to bargain with the union over wages, hours, and other terms and conditions of employment (“mandatory subjects”). The parties may, but are not obligated to, bargain over non-mandatory (or “permissive”) subjects. The employer must bargain in good faith with the union over proposed mandatory subjects until the parties reach either an agreement or an impasse.⁴⁷ At the point of impasse – where the parties are bargaining in good faith, but cannot reach agreement – the employer may make unilateral changes consistent with the employer’s proposal at the point the parties reached an impasse.⁴⁸

Many issues clearly fall within the category of mandatory subjects of bargaining, including remuneration, workplace safety, paid leaves, insurance, pensions, posting openings for promotions, and grievance processes. The disputes over the scope of mandatory subjects tend to concern whether the employer has a duty to bargain over basic business decisions, such as decisions to lay off employees, subcontract bargaining unit work, or partially close the business. In 1981, in *First National Maintenance v. NLRB*,⁴⁹ the US Supreme Court adopted a benefits/burdens balancing test to resolve such disputes, weighing the benefit to labor-management relations and the collective bargaining process against the burden on the employer in being required to bargain with the union.⁵⁰ In such cases, unions argue that business decisions that have an economic impact on employees are well-suited for collective bargaining, particularly when the employer is seeking to reduce labor costs. Employers emphasize their managerial prerogative to make unilateral decisions about issues that go to the “core of entrepreneurial control.”⁵¹ Given the weight that the courts place on managerial prerogative, the balancing test tends to favor employer arguments that the decision about such business decisions is not a mandatory subject of bargaining.⁵² Even if an employer has no duty to bargain over a decision (e.g. a decision to lay off employees), the employer does have a duty to bargain over the impact or effects of the decision, such as severance pay and the order of layoff or recall.⁵³

It is not clear whether decisions to change technology through automation or robotics fall within the scope of mandatory subjects of bargaining. Since the facts in *First National Maintenance* did not concern automation of work, the Court declined to state how the

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47 See, Ron Brown, *Robots, New Technology, and Industry 4.0 in Changing Workplaces. Impacts on Labor and Employment Laws*, 7 Am. U. Bus. L. Rev. 349, 374 (2018).

48 Atkinson, *supra* note 15, at 447-48.

49 452 U.S. 666 (1981).

50 *Id.* at 679.

51 See, *Fiberboard Paper Prods. Corp. v. NLRB*, 379 U.S. 203, 223 (1964) (Stewart, J., concurring).

52 See, Atkinson, *supra* note 15, at 448-50.

53 *Id.* at 442-43.

balancing test would apply to employer decisions about automation, stating only that such decisions “are to be considered on their particular facts.”⁵⁴ In cases decided prior to the Supreme Court’s decision *First National Maintenance*, the NLRB had held that technology that affects job security is a mandatory subject of bargaining.⁵⁵ However, in future cases about technological change, including robots, the NLRB and the courts will apply the benefits/burdens balancing test to determine the scope of the duty to bargain. Where employers decide to use automation and robotics because of labor cost savings, unions will have strong arguments that collective bargaining will benefit the labor-management relationship by negotiating over issues that affect employees’ interests in wages and job security. However, under the balancing test, the NLRB and the courts show significant deference to the employer’s managerial prerogative to make decisions that may affect the nature and scope of the business. The NLRB has applied the balancing test to hold that an employer has a duty to bargain over a decision to relocate bargaining unit work where that decision was motivated directly or indirectly by labor costs.⁵⁶ Even so, the NLRB also held that the employer’s decision would not be a mandatory subject of bargaining if the employer could prove that the relocation would substantially change the work performed or if bargaining over the decision would be futile in light of factors showing that the employer’s decision was inevitable.⁵⁷ Applying this reasoning to decisions about automation or robotics technology, the employer could argue that even where labor costs are a consideration, such technological changes are major capital investments that lie at the core of entrepreneurial control and that are needed to maintain their competitiveness in the global market.⁵⁸

If the decision over whether to adopt new technology is not a mandatory subject of bargaining, the employer still has the duty to bargain over the effects of the decision, including issues such transfers, order of layoffs and severance pay. Unions and employers have engaged in “effects bargaining” over changes in technology, including collective bargaining clauses requiring employer notification to the union of technological changes, creation of joint union-management committees to decide how to apply the new technology, requirements for employee retraining programs, monetary compensation, and health and safety issues.⁵⁹

Effects bargaining, however, does not involve union participation in shaping decisions about technology. As philosophy of technology scholar Andrew Feenberg explains, “[c]

54 *First Nat’l Maint. Corp. v. NLRB*, 452 U.S. 666, 686 n.22 (1981) (“In this opinion we intimate no view as to automation which are to be considered on their particular facts.”).

55 *Brown*, *supra* note 47, at 373-75.

56 *Dubuque Packing Co.*, 303 NLRB 386 (1991).

57 *Id.* at 391. See, Shelby Silverman, *Outsourcing and Collective Bargaining: A “Win-Win” for Employers and Employees*, 13 *CARDOZO J. INT’L & COMP. L.* 601, 615-16 (2005).

58 Atkinson, *supra* note 15, at 438-39.

59 Atkinson, *supra* note 15, at 455-56; *Brown*, *supra* note 47, at 362-63, 373-74.

ritical theory of technology...propos[es] an explicit theory of democratic interventions into technology” at all stages to address how it is designed and used.⁶⁰ In the 1980s, the International Association of Machinists in the US proposed that Congress adopt a “New Technology Bill of Rights,” including a provision stating, “Workers, through their trade unions and bargaining units, shall have an absolute right to participate in all phases of management deliberations and decisions that lead or could lead to the introduction of new technology...”⁶¹ Applying this approach to collective bargaining would enable the employer and union to address decisions about technology in ways that consider a wide range of business and labor interests. Negotiations could include issues of cost savings and job retention.⁶² More broadly, the employer and union could negotiate ways to use automation to free employees from monotonous or dangerous work and enable them to engage in more creative work. Based on employee knowledge about the work process, the union could also negotiate about improving the use of technology to increase the employees’ quality of work. Such creative use of collective bargaining, however, depends on the employer and union’s mutual commitment to maintain employment by preserving existing jobs or developing employees’ knowledge and skills for new positions. In service industries, this could result in saving jobs, expanding employee opportunities, and improving the quality of service to the public.

6. CONCLUSION

Understanding technology as a social phenomenon opens the potential to treat decisions about technological change as contingent on choices of social and economic goals. Leaving decisions about workplace technology to the employer’s unilateral control, therefore, will result in technological change that furthers solely the employer’s goals, often at the expense of employees’ economic and social well-being. Given the trends in the current gig economy where employers seek to rupture the employment relationship, it is predictable that employers will continue to use technological change as a tool to eliminate jobs or label employees as independent contractors. Such tactics advance employer goals of controlling employee conduct, reducing labor costs, and avoiding unionization.

60 Feenberg, *supra* note 11 at 635. See also, Brishen Rogers, *The Law and Political Economy of Workplace Technological Change*, 55 HARV. C.R.-C.L. L. REV. 531, 580-82 (2020).

61 Atkinson *supra* note 15, at 440, citing, *Technology’s Politics: International Association of Machinists*, 8 NOVA. L. REV. 482, 483-85 (1984).

62 Atkinson, *supra* note 15, at 460.

By contrast, a democratic approach to technological change would open the decision-making process to all those affected, which would include the interests of labor as well as management. The inclusion of all interests in such decisions is equally important in all types of work, whether in manufacturing or service occupations. Regardless of the job, choices about technological change, such as automation and robotics, will affect employees' working conditions in negative or positive ways, ranging from the potential to threatening job security, to enhancing work, or to expanding opportunities to build new skills. In the service sector, such technological change will also affect the public's experience in negative or positive ways, ranging from the potential to objectifying customers through their interactions with robots, to improving efficiency in service delivery, or to enabling employees to spend more time to improve the quality of customer service.

The State has an important role and responsibility to ensure the inclusion of the interests of employers, labor, and the public welfare in decision-making about technology. At a minimum, the State should strongly enforce employees' rights to unionize and engage in collective bargaining on a broad scope of employment conditions, including technology. In the US, the weak enforcement of labor rights undermines employees' ability to protect their collective interests in health, safety, job security, and meaningful work. Strengthening collective bargaining would enhance the interests of employees and the public, as good working conditions will enable employees to produce better work products. In the service sector, the impact on the public is immediate, as collective bargaining for well-paid jobs with safe working conditions will enhance employees' ability to improve customers' experience. In the post-pandemic period, such democratic forms of decision-making will be crucial to ensure that choices about workplace technology protect the collective interests of labor to respect, dignity, and meaningful work.