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# Artificial Intelligence and Labour
## Perspectives from Organized Labour in Canada

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Résumé de l'article

Nous vivons dans une époque technologique importante de l'histoire, dans laquelle des experts du milieu universitaire, des instituts de recherche et des organisations non gouvernementales postulent que les développements de l'intelligence artificielle entraîneront des perturbations généralisées sur le marché du travail. Cet article répond à cette affirmation en demandant si les syndicats considèrent l'intelligence artificielle comme une menace tout aussi imminente. De plus, il demande comment le travail se prépare à défier le pouvoir du capital alors que les employeurs tirent parti de l'automatisation à une époque de précarité néolibérale. Les documents publiés en ligne par les syndicats affiliés au Congrès du travail du Canada sont examinés ici au moyen d'une analyse discursive. Nos conclusions indiquent que même si aucun syndicat n'a exprimé son opposition au changement technologique, beaucoup se sont interrogés sur la manière dont les employeurs l'exploitent sur le lieu de travail et sur ses effets géopolitiques et sociétaux plus larges qui affectent leurs membres et leurs communautés. Nous constatons que la discussion autour du changement technologique met l'accent sur le fait que la technologie rend le travail meilleur et plus sûr dans un environnement de travail centré sur l'humain. Dans l'ensemble, le mouvement syndical au Canada est attentif aux problèmes dans le contexte politico-économique de l'automatisation, du travail précaire, des impacts sur la communauté, du rôle du gouvernement et de la réglementation, des compétences et du recyclage, et de la perte d'emploi, entre autres. Compte tenu de la vision de la technologie détenue par les travailleurs organisés, nous remettons en question les perspectives de techno-pessimisme et de techno-optimisme et soulignons plutôt que les syndicats sont dans une position unique pour à la fois réagir et s'adapter à l'évolution du travail. Des interventions stratégiques élargies autour de l'automatisation sont nécessaires pour lutter contre le travail précaire et l'érosion des conditions de travail à l'heure actuelle et dans les années à venir, et nous soulignons certains efforts notables qui sont en cours.

## RESEARCH NOTE / NOTE DE RECHERCHE

# Artificial Intelligence and Labour: Perspectives from Organized Labour in Canada

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**Abstract:** We are in an important technological moment in history, where experts in academia, research institutes, and non-governmental organizations posit that developments in artificial intelligence (AI) will lead to widespread disruptions in the labour market. This article addresses this claim by asking if organized labour sees AI as an equally imminent threat. Moreover, it asks how labour is preparing to challenge the power of capital as employers leverage automation in an age of neoliberal precarity. Online materials published by unions affiliated with the Canadian Labour Congress are reviewed here through discursive analysis. Our findings indicate that while no union has expressed opposition to technological change, many have questioned how employers leverage it in the workplace and its wider geopolitical and societal effects that affect their members and communities. We find that discussion around technological change emphasizes that technology makes work better and safer in a human-centred work environment. Overall, organized labour in Canada is attentive to issues within the political-economic context of automation, precarious work, community impacts, the role of government and regulation, skills and retraining, and job loss, among others. Given the view of technology held by organized labour, we challenge perspectives of both techno-pessimism and techno-optimism and highlight instead that labour unions are in a unique position to both respond and adapt to the evolution of work. Expanded strategic interventions around automation are needed to combat precarious work and the erosion of working conditions at present and in the coming decade(s), and we point to some notable efforts that are underway.

**Keywords:** artificial intelligence, automation, labour, technological change, gig economy, trade unions

**Résumé :** Nous vivons dans une époque technologique importante de l'histoire, dans laquelle des experts du milieu universitaire, des instituts de recherche et des organisations non gouvernementales postulent que les développements de l'intelligence artificielle entraîneront des perturbations généralisées sur le marché du travail. Cet article répond à cette affirmation en demandant si les syndicats considèrent l'intelligence artificielle comme une menace tout aussi imminente. De plus, il demande comment le travail se prépare à défier le pouvoir du capital alors que les employeurs tirent parti de l'automatisation à une époque de précarité néolibérale. Les documents publiés en ligne par les syndicats affiliés au Congrès du travail du

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Canada sont examinés ici au moyen d'une analyse discursive. Nos conclusions indiquent que même si aucun syndicat n'a exprimé son opposition au changement technologique, beaucoup se sont interrogés sur la manière dont les employeurs l'exploitent sur le lieu de travail et sur ses effets géopolitiques et sociétaux plus larges qui affectent leurs membres et leurs communautés. Nous constatons que la discussion autour du changement technologique met l'accent sur le fait que la technologie rend le travail meilleur et plus sûr dans un environnement de travail centré sur l'humain. Dans l'ensemble, le mouvement syndical au Canada est attentif aux problèmes dans le contexte politico-économique de l'automatisation, du travail précaire, des impacts sur la communauté, du rôle du gouvernement et de la réglementation, des compétences et du recyclage, et de la perte d'emploi, entre autres. Compte tenu de la vision de la technologie détenue par les travailleurs organisés, nous remettons en question les perspectives de techno-pessimisme et de techno-optimisme et soulignons plutôt que les syndicats sont dans une position unique pour à la fois réagir et s'adapter à l'évolution du travail. Des interventions stratégiques élargies autour de l'automatisation sont nécessaires pour lutter contre le travail précaire et l'érosion des conditions de travail à l'heure actuelle et dans les années à venir, et nous soulignons certains efforts notables qui sont en cours

**Mots clefs :** intelligence artificielle, automatisation, travail, changement technologique, économie à la demande, syndicats

Automation in the workplace has been a popular topic of discussion since the introduction of machines into factories, with the overall conversation still either lauding automation as an innovative boon to productivity or lamenting robots as job killers. Regardless of position, the question remains not *if* automation will change work but rather *when* and *how*. Studies suggest that recent technological advancements may lead to widespread automation of jobs, with most reports suggesting that between 42 per cent and 47 per cent of North American jobs are at high risk.[1] While extensive work examines coming changes to the labour market and labour conditions from the perspective of capital, more studies are needed to further understand how labour is anticipating the impacts of workplace automation and developing strategies to protect the interests of workers.[2]

Historically, organized labour in Canada has been vocal in the discussion on technological change. In 1955 the Canadian Congress of Labour (CCL) asked

1. Creig Lamb, *The Talented Mr. Robot* (Toronto: Brookfield Institute, June 2016), https://brookfieldinstitute.ca/the-talented-mr-robot/; Carl Benedikt Frey & Michael A. Osborne, "The Future of Employment: How Susceptible Are Jobs to Computerisation?," *Technological Forecasting and Social Change* 114 (January 2017): 254–280.

2. Organisation for Economic Co-operation and Development (OECD), "Automation and Independent Work in a Digital Economy," Policy Brief on the Future of Work, OECD, Paris, May 2016, https://www.oecd.org/els/emp/Policy%20brief%20-%20Automation%20and%20Independent%20Work%20in%20a%20Digital%20Economy.pdf; World Economic Forum (WEF), *The Future of Jobs Report 2020* (Geneva, October 2020), https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf; RBC, "Automation to Impact at Least 50% of Canadian Jobs in the Next Decade: RBC Research," news release, *Cision*, 26 March 2018, https://www.newswire.ca/news-releases/automation-to-impact-at-least-50-of-canadian-jobs-in-the-next-decade-rbc-research-677900483.html.

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the question "How far will automation go?"[3] Here the CCL explored factors it believed would affect this process, such as cost, redesign and shortage of technical skills, and human attitudes toward automation. It explained the crucial point that simply because the automation of tasks or jobs is possible does not mean this will occur. Decades later, the Ontario Federation of Labour convened the Technology Adjustment Research Program (TARP) in 1995, which produced reports in 1995 and 1999. The labour federation considered it a "breakthrough programme," noting that "in the past, research conducted into technological change represented either the position of employers or that of academics."[4] The goal was to "put technology on trial" from a labour perspective, to find out how new technologies are reshaping work and the everyday lives of workers.[5] TARP recommended new laws on non-standard work, paid educational leave, new economic strategies, and new regulations. All considerations within these historic reports remain relevant to the currents and future of artificial intelligence (AI) in the workplace.

Using these historical examples, we build on newly emerging work in this area, such as the Centre for Future Work's examination of Canadian collective agreement provisions involving negotiations around technology between employers and unions.[6] The 2021 report found that unions are using their power to shape technology through collective bargaining, not by stopping it but by influencing its implementation and use, and the findings show that fears regarding large-scale technological unemployment are misplaced. However, the BC Federation of Labour (BCFED) differs in its opinion, releasing a report that offers more concern over automation. It suggests that 60 percent of British Columbia's labour force has a medium or high risk of being automated out of their current jobs by 2040.[7] The BCFED raises caution about technological change, noting that the long-term trend toward automation has led to fewer jobs as well as a decline in good-paying jobs and the share of pay for workers, citing the social context of its adoption as a major factor in this outcome.

3. Canadian Congress of Labour, *Probable Effects of Increasing Mechanization in Industry* (Hull: Royal Commission on Canada's Economic Prospects, 1956), chap. 2, https://publications.gc.ca/site/eng/9.893598/publication.html.

4. Chris Schenk & John Anderson, eds., *Reshaping Work: Union Responses to Technological Change* (Toronto: Broadview Press, 1995), 6.

5. Chris Schenk & John Anderson, eds., *Reshaping Work 2: Labour, The Workplace, and Technological Change* (Toronto: University of Toronto Press, 1999), 2.

6. Jim Stanford & Kathy Bennett, "Bargaining Tech: Shaping New Technologies to Improve Work, Not Devalue It," PowerShare research paper, Centre for Future Work, June 2021, https://centreforfuturework.ca/wp-content/uploads/2021/06/Bargaining-Tech.pdf.

7. BC Federation of Labour, *Automation and Labour in British Columbia: Final Report* (Vancouver: BC Federation of Labour, February 2020), https://bcfed.ca/automation-research-report-2020.

While these reports are important contributions to the conversation on automation, we still observe that the perspective of labour is still much less visible in discussions on automation and the future of work. In this article, we examine how unions are using public communication to shape how workers anticipate and strategize around technological change. We offer a preliminary investigation of changes in a technologically advanced and automated world from the perspective of Canadian labour. To do this we look at public organizational discourse – the public-facing and self-published writings, documents, reports, and other discourse – of the affiliates of the Canadian Labour Congress (CLC) to examine the social reality as constructed by and understood within these organizations. At the centre of this article is the following question: How does Canadian labour understand technological change in the workplace? Moreover, how does the labour movement communicate strategy to address employers leveraging technology to their own benefit?

Our findings provide initial data to explain organized labour's public attitudes toward automation and reveal that the topic has become part of widespread discussion within unions. We find that, overall, unions are not antagonistic to technology and technological change. They are resistant to the rise of precarious work that occurs alongside technological change, and thus they generally favour regulation, re-skilling, and organizing as a solution. Unions also raise concerns about how employers use technology in ways that compromise safety and quality of work and how this affects both workers and the communities they serve. We argue that without strategies and intervention from labour unions that go beyond their immediate membership, technological developments will lead to precarious work and the erosion of working conditions in the near future. The Canadian Union of Postal Workers is already participating in such a strategy through its support for gig worker organizing. In addition, labour unions are well positioned and already prepared to make substantial contributions to strategy, policy, and political discourse regarding automation. We conclude that organized labour can and should be a leader in the debate on this issue, and our findings demonstrate that unions are already effectively pushing back against the hyperbole and fear mongering that often accompany discussion of technology and working life.

## Future Projections

Technological change, both within the workplace and outside of it, is a driving force of capitalism and a central pillar of modern life. One of the most widely cited articles addressing the future of employment and automation concludes that 47 per cent of jobs in the United States labour market are at high risk to become automated, based on technological capabilities in 2017.[8] While the technology is currently available to automate nearly half of the US

8. Frey & Osborne, "Future of Employment."

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labour market, it is challenging, if not impossible, to predict the degree and pace of automation in the core capitalist states. There is consequently a lack of agreement among studies about the future of workplaces. Projected outcomes of job losses relative to gains as a result of advancements in AI vary widely, from optimistic to catastrophic, including reports produced by banks, research institutes, global enterprises, and universities.[9] These reports do much to establish the argument that capitalist economies are in a unique technological moment in history that will lead to widespread disruptions, though the absence of social and political analysis in such reporting is concerning.[10] Perspectives on questions of long-term implications for workers are also largely absent.

The threat of job loss caused by machines and/or technology has been a looming spectre since at least the Industrial Revolution, though the 21st century offers novel elements to this age-old tension. The types of workplaces most likely to be affected first are those with highly automatable tasks, such as those routine tasks within the transportation, sales, food service, and administration sectors.[11] But while manual routine tasks, like parts assembly, have been the first to go to automation, advances in computer vision, natural language processing, and machine learning have meant that routine cognitive tasks, including data-driven decision-making in the insurance industry and medical diagnostics, are also faced with the possibility of automation.[12] In addition, categories of work once thought to be "safe" from automation, like cognitively demanding non-routine jobs in fields such as teaching, care, journalism, and design, are now well within the boundaries of automatable work.[13]

9. Erin Winick, "Every Study We Could Find on What Automation Will Do to Jobs, in One Chart," *MIT Technology Review*, 25 January 2018, https://www.technologyreview.com/s/610005/every-study-we-could-find-on-what-automation-will-do-to-jobs-in-one-chart/; RBC, "Automation to Impact"; James Manyika, Susan Lund, Michael Chui, Jacques Bughin, Jonathan Woetzel, Parul Batra, Ryan Ko & Saurabh Sanghvi, *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation* (New York: McKinsey Global Institute, December 2017), https://www.mckinsey.com/~/media/mckinsey/industries/public%20and%20social%20sector/our%20insights/what%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/mgi-jobs-lost-jobs-gained-executive-summary-december-6-2017.pdf; Ian Stewart, Debapratim De & Alex Cole, "Technology and People: The Great Job Creating Machine," Deloitte, August 2015, https://www2.deloitte.com/uk/en/pages/finance/articles/technology-and-people.html.; WEF, *Future of Jobs Report 2020*; Lamb, *Talented Mr. Robot*.

10. Joseph Pierce, Mary Lawhon & Tyler McCreary, "From Precarious Work to Obsolete Labour? Implications of Technological Disemployment for Geographical Scholarship," *Geografiska Annaler: Series B, Human Geography* 101, 2 (2018): 85–101, doi:10.1080/04353684.2018.1544467.

11. Lamb, *Talented Mr. Robot*.

12. Makada Henry-Nickie, "AI Should Worry Skilled Knowledge Workers Too," *TechTank* (blog), Brookings Institution, 8 November 2017, https://www.brookings.edu/blog/techtank/2017/11/08/ai-should-worry-skilled-knowledge-workers-too/.

13. Stanford & Bennett, "Bargaining Tech."

It is likely that the introduction of novel workplace technology will not be universal but rather target specific types of tasks. It is thus important to recognize that the advance of automation may not look like entire jobs being lost to computerization or automation; it may perhaps appear to be a more fragmented approach that could result in certain tasks or responsibilities within a workplace or job being automated, resulting in a dilution of hours, reduced access to benefits, a redefinition of jobs, or other negative impacts if not carefully adapted. To complicate this discussion further, technological change can be either labour replacing or labour enabling, and it is difficult to distinguish and predict whether technology will become a full substitute for human labour or an augmentation of human productive capability.[14]

Thus, advances in technology will likely also result in some level of job creation. The World Economic Forum projects net gains in jobs globally by up to 12,000,000 by 2025 with significant gains in the United States, though others claim there will be net losses up to 7 per cent by 2025.[15] The COVID-19 pandemic has only exacerbated uncertainty in projections. Reports suggest that job creation will come in new areas with low-automation-risk occupations, such as health care, infrastructure renewal, green energy, community care, and education in particular.[16] After all, "technology eliminates jobs, not work."[17] However, reports raise questions about what public investment, policy, and collective organizing is needed to achieve lasting and quality employment alongside workplace automation. Given the neoliberal orientation of the economy, it is unlikely that such investments will be made without significant political-economic shifts.

Among Marxist scholars, these questions have been addressed with a wide range of positions. Some consider technological advancement as liberatory for the working class, with utopian visions of post-scarcity and increased leisure time.[18] The argument is that an economy based on markets and private ownership will not be able to survive the new, zero-cost information economy that will see humans replaced with machines and products offered freely such as

14. Daron Acemoglu & Pascual Restrepo, "Modeling Automation," *AEA Papers and Proceedings* 108 (May 2018): 28–53, doi:10.1257/pandp.20181020; Aaron Benanav, *Automation and the Future of Work* (London: Verso Books, 2020).

15. WEF, *Future of Jobs Report 2020*; Forrester Research, "Robots Will Replace 7% of US Jobs by 2025," news release, 22 June 2016, https://www.forrester.com/Robots+AI+Will+Replace+7+Of+US+Jobs+By+2025/-/E-PRE9246#.

16. Manyika et al., *Jobs Lost, Jobs Gained*; Stewart, De & Cole, "Technology and People."

17. United States, National Commission on Technology, Automation and Economic Progress, *Technology and the American Economy*, vol. 1 (Washington, DC: Government Printing Office, February 1966), 9, https://hdl.handle.net/2027/coo.31924050772056.

18. Aaron Bastani, *Fully Automated Luxury Communism: A Manifesto* (London: Verso Books, 2019).

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with Firefox and Wikipedia.[19] This perspective advocates for accelerating technological advancement, and demands for a fully automated economy as not only something that is a desirable political program for the left, but one that is achievable owing to the unprecedented advancements in big data and AI. For Nick Srnicek and Alex Williams, for example, the struggle against wage labour can be fought and won through left populist anti-work politics, akin to the anti-globalization or Occupy movements that are not built on strict class identities.[20] Such a view regards fighting for the reduced workweek – an important demand of the labour movement – as having potential in itself to revolutionize the labour-capital relationship toward achieving a post-capitalist future without wage labour.

This techno-optimistic view is a misinterpretation of Marx that replaces technological advancement with class struggle as the driver of systemic change.[21] Further, scholarship on how "automation" works is a misnomer that rearranges work to become divided into microtasks, outsourced, and invisibilized questions this techno-optimistic argument. Most automated services are not automated at all but in truth rely on high-tech piecework done by humans far away and behind a screen.[22] This work includes varying tasks: for example, verifying information, copy-editing, data entry, translation, transcription, and click work that teaches computers how to recognize images. Technological work is often done by some of the most vulnerable and precarious workers in a globalized workforce – single mothers, people with disabilities, migrants, the chronically un(der)employed, and people in the Global South – and they are left without basic labour protections. These workers are made invisible by design, to further reduce the value of their already systemically devalued labour.[23] Thus, automating work will not free everyone from boring and repetitive labour but may in fact expand its necessity.

At the other end of the spectrum, techno-pessimists argue that as technology becomes increasingly capable of doing more advanced tasks, more jobs will be destroyed than created. In agreement with Marx's consideration that machinery is a "superior competitor" of workers always threatening to make them redundant, they argue that "computer-based technology inherently

19. Paul Mason, *Postcapitalism: A Guide to Our Future* (London: Penguin, 2015).

20. Nick Srnicek & Alex Williams, *Inventing the Future: Postcapitalism and a World without Work* (London: Verso Books, 2015).

21. Nick Dyer-Witheford. *Cyber-Marx: Cycles and Circuits of Struggle in High-Technology Capitalism* (Urbana: University of Illinois Press, 1999).

22. Mary L. Gray & Siddharth Suri, *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass* (Boston: Houghton Mifflin Harcourt, 2019).

23. Sarah T. Roberts, *Behind the Screen: Content Moderation in the Shadows of Social Media* (New Haven: Yale University Press, 2019).

eliminates labor."[24] From this starting point, they conclude that as investments in new technologies continue to expand, there will not be enough newly created jobs to go around.[25] This view suggests that AI will advance to the point where our future will include a large number of superfluous workers who are technologically unemployed.[26] Proponents claim that we may see permanent unemployment that cuts a sizable number of workers completely out of the labour market.[27] Some go so far as to claim that the impact of AI on labour will be so great that Marx's labour theory of value must be reconsidered, meaning that labour may no longer be the source of value in future capitalist economies.[28] According to this view, technological change will cause the logics of capitalism to break down, creating something more disempowering for the former working class. Another flavour of techno-pessimism is neo-Luddism, a perspective aligned with degrowth and decelerationist politics. For example, Gavin Mueller offers a critique of Marxist discourse on technology, considering it "at worst neutral: [the problem] is not the technology itself, but who controls it, labour or capital."[29] He compellingly argues that technology reproduces hierarchies and injustices on behalf of those in power, though we are unconvinced that Luddite tactics popularized before labour unions were organized are the path toward building worker power today.

We are skeptical of the above positions on the grounds that both techno-utopian and techno-pessimist positions overstate the power of AI. By contrast, we adopt the view that advancing technology changes labour relations by shifting power both inside workplaces and within society at large. Our aim is to emphasize power imbalances rather than technology itself as the cause of the problem. Marx took this perspective when he wrote that machines revolutionize "the agency through which the capital-relation is formally mediated, i.e. the contract between the worker and capitalist." This is done by creating the conditions that give "free rein" to capital in raising the productivity of labour.[30] We adopt his later, more scientific view of technology that "tended

24. Karl Marx, *Capital*, vol. 1 (London: Penguin/New Left Review, 1990); Stanley Aronowitz & William DiFazio, *The Jobless Future: Sci-Tech and the Dogma of Work* (Minneapolis: University of Minnesota Press, 2010), 6.

25. Aronowitz & DiFazio, *The Jobless Future*.

26. Christian Marazzi, *The Violence of Financial Capitalism* (Los Angeles: Semiotext(e), 2010).

27. Nick Dyer-Witheford, Atle M. Kjosen & James Steinhoff, *Inhuman Power: Artificial Intelligence and the Future of Capitalism* (London: Pluto Press, 2019).

28. Dyer-Witheford, Kjosen & Steinhoff; Nigel Walton & Bhabani Shankar Nayak, "Rethinking of Marxist Perspectives on Big Data, Artificial Intelligence (AI) and Capitalist Economic Development," *Technological Forecasting and Social Change* 166 (May 2021), doi:10.1016/j.techfore.2021.120576.

29. Gavin Mueller, *Breaking Things at Work: The Luddites Are Right about Why You Hate Your Job* (London: Verso Books, 2021), 4.

30. Marx, *Capital*, 519, 526.

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to regard the relations of production as determinant" – meaning that while technology does influence productive relations, it does not *cause* the power imbalance – over his earlier, more optimistic view of technological change.[31] In short, we adopt Marx's later view of technology as a tool that mediates the adversarial relationship between the worker and the capitalist to increase productivity and profit at the expense of working conditions.

Within this framework, technological change in the workplace impacts less the overall quantity of work and more the quality of it.[32] This adversarial relationship reflects the degradation of work through scientific management of workplaces resulting in more employer control over the labour process, deskilling, the development of human resources departments, and application of industrial psychology.[33] Today's high-tech surveillance environment and the expansion of micro-work can be seen as an extension of this practice. Thus, alongside Mueller, we also reject the notion that technology is neutral. The ongoing construction, implementation, and constant negotiation of its use indicates that technology is too complex to be neutral. Technological change also does not lead to inevitable outcomes. We instead view technology as "man-made systems that appear to require, or to be strongly compatible with, particular kinds of political relationships."[34] In other words, while technologies by design might predispose certain possibilities, no outcome is guaranteed based on technological, or social, factors. Based on this view of technology, our focus remains on the renegotiated power relations afforded by and contributing to technological change that affect working people, rather than on technology itself.

Such renegotiation of power in workplaces today occurs within the context of the growing precarity of the neoliberal era that led to the rise of the "gig" economy. As part of the neoliberal project that arose from the economic crises of the 1970s, federal and provincial governments in Canada passed legislation that targeted employment conditions of the working class. These changes led directly to the rise of gig workers, whom economists at the Bank of Canada describe as on-demand, contingent, part-time, and freelance workers.[35] Such workers have little to no spatial contact with their employer or fellow workers, and it has thus been challenging for workers to organize – though not impossible. The classification of precarious workers as "gig" workers is a tactic

31. Andreas Malm, "Marx on Steam: From the Optimism of Progress to the Pessimism of Power," *Rethinking Marxism* 30, 2 (2018): 166, doi:10.1080/08935696.2017.1417085.

32. Stanford & Bennett, "Bargaining Tech."

33. Harry Braverman, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century* (New York: NYU Press, 1998).

34. Langdon Winner, "Do Artifacts Have Politics?," *Daedalus* 109, 1 (1980): 121–136, 123.

35. Olena Kostyshyna & Corinne Luu, "The Size and Characteristics of the Informal ('Gig') Work in Canada," Staff Analytical Note 2019-6, Bank of Canada, Ottawa, 2019, https://www.bankofcanada.ca/wp-content/uploads/2019/02/san2019-6.pdf.

for employers to circumvent labour laws, to avoid paying minimum wage and providing benefits or steady work, and to ensure their workers cannot unionize. In our view, these conditions are not the inevitable result of technological development but the reality of its growth in an era of neoliberal capitalism.[36]

Growth in the gig economy is associated with the pressures of unemployment and technological change and stretches beyond just app-based companies.[37] Statistics Canada estimated in 2017 that the labour force included 2.8 million on-demand, contingent, and freelance workers, though a more recent study estimates that this type of employment could constitute 30 per cent of the labour force.[38] Notably, this figure is higher than that of organized workers in Canada. Gig workers do not have regular hours, benefits, or bargaining power, and growth in this area shows no signs of slowing.[39] In the United States, most jobs created since the 2008 recession fall into this category, and we consider Canada to be a comparable case.[40]

The growth of the gig economy highlights the weakened position of labour, revealing its inability to combat the leveraging of technological change in favour of capital's power. Unions in Canada face an uphill battle moving forward as union membership, solidarity, and workplace protections are being degraded following years of neoliberal attack. These current conditions of work forewarn what the future of work will be without the power of a strong labour movement. Yet, in many ways, the current moment can represent one in which to reflect and regroup. A shifting landscape of new workers comfortable with technology and resistant to exploitative workplaces could be an opportunity for labour to focus on areas of 21st-century job growth.[41] In the advent of projected larger-scale technological change, how labour should

36. Naomi Smith & P. J. Holtman, "New Subjectivities of Work? Technologies and Capitalism into the Future," *Arena Journal*, no. 51–52 (July 2018): 153–176, https://arena.org.au/informit/new-subjectivities-of-work-technologies-and-capitalism-into-the-future/.

37. Lawrence F. Katz & Alan B. Krueger, "The Rise and Nature of Alternative Work Arrangements in the United States, 1995–2015," *Industrial and Labour Relations Review* 72, 2 (2018): 382–416, doi:10.1177/0019793918820008.

38. Statistics Canada, "Average Usual Hours and Wages by Selected Characteristics, Monthly, Unadjusted for Seasonality (x 1,000)," Table 14-10-0320-02, last modified 18 August 2021, doi:10.25318/1410032001-eng; Kostyshyna & Luu, "Size and Characteristics."

39. BMO Wealth Management, "The Gig Economy," Canadian ed., July 2018, https://nesbittburns.bmo.com/getimage.asp?content_id=81455.

40. Lawrence F. Katz & Alan B. Krueger, "The Role of Unemployment in the Rise in Alternative Work Arrangements," *American Economic Review* 107, 5 (2017): 388–392, doi:10.1257/aer.p20171092.

41. Hannah Fingerhut, "Millennials' View of News Media, Religious Organizations Grow More Negative," Pew Research Center, 4 January 2016, http://pewrsr.ch/1OGDQip; Hamilton Nolan, "Why We've Decided to Organize," *Gawker*, 16 April 2015, https://gawker.com/why-weve-decided-to-organize-1698246231.

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adapt to a world with increasing reliance on AI in the workplace remains an ongoing question.[42]

## Research Design

### *Methodology*

To discuss the issue of technology, unions, and power in the workplace, we examine the discourse of Canadian labour unions and their umbrella organizations, providing an initial mapping of this specific but diverse field. We approach our research questions through exploratory organizational discourse analysis (ODA) of all publicly available materials released by the English-speaking CLC-affiliated unions on the topics of AI, technological change, and automation. ODA is situated within the broader research paradigm that is critical discourse studies (CDS) and is an inherently inter- and multidisciplinary field within the social sciences, as it follows the approach of CDS to understanding discourse as "social practice."[43] Discursive social practices have "major ideological effects – that is, they can help produce and reproduce unequal power relations … through the ways in which they represent things and position people."[44] Through analysis of published materials, language choices, topics discussed, and those omitted, we are offered a window into not only labour's understanding and reproduction of power in our current time, but also how contemporary ideas of automation, technological change, precarity, and human labour are being actively shaped. The relationship between discourse, power, and our social reality is particularly evident and important when looking at public organizational discourse. "Organizations exist only in so far as their members create them through discourse," Dennis Mumby and Robin Clair explain. "This is not to claim that organizations are 'nothing but' discourse, but rather that discourse is the principle means by which organization members create a coherent social reality that frames their sense of who they are."[45]

Organizations are venues of political and economic struggle where various forms of power and domination are active and can influence decisions about

42. Wayne Lewchuk, "The Political Economy of Precariousness in an Era of Artificial Intelligence: Precarious Work, or None at All," *Canadian Labour and Employment Law Journal* 21, 2 (2018): 239–266.

43. Ruth Wodak & Michael Meyer, "Critical Discourse Analysis: History, Agenda, Theory and Methodology," in Wodak & Meyer, eds., *Methods of Critical Discourse Analysis*, 2nd ed. (London: SAGE, 2009), 1–33.

44. Norman Fairclough & Ruth Wodak, "Critical Discourse Analysis," in Teun A. van Dijk, ed., *Discourse Studies: A Multidisciplinary Introduction*, vol. 2 (London: SAGE, 1997), 258.

45. Dennis Mumby & Robin Clair, "Organizational Discourse," in Teun A. van Dijk, ed., *Discourse as Structure and Process: Discourse Studies*, vol. 2, *A Multidisciplinary Introduction* (London: SAGE, 1997), 181–205, 181.

and the structure of our social environment.[46] Organizations "are primary sites for 'reality construction,'" and through close analyses of organizational discourses, especially those publicized and represented as intentional "explainers" of an organization's position on a topic, we can begin to unpack the ideologies legitimizing and reinforcing specific societal and organizational relations.[47] In the case of technology in the workplace, there is a tendency among organizations representing elite interests to overstate the capabilities of technology, to obscure and devalue the human labour that is behind its functioning.[48] Business-aligned perspectives have an incentive to overstate technology's impact on jobs, to instill fear in workplaces around job security. Materials analyzed herein do not and cannot reflect the inevitably complex and likely fraught internal conversations around these issues; however, through this focus on organizational discourse, we are able to investigate how unions are shaping both their members' and the public's perspectives of technology in workplaces and the ways they may combat overstatements by business and governments.

### *Data collection*

This article is fundamentally concerned with the way that Canadian unions represent themselves discursively to their members and the public, as well as with their positions relative to the developing prospect of future automation in the workplace. To this end, the unit of analysis for this study is all publicly available online statements, press releases, convention documents, position papers, and reports of labour unions affiliated with the CLC, including both Canadian unions and international unions that organize in Canada.[49] As Canada's largest labour organization representing diverse sectors – with 53 affiliates listed publicly on its website, representing over 3,000,000 workers in Canada – the CLC is the most robust choice for a comprehensive study of this nature.[50] It also represents provincial and territorial labour federations and local labour councils, though their independent materials were not explored

46. Mats Alvesson & Stanley Deetz, *Doing Critical Management Research* (Thousand Oaks, California: SAGE, 2000).

47. Andrea Mayr, "Introduction: Power, Discourse and Institutions," in Andrea Mayr, ed., *Language and Power: An Introduction to Institutional Discourse* (London: Continuum, 2008), 3; Alvesson & Deetz, *Doing Critical Management Research*.

48. Simon Schaffer, "Babbage's Intelligence: Calculating Engines and the Factory System," *Critical Inquiry* 21, 1 (1994): 203–207; Schaffer, "Babbage's Dancer and the Impresarios of Mechanism," in *Cultural Babbage: Technology, Time and Invention* (London: Faber, 1996), 53–80; Gray & Suri, *Ghost Work*.

49. "Affiliates," Canadian Labour Congress, accessed 1 June 2021, https://canadianlabour.ca/who-we-are/affiliates/. We left collective agreements out of this study, as they do not fit the category of discourse.

50. "Who We Are," Canadian Labour Congress, accessed 1 June 2021, https://canadianlabour.ca/who-we-are/.

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in this study. Material was gathered from online sources, and it is important to note the growing recognition of online discourse as a fruitful research site for further understanding the dialectic between discourse and material relations in the 21st century.[51]

We conducted three searches per organization between 5 and 22 August 2021 using Google and, where possible, union website internal searches, for a total of either three or six searches per union. Google searches included the organization name in quotation marks and the qualifier AND, followed first by the term "artificial intelligence," second by "automation," and third by "technological change." Only material that is indexed by Google or on a union's website appears in this study, and most relevant material returned by this search is reviewed here. "Relevant material" is defined as written documentation that indicates a position, sentiment, analysis, or strategy around topics related to terms 1, 2, or 3. Only documents that were authored by the union, or an author publishing on behalf of the union, were included. Of the 53 unions studied, 28 have publicly available material that is discussed in this article.[52] This is not an entirely comprehensive analysis; our discussion catches most materials to offer a review of what we consider to be the most impactful and representative statements that indicate a union's overall position on these questions. First, we review the only two comprehensive reports that our searches returned, and then we cluster the findings into themes: historic struggle against automation, the wider political context of automation, an intersectional analysis of technological change, precarious work, community impact, the role of government and regulation, skills and retraining, and job loss. We discuss these themes below.

### *Research Findings*

Some unions are publishing their own reports about future automation and its possible impact on the work their members do. Two extensive reports have been released: one commissioned by the International Longshore and Warehouse Union (ILWU), and one prepared by the United Food and Commercial Workers (UFCW). First, the ILWU study analyzed possibilities for job loss resulting from technological change using current levels of technology. It found that there is the possibility of either 50 per cent or 90 per cent job loss at BC marine terminals due to future automation, with the extent depending on the potential digitization path that is chosen. In addition to projected job losses, the ILWU report discusses potential economic impacts on communities and workers that have been largely absent from business-centred reports. It raises concern over high-income job loss, particularly in small communities like Prince Rupert, BC,

51. David Barton & Carmen Lee, *Language Online: Investigating Digital Texts and Practices* (New York: Routledge, 2013).

52. See Appendix A for a list of unions identified as affiliated on the CLC website; the appendix indicates those unions that have authored materials reviewed in this study.

where longshore work accounts for 26 per cent of the labour force earning over $70,000 and 66 per cent of earners making more than $100,000.[53] The report also discusses potential layoffs as not only affecting longshore workers but also creating a ripple effect in communities – a point that speaks to the reduction of consumer spending as overall wages in the community become depressed. Importantly, the report signals that the union "does not assume that permanent job loss is offset by temporary construction jobs that might be associated with building a new port or installing new equipment in an existing port."[54] The report critiques the more mainstream approaches that often ignore long-term impacts in favour of short-term fixes with temporary employment. As the first Canadian report of its kind, the ILWU economic impact assessment could provide a model for similar studies in other industries at risk of automation, centring the study of worker and community impacts that are projected to stem from future automation.

In addition, the UFCW issued a white paper on the subject called "Proactively Responding to Technological Change."[55] The report assesses risk for automation by sector – with care work identified as low risk; retail, hospitality, and health care as moderate risk; and logistics work, or the management and flow of goods, as high risk – emphasizing automatable skills rather than automatable jobs. It discusses how automation will eliminate and create jobs, voicing concern over the new terms of employment with newly created jobs. As a solution to future unemployment, the UFCW white paper points to bargaining to strengthen contract language around technological change, as well as skill development, and advocacy around labour law. It also draws attention to ethical discussions about the use of AI in terms of, for example, bias in the judicial system and service administration leading to over-policing of Black communities, and privacy concerns with tracking software in the workplace. It raises concerns about hypothetical scenarios of autonomous vehicles being hacked and redirected. While this does not pertain to the discussion of workplace attitudes or strategy, it does indicate perhaps an alarmist view of technology in general.

Several unions in Canada take pride in winning historic battles related to technological change. Some use such victories as a mobilizing tool to keep the union strong, relevant, and looking to the future. For example, the Bakery, Confectionery, Tobacco Workers and Grain Millers' (BCTGM) International

53. Prism Economics and Analysis, *Economic Impact Study of Digitization and Automation of Marine Port Terminal Operations in British Columbia* (Vancouver: International Longshore and Warehouse Union, July 2019), https://ilwu.ca/wp-content/uploads/prism-ilwu_report-a3-aug14.pdf.

54. Prism Economics and Analysis, 3.

55. United Food and Commercial Workers Union, "Proactively Responding to Technological Change," UFCW Canada Whitepaper, 2019, http://www.ufcw.ca/templates/ufcwcanada/images/submissions/Proactively-Repsonding-to-Technological-Change_FINAL_PRINT.pdf.

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Union highlights that, historically, changes to plants were imposed on workers, from the speeding up of work through automation to plant closures.[56] The ILWU notes that struggles around automation are an important part of its history, especially at the moment when workers confronted technological change through caucuses, special conferences, membership meetings, and more in the 1960s, winning historic protections against the negative impacts of machines.[57]

A book published by the Air Line Pilots Association, International (ALPA) outlining the history of the organization includes important victories such as fighting for continued co-piloting during increasing plane automation and the right of pilots to cancel unsafe flights. The general theme of this history is that technological change aggravated conflict between pilots and their employers.[58] In addition, other unions have digitized historical documents that address the question of technological change. For example, the historical newsletters digitized by the British Columbia Teachers' Federation (BCTF) feature in-depth discussions on the topic, with one issue in particular discussing a new industrial revolution built from cybernetics that is "bound to devalue the human brain."[59] One teacher wrote in the union newsletter that he was convinced automation would lead to a shorter workweek and that teachers should anticipate the need to teach students leisure skills such as fishing, hunting, and camping.[60] Others took a more pessimistic view, suggesting that automation would put future generations out of work and temper labour demands.[61] The Office and Professional Employees International Union (OPEIU) raised similar points in a 1961 issue of its newsletter, with the board expressing concern about the impact of automation on the white-collar worker.[62] Further, the

56. "Our History," BCTGM Local 406, accessed 12 June 2021, http://www.bctgm406.com/our_history.html.

57. "The ILWU Story," International Longshore and Warehouse Union, accessed 18 June 2021, https://www.ilwu.org/history/the-ilwu-story.

58. George E. Hopkins, *Flying the Line: The First Half Century of the Air Line Pilots Association* (Washington, DC: Air Line Pilots Association, 1982).

59. W. H. Creese, "School for Robots?," *BC Teacher* 45, 6 (1966): 224, https://wayback.archive-it.org/16900/20210708105652/https://bctf.ca/WorkArea/GetAsset.aspx?id=41823.

60. Ralph Shaw, "Fishing – Recreation and Re-creation," *BC Teacher* 41, 7 (1962): 307, https://wayback.archive-it.org/16900/20210708104822/https://bctf.ca/WorkArea/GetAsset.aspx?id=41773.

61. W. C. Lorimer, "Education in the Next Decade," *The BC Teacher* 44, 5 (1965): 185, https://wayback.archive-it.org/16900/20210708105533/https://bctf.ca/WorkArea/GetAsset.aspx?id=41829; Brigitte Sutherland, "Changepurses and Piggybanks Beware," *Status of Women* (Winter 1986): 6, https://wayback.archive-it.org/16900/20210707223150/https://bctf.ca/WorkArea/getAsset.aspx?id=46015.

62. "Board Again Expresses Automation Concern," *White Collar*, no. 191, Office Employees International Union (July–August 1961): 1, https://www.opeiu.org/portals/0/whitecollar/1960-1969/1961-July-Aug-191.pdf.

OPEIU president remarked that automation was destroying jobs faster than creating them and therefore he expected the unemployment rate to double to 10 per cent by 1968.[63]

Today, unions in Canada are participating in public discourse around the wider issue of automation, with most focusing on globalization, privatization, and offshoring. Using a critical lens, unions often see technological change in the workplace intertwined with other political or legal matters. For example, the Amalgamated Transit Union (ATU) reviewed a report by the Centre for Economic Policy and Research that stressed that the global trend of overall decline in union density cannot be attributed to technological change or globalization but rather is due to the political and legal climate of each locale.[64] The ATU rejects the inevitability of such decline and implies that technological change cannot be a scapegoat for shrinking levels of unionization. Similarly, the Canadian Union of Public Employees (CUPE) critiques the International Monetary Fund's position that growing wealth inequality is due to changes in technology and automation. Instead, the union attributes these changes to monopolization, increased exploitation through outsourcing, and precarious work.[65] The National Union of Public and General Employees (NUPGE) takes a similar stance in a piece written by Linda McQuaig for the union. McQuaig states that technological change and globalization are not responsible for precarious work thrust upon youth; rather, it is the "set of policy changes enacted in recent years – tax cuts for the rich, deregulation, privatization, and reduction in labour protections."[66] In addition, CUPE sees increasing automation in the workplace alongside the expansion of foreign ownership of Canada's transportation sector (e.g. airlines, ports) and foreign investment as a pathway to increased automation and job loss. The union notes that "increased foreign ownership of airlines has been shown around the world to increase precarity for workers, and weaken working conditions, labour standards, aircraft safety, and collective bargaining rights."[67] CUPE had earlier criticized Bill C-49 – which became the *Transportation Modernization Act*, passed in 2017 – as

63. Howard Coughlin, "Automation's Deadly Toll," *White Collar*, no. 219, Office Employees International Union (March 1964): 4, https://www.opeiu.org/portals/0/whitecollar/1960-1969/1964-March-219.pdf.

64. "Losing Ground," *In Transit* 120, 6, Amalgamated Transit Union (November–December 2011): 22 https://issuu.com/atucomm/docs/nd_itus_web.

65. "Workers' Shrinking Slice of the Economic Pie," *Economy at Work*, CUPE, 21 June 2017, https://cupe.ca/workers-shrinking-slice-economic-pie.

66. Linda McQuaig, "Who's Got His Eye on Your Slice?," in National Union of Public and General Employees, ed., *Union Matters: A Reader*, vol. 2, *The Next 25 Very Good Reasons* (Nepean, Ontario: NUPGE, March 2015), 27, https://nupge.ca/sites/default/files/documents/um_unions_matter_vol_2_web.pdf.

67. "Bill C-49 Jeopardizes Canadians' Privacy and Jobs," CUPE, 3 May 2018, https://cupe.ca/bill-c-49-jeopardizes-canadians-privacy-and-jobs.

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it raised allowances for foreign ownership of Canada's airlines from 20 per cent to 49 per cent.[68] Similarly, the Ontario Public Service Employees Union (OPSEU) raised concerns about AI as a factor in continued privatization of public services in its 2019 convention documents.[69]

Some unions take an intersectional approach to understanding how technological change affects union members. The ATU, for instance, purports the fact that good union jobs have been a key factor in social mobility, especially in racialized communities. It notes that laying off workers as a result of automated transit could worsen racial inequalities, as transit operation is a sector with a large number of Black workers.[70] Similarly, in a discussion of economic recovery after COVID-19, CUPE highlights that automated tools are displacing women employed in food service and retail, who may now be excluded from the workforce. In addition, it notes that automation disproportionately affects women in hospital clerical work, where staff have been terminated in favour of an automated check-in system.[71] The Public Service Alliance of Canada (PSAC) points out how automated screening may subject marginalized communities to racial profiling.[72]

In relation to technological change, several unions are discussing issues around precarious work. For example, in its vision documents, the International Union of Painters and Allied Trades (IUPAT) told its members that it will fight against big corporations that try to "pull the trades into the gig economy," meaning that the union plans to resist trade work becoming freelance and piecemeal work.[73] The union is opposed not to technological change itself but to the precarity of the gig economy. In addition, NUPGE expresses concern over precarious work and resulting income inequality in its convention documents. It situates the issue as a deliberate part of globalization and the policies accompanying it, discussing automation as only adding to this problem.[74] OPSEU spoke out against precarious employment of college faculty

68. "Bill C-49 Jeopardizes."

69. "Section G: Resolutions," *Indivisible: 2019 Convention* (Toronto: OPSEU/SEFPO, 2019), https://opseu.org/wp-content/uploads/2019/05/section_g_with_covers.pdf.

70. "How Automation of Transit Could Worsen Racial Inequality," *In Transit* 127, 1, Amalgamated Transit Union (January–February 2018): 15, https://www.atu.org/atu-pdfs/intransit-canadianpdfs/JFIT18_CANFULL.pdf.

71. "Dozens of St. Mike's Hospital Clerical Staff Laid Off with 2 Weeks Notice," CUPE, 2 May 2019, https://cupe.ca/dozens-st-mikes-hospital-clerical-staff-laid-2-weeks-notice.

72. "PSAC-CIU Raise Border Automation Concerns with Government," Public Services Alliance of Canada, 21 April 2021, https://psacunion.ca/psac-ciu-raise-border-automation-concerns.

73. Kenneth E. Rigmaiden, "A Message from the General President," *Painters and Allied Trades Journal* (Spring 2020): 5. http://docplayer.net/182317049-A-look-inside-know-your-pension-member-education-boycott-ppg.html.

74. "Precarious Work," *1919 Winnipeg General Strike: NUPGE Convention, Winnipeg 2019*

during its 2017 strike, acknowledging that an AI-driven gig economy impacts both its members and the entire labour market into which their students will be entering.[75] The Canadian Union of Postal Employees (CUPW) takes the strongest stance on precarious gig work:

> Remember that it's not just app-based services who are undercutting worker rights with automation, increased flexibility, and increasing isolation and atomization of workers. Employers, including Canada Post, are attracted to shortcuts and anything that cheapens their labour costs by setting workers to compete against each other. Poor working conditions and wages in any logistics workplace threaten to lower the standards for all of us. We have to push back, and show that working conditions must be just.[76]

CUPW is embracing the solidarity principle of "an injury to one is an injury to all" in relation to precarious work, recognizing that even workers with good union jobs like their members are affected by downward pressure on wages and working conditions in the gig economy.

Unions are recognizing that the fallout from technological change goes beyond just their members. Recent campaigns express concern over safety and quality of work performed that affects both workers and the communities they serve. Associated with this discussion is an emphasis on human-centred workplaces. ALPA is taking a large role in this conversation with several public statements, highlighting, for instance, that overreliance on automation in the cockpit is dangerous.[77] It states that "airline pilots are the most important safety feature on an aircraft," and single-pilot operations are too risky.[78] According to ALPA, automation can make flights safer in many ways, but there are also dangers such as the ongoing erosion of pilots' skills in consistently relying on automation and the inability of machines to observe sights and smells in the work environment – something that is crucial for assessing situations.[79] In discussions of safety, ALPA reiterates its commitment to human-centred

(Nepean, Ontario: NUPGE, 2019), https://nupge.ca/sites/default/files/documents/Precarious%20Work%20and%20the%20Precariat.pdf.

75. R. M. Kennedy, "How Faculty Said No to the Gig Economy," Ontario Public Service Employees Union, n.d., accessed 22 November 2019, https://www.opseu558.org/how-faculty-said-no-to-the-gig-economy/.

76. Jean-Philippe Grenier, "Foodsters Vote Results: History Made, and a Sign of Things to Come," Canadian Union of Postal Workers, 22 June 2020, https://www.cupw.ca/en/foodsters-vote-results-history-made-and-sign-things-come.

77. Air Line Pilots Association, "The Dangers of Single Pilot Operations," ALPA White Paper, McLean, Virginia, 2019, https://www.alpa.org/-/media/ALPA/Files/pdfs/news-events/white-papers/white-paper-single-pilot-operations.pdf.

78. Air Line Pilots Association, International, "ALPA Reminds the Industry: Airline Pilots Are the Most Important Safety Feature on an Aircraft," news release, 21 May 2021, https://www.alpa.org/news-and-events/news-room/2021-05-19-alpa-reminds-industry.

79. "Pilot Training and Automation," *Leadership from the Cockpit* (blog), Airline Pilots Association, International, 14 January 2016, https://www.alpa.org/news-and-events/Blog/2016/01/14/pilot-training-automation.

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aviation. It notes that "while automation is the new normal in aviation, we need it to adapt to us – the human – and always remember that we the pilots are the ones who ultimately determine the success of each flight."[80] The Teamsters also raise concerns about safety risks around automation of transportation, arguing that self-driving cars and trucks have not been adequately tested to enable a full understanding of the dangers of replacing professional drivers.[81]

CUPE also emphasizes safety concerns in its communications. In relation to "staffless libraries" in which patrons use self-checkouts, it states that "in a rush toward automation, the library is jeopardizing the personal security of its patrons."[82] PSAC took issue with Prime Minister Justin Trudeau's 2021 federal budget, which introduced touchless and automated interactions at the Canada-US border. The union "stressed that technology is no substitute for seasoned officers" and that to truly be serious about security, human workforce investments must match technological ones.[83] The Canadian Association of Professional Employees (CAPE), which represents federal employees, including translators, is also concerned that relying on automated translation rather than on its members will lead to "poor-quality translations" that could "sully the reputation of the Translation Bureau." According to CAPE, the technology is not advanced enough to understand the complexity of language.[84]

Further, several unions are concerned about how automation of work can impact the health of community relationships. CUPE emphasizes community partnerships over automation, using the language of organizing: "You can't automate partnership, even in the days of digital disruption. Like solidarity, it's a practice."[85] The ATU states that "the role of the human bus driver and other transit workers and ATU members will always be crucial to [the] ultimate success [of the future of public transit]." This is because ATU members do more than simply drive buses; they assist senior and disabled riders, and they take on the role of supervision for youth.[86] Similarly, a report published by the

80. Christopher Freeze, "Trained for Life: Keeping Humans at the Center of Aviation," *Air Line Pilot*, June 2018, https://www.alpa.org/news-and-events/air-line-pilot-magazine/trained-for-life-human-factors.

81. "Unions in Times of Uncertainty," *Teamsters Canada* (blog), 3 September 2018, http://teamsterscanada.org/en/blog/2018/09/03/unions-in-times-of-uncertainty/.

82. Pierre Ducasse, "Toronto Library Workers Sound Alarm on 'Staffless Libraries,'" CUPE, 25 March 2019, https://cupe.ca/toronto-library-workers-sound-alarm-staffless-libraries.

83. "PSAC-CIU Raise Border Automation Concerns."

84. "Hello Bonjour Translation Machine," Canadian Association of Professional Employees, 10 June 2015, https://www.acep-cape.ca/en/news/hello-bonjour-translation-machine.

85. "The Real World of Self-Scanning Library Kiosks," *Counterpoint*, CUPE, 16 October 2016, https://cupe.ca/real-world-self-scanning-library-kiosks.

86. "Amid Automation Trend, Here's Why We Still Need Bus Drivers," *In Transit* 127, 3 Amalgamated Transit Union (May–June 2018): 27, https://www.atu.org/atu-pdfs/LoRes_ATU_InTransit_May_June2018Dom.pdf.

BCTF emphasizes the role played by human teachers in its critique of a provincial government and OECD (Organisation for Economic Co-operation and Development) Education initiative that was "hyper-focussed on AI (Artificial Intelligence)." This report alludes to software and apps as the future of student learning, implying that the need for teachers will be eliminated, and notes that the OECD conference failed to mention the importance of people and the role teachers play in "humanizing the system and nurturing our students."[87] In more detailed commentary on the conference, teacher Tom Kertes wrote,

> Throughout all of the OECD's presentations at the Vancouver conference an explicit pitch was made. That pitch was to replace teachers and schools with artificial intelligence and computers … The OECD's agenda promotes a vision of education based on values that are incompatible with a broad mandate for public education in the province. Rather than provide an education based on local community values, traditional knowledges and ways of knowing, and sustaining the land through shared responsibility, the OECD promotes learning systems that seek to transform learners to create new value, resolve tensions and dilemmas, and exercise personal, or individual, responsibility.[88]

Teachers in British Columbia are worried not only about their jobs but also the larger implications for students and society, as plans for increased AI do not take certain values into account. This report emphasizes the role of a human teacher and the collective relationships built in the classroom that cannot be replaced with standardized technology.

Some unions make general statements stressing that their membership must develop skills to ensure their relevance when faced with automation as a potential threat to jobs, with some promoting upskilling programs. The International Alliance of Theatrical Stage Employees, Moving Picture Technicians, Artists and Allied Crafts of the United States, Its Territories and Canada (IATSE) recently announced its creation of a fund, in partnership with employers, to ensure that its members' skills keep up with technological advances. This approach highlights the spirit of embracing technological change.[89] Similarly, the International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers (IBB) has created for its members a pathway toward a college degree, funded in part by the union. The reason, according to the IBB, is that "everything is going to automation; and we have

87. Jo Atkinson-Cornthwaite, "The Compass as a Source of (Dis) Orientation: Why the OECD 2030 Learning Compass Missed the Mark," in *"Navigating" Transformation: Education 2030, Teachers' Unions, and Spaces of Resistance*, BCTF Research Report, October 2019, 32, https://www.bctf.ca/docs/default-source/default-document-library/navigatingtransformation_2019_oecd_report.pdf?sfvrsn=494eb685_0.

88. Tom Kertes, "Why the OECD's Education Agenda Matters to Students, Communities, and Teachers in British Columbia," in BCTF, *"Navigating" Transformation*, 27.

89. "IATSE Entertainment and Exhibition Industries Training Trust Fund," IATSE Local 118, n.d. [2021], https://iatse118.com/post/iatse-entertainment-and-exhibition-industries-training-trust-fund.

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to be up to speed on technology so we're not left behind."[90] As well, UFCW offers free online courses to members because "responding to the uncertainty of technological change will require proactive initiatives."[91] UFCW Canada's president explains that the union is in a good position to work with governments and employers to help workers prepare for jobs of the future.[92] A year later, it attributed the federal government's Future Skills Initiative to the advocacy of UFCW Canada and the CLC. The initiative is in place to attend to skills gaps in the job market and support skill development for Canadians throughout their working lives.[93] This initiative is notable, as the union took leadership in advocating for all working Canadians, not just its members.

Other unions comment on government policy, with some taking critical stances on government inaction in anticipation of technology-driven labour disruptions. While less common, some welcomed other initiatives. The Association of Canadian Financial Officers (ACFO) has raised concerns about the impact of AI on privacy and advocates for the creation of a data commissioner to inform both business and government on these challenges.[94] The Alliance of Canadian Cinema, Television and Radio Artists (ACTRA) also critiqued the federal budget, stating that it ignored the screen industry and should be funding programs needed to "evolve in response to the technological changes to the content industry."[95] The ATU has called for greater regulation of companies such as Uber and Lyft whose business competes directly against transit operations, drawing attention to safety concerns.[96] NUPGE calls for

90. "Local D23 Boosts Education and Safety at Cemex Plant," *Boilermaker Reporter* 58, 4 (October–December 2019): 31, https://boilermakers.org/news/locals/local-d23-boosts-education-and-safety-at-cemex-plant.

91. Paul R. Meinema, "On Automation, Workers Need Sound Leadership Today to Thrive in Jobs of Tomorrow," UFCW, 18 May 2019, http://www.ufcw.ca/index.php?option=com_content&view=article&id=32283:on-automation-workers-need-sound-leadership-today-to-thrive-in-jobs-of-tomorrow&catid=10060&Itemid=6&lang=en.

92. Paul R. Meinema, "Workers Must Define the Future of Work," UFCW, 30 August 2018, http://www.ufcw.ca/index.php?option=com_content&view=article&id=32026:workers-must-define-the-future-of-work&catid=9982&Itemid=6&lang=en.

93. "Future Skills Initiative Should Focus on Needs of Workers," UFCW, 18 March 2019, http://www.ufcw.ca/index.php?option=com_content&view=article&id=32226&catid=10042&lang=en.

94. "Budget 2021 Highlights Critical Role of Public Service Finance and Audit Workers Now and in the Future," Association of Canadian Financial Officers, 20 April 2021, https://www.acfo-acaf.com/2021/04/20/budget-2021-highlights-critical-role-of-public-service-finance-and-audit-workers-now-and-in-the-future/.

95. ACTRA, "Federal Budget Forgets Canada's Screen Industry," news release, 20 March 2019, https://www.actra.ca/news-release/2019/03/federal-budget-forgets-canadas-screen-industry/.

96. Amalgamated Transit Union, "At Convention, ATU Offers Vision for 21st Century Transit and a Just Economy," news release, n.d., accessed 11 June 2021, https://www.atu.org/media/releases/at-convention-atu-offers-vision-for-21st-century-transit-and-a-just-economy.

stronger legislation around scabbing in an era of technological change, because scab workers can work digitally without crossing a physical picket line.[97] The International Association of Machinists and Aerospace Workers (IAMAW) points to the lack of understanding of the social impacts of certain technologies, and the consequent lack of regulation around technological change, where businesses are allowed to self-regulate.[98] In general, many unions are attentive to the need to work with governments to regulate new technologies as they emerge, not only in relation to the jobs of their members but, perhaps more importantly, for the societal impacts around privacy and safety.

Some unions mention the threat of job loss when it comes to technological change and make it clear that it is up to the union to fight for an implementation in the workplace that is fair and minimizes job loss and other effects that make working conditions more difficult, such as increased surveillance. For example, UFCW takes a strong stance on this, stating that "automation and artificial intelligence cannot be allowed to be job and community-destructive. But left solely to the private sector or government, they could be."[99] It argues that working people need to put this issue on the agenda to ensure a fairer future in which workers have power to define and control technology. In contrast, some unions remain skeptical about the potential for AI to be used to automate the work of their members, acting as a counter-voice to the popular narrative that AI is an imminent threat to jobs. Along these lines, some express support for automated technology in the workplace. However, this varies widely by sector; it is most pronounced in the nurses' union, which represents an occupation at low risk of automation. For example, Andrew Au, the closing speaker at the 2019 Canadian Federation of Nurses Unions (CFNU) convention, argued that the replacement of human workers by AI is confined to the realm of science fiction. Au emphasized the role of technology as an enhancer of clinical practice and stated that learning to work with AI will empower workers to adapt to their environments.[100]

The Canadian Media Guild, affiliated with the Communication Workers of America, is unconvinced about future projections of widespread job elimination and suggests that the future impacts of AI are exaggerated to intimidate workers.[101] CUPE has raised similar questions around "robots stealing jobs."

97. "Movement Afoot in Quebec to Outlaw High-Tech Scabs," NUPGE, 24 September 2010, https://nupge.ca/content/movement-afoot-quebec-outlaw-high-tech-scabs.

98. "Charting Change: Workers' Voices in an Automated World," International Association of Machinists and Aerospace Workers, n.d., accessed 14 June 2021, http://www.iamaw.ca/charting-change-workers-voices-in-an-automated-world/.

99. Meinema, "Workers Must Define."

100. Linda Silas, "The Digital Transformation of Health Care," in *Convention 2019 – Newsletter, Day 5*, Canadian Federation of Nurses Unions, 7 June 2019, https://nursesunions.ca/convention-2019-newsletter-day-5/.

101. "karenatcmg," "The Robot Reporter: False Hope or Cautionary Tale?," Canadian Media

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It released a statement pointing out that technology has always transformed work and that there is no evidence that automation has led to joblessness. With the aim of alleviating the fears of its membership, it further iterated that, generally, professions represented by CUPE are at a low risk of automation.[102] However, it does raise concerns about automation in its profile of the communications sector, in which it highlights technological change as a driver of subcontracting, with the ability to work remotely – a phenomenon the union predicts will increase with the adoption of 5G networks in Canada.[103] It reiterated this position at its most recent convention, held in 2019.[104] In addition, CUPE stated that automation has made work safer for its members, by making work less physically demanding and reducing injuries.[105] Finally, the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied-Industrial and Service Workers International Union (United Steelworkers) underscores the manufacturing success of industrial powerhouses such as Germany and Japan, which have the highest number of industrial robots per capita.[106] The United Steelworkers cites them as evidence that automation is compatible with a thriving manufacturing workforce and, therefore, that job loss is not an inevitable outcome of automated industry.[107] Further, it mentions the benefits to employers and workers alike, with increased productivity, safety, and prosperity in the workplace.[108]

As this review demonstrates, no union has taken a public stance against the introduction of AI or automation in the workplace. Perhaps Ed Wytkind,

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Guild, 10 March 2010, https://www.cmg.ca/en/2010/03/10/the-robot-reporter-false-hope-or-cautionary-tale/.

102. "Will Robots Steal Your Job?," CUPE, 21 June 2017, https://cupe.ca/will-robots-steal-your-job.

103. "Sector Profile: Communications," CUPE, 30 October 2020, https://cupe.ca/sector-profile-communications.

104. "Finding Solutions Together," CUPE, 6 October 2019, https://cupe.ca/finding-solutions-together.

105. "Will Robots Steal"; Karin Jordan, "In-House Solid Waste Boosts Safety for CUPE 3034 Crew," CUPE, 16 January 2020, https://cupe.ca/house-solid-waste-boosts-safety-cupe-3034-crew.

106. Darrell M. West & Christian Lansang, "Global Manufacturing Scorecard: How the US Compares to 18 Other Nations," Center for Technology Innovation, Brookings Institution, 10 July 2018, https://www.brookings.edu/research/global-manufacturing-scorecard-how-the-us-compares-to-18-other-nations/.

107. Riley Ohlson, "John Oliver's Segment on Jobs and Automation Doesn't Quite Get It Right," *usw Blog*, 13 March 2019, https://m.usw.org/blog/2019/john-olivers-segment-on-jobs-and-automation-doesnt-quite-get-it-right.

108. Melissa Gillam, "Automation Augmentation Enhances Workers' Roles in Manufacturing," *usw Blog*, 29 November 2018, https://m.usw.org/blog/2018/automation-augmentation-enhances-workes-roles-in-factories.

former president of the Transportation Trades Department of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), stated it best: "This idea that we're a bunch of Luddites in the labour movement is just wrong. Safe transportation requires highly skilled workers, strong safety regulations, built-in redundancies, and persons and machines to work together and interface."[109] This view is in line with the overall tendency of unions in the 20th century not to resist new technology but rather to mobilize in sharing its benefits.[110.] Unions in Canada still do not oppose technological change, though they do recognize that its adoption and use is related to other issues in Canadian workplaces: safety, job security, gender and racial equality, and skill development. Workers are not afraid of technology or automation; they are rightfully afraid of the precarity, low wages, and brutal working conditions that the technological gig economy represents. Further, rather than seeing automation as a threat to jobs, several unions have taken issue with how employers are leveraging it in the workplace and the wider political context in which it is implemented: lack of legislation and regulation, globalization and offshoring, and trade policy. In short, unions are rejecting technological change as a scapegoat for growing inequalities and depressed wages, because they have organized, mobilized, and bargained historically and currently around its implementation – and are better off for it. They also recognize that workers can do their jobs and serve their communities better when they have the power to influence how technology is used in the workplace alongside and not in competition with workers.

Notably, these findings are contrary to the reviewed popular and scholarly discourse on the subject. In fact, a scholarly return to Luddism is developing, where Luddism is examined as a historical movement "confronting the technopolitics of industrial capitalism" that is relevant to today's political-economic conditions.[111] However, this method of resistance was born and popularized before the modern labour movement was organized in its current form. It is no surprise that this empirical study suggests that organized labour continues to see the struggle differently. Instead of Luddite tactics, Unions are oriented toward working with technology to create better workplaces and communities. This comes not from a view of technology as the "'material foundation' for the capitalist system of exploitation" but rather from one that divides the worker and the capitalist into two classes.[112] Without this division

109. "Making News and Taking Action at ALPA's Annual Safety Forum," *Air Line Pilot*, September 2018, https://www.alpa.org/news-and-events/air-line-pilot-magazine/making-news-taking-action-asf.

110. Carl Benedikt Frey, *The Technology Trap: Capital, Labor, and Power in the Age of Automation* (Princeton: Princeton University Press, 2019).

111. Jathan Sadowski, *Too Smart: How Digital Capitalism Is Extracting Data, Controlling Our Lives, and Taking Over the World* (Cambridge, Massachusetts: MIT Press, 2020), 170.

112. Sadowski, 170.

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as the central unit of analysis, technology becomes understood as the boss and acts of sabotage are substituted for class struggle. Most crucially, there seems to be a mischaracterization of labour's position and tactics by the neo-Luddites, as we see here that many unions are concerned about future technology and understand it as a site of struggle. Labour movements are not passively conceding that technology is politically neutral. Instead, they recognize that technology is a weapon leveraged by the boss, and they are using their power to actively shape its politics through engaging in public discourse, conducting member education, collective bargaining, organizing gig workers, waging legal battles, and fighting for their communities and society as a whole. In our view, the most important discrepancy here is a question of tactics rather than irreconcilable philosophical differences in confronting techno-capitalism. Ultimately, shifting the power imbalance from capital to labour will create the conditions for more worker-driven shaping of technologies and renegotiation of their use.

## Conclusion and Future Study

Carl Benedikt Frey observes that "there is nothing to ensure that technology will always be allowed to progress uninterrupted. It is perfectly possible for automation to become a political target."[113] Unions today are targeting technology in favour of more regulation though legal and political means, and overall, they are aiming to ensure that technological change is *progressive* for workers. At best, unions see automation as not eroding current jobs or working conditions. Taken as a whole, unions also believe that trends around technologically driven precarious work can be reversed by organizing and striking. At worst, some may be too quick to dismiss the potential for employers to leverage automated technology against current gains made by the labour movement. It is clear, though, that without strategic targeting and intervention from labour unions and workers, technological change will continue to lead to precarious work and erosion of working conditions in the coming decade(s) – a trend that continues to favour capital. While automation is sometimes presented as a negative or frightening spectre for workers and their unions, the data reviewed here makes it clear that Canadian labour is not afraid of automation, nor does it want to halt the process.[114]

It is evident that unions are developing positions on AI and automation as an ideological construct, as something to engage with as labour organizations.[115] Despite the setbacks that unions have faced since the neoliberal

113. Frey, *Technology Trap*, 291.

114. Claire Cain Miller, "The Long-Term Jobs Killer Is Not China. It's Automation," The Upshot, *New York Times*, 21 December 2016, https://www.nytimes.com/2016/12/21/upshot/the-long-term-jobs-killer-is-not-china-its-automation.html.

115. James Avis, *Vocational Education in the Fourth Industrial Revolution: Education and*

era, it appears as though labour is positioned to be able to make significant interventions in the public conversation around automation. It remains to be seen if unions in Canada can continue to leverage their power to cement labour's perspective not as one among many but as a primary guiding force in opinion formation and decision-making regarding technological change in the workplace. Labour's strategies and responses to large projected disruptions to employment must be bold in order to deal with this continued power shift. Given both the current neoliberal political-economic environment and the current capacity to automate up to 50 per cent of the workforce, regardless of pace of automation, further introduction of automation into the workplace will strengthen the position of capital over labour. In the event of job loss resulting from automation, local economies with concentrations of at-risk sectors may be devastated with widespread job loss, particularly in higher-income professions.[116] Wages would likely become depressed across sectors, even ones that are at low risk of automation.[117] The majority of job creation over the last decade has been in precarious, low-wage, part-time work, and with the development of technology beyond existing levels in the same neoliberal context, we can expect this trend to continue.[118] Because of this, labour movements should adopt wider strategies that reposition labour in relation to capital, especially those that have historical significance such as exploring a shorter workweek with no loss in pay.[119]

In some recent cases, the organizing and recognition efforts of gig workers in Canada have escalated to legal battles. One example is the Berlin-based food delivery company Foodora being brought before the Ontario Labour Relations Board by Foodsters United, a collective fighting precarious work. The board ruled that Foodora workers are employees and have the right to organize into a bona fide trade union.[120] Following this decision, Foodora began bankruptcy proceedings in what can be interpreted as a union-busting move. App-based workers still have an uphill battle to organize, owing to continued legal wrangling and increased union avoidance tactics by employers.[121] However, this ruling was historic and the result of a hard-fought campaign, organizationally

*Employment in a Post-Work* (Cham, Switzerland: Palgrave Pivot, 2021).

116. Prism Economics and Analysis, *Economic Impact Study*.

117. Acemoglu & Restrepo, "Modeling Automation."

118. Katz & Krueger, "Role of Unemployment."

119. Christoph Hermann, *The Political Economy of Work Time* (New York: Routledge, 2014).

120. Dan Darrah, "How Foodsters United Is Organizing Canada's Gig Economy," *Jacobin*, 11 September 2020, https://jacobinmag.com/2020/11/foodsters-united-canada-gig-economy-foodora.

121. Alison Braley-Rattai & Larry Savage, "Despite Foodora Ruling, App-Based Workers Face Uphill Union Battle," *The Conversation*, 15 March 2020, https://theconversation.com/despite-foodora-ruling-app-based-workers-face-uphill-union- battle-132744.

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supported by unions including the Canadian Union of Postal Workers (CUPW). Thanks in large part to their representation by CUPW, Foodora workers fought their termination and received a $3.43 million settlement that was distributed to affected workers across Canada.[122]

Many California app-based companies, such as Lyft and Uber, seem to share Foodora's anti-union sensibilities and are refusing to comply with legislation.[123] As such, all eyes have been on California, where the state assembly passed Bill 5, which states that most wage-earning workers are indeed employees under the law.[124] This legal change places the burden of proof on the employer to show that workers they had previously defined as "independent contractors" were indeed employees and thus able to unionize under the law. In response, Uber, Lyft, and other app-based companies lobbied for a referendum that asked "voters to undo the work of the legislature."[125] The world watched as Proposition 22 passed in California – after industry spent $205 million on a campaign against changing the status quo of precarious work for app-based workers – creating an exception to the protection law for this kind of employment.[126] However, the battle continues, as most recently a superior court judge ruled this exception unconstitutional.[127] Given the legal climate in the United States, appeals are expected and could take years.

For future analysis and strategy, we are most attentive to organizing that goes beyond immediate union membership in recognition that the entire working class is affected by automation and the transformation or elimination of jobs enabled by recent technological developments. Union support of organizing gig workers is significant because unions like CUPW have the resources and skills to wage such wars and can provide what is required for workers to organize themselves. This recent legal victory by CUPW and Foodora couriers points to the potential for unions to go on the offensive to organize precarious

122. Darrah, "How Foodsters United."

123. Scott Rodd, "Uber, Lyft, Postmates Refuse to Comply with California Gig Economy Law," NPR, 4 January 2020, https://www.npr.org/2020/01/04/793142903/as-california-tries-to-make-contract-workers-employees-industries-push-back.

124. AB 5 ["Worker Status: Employees and Independent Contractors"] (Cal. 2019–2020), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB5.

125. Miriam Cherry, "Dispatch – United States: 'Proposition 22: A Vote on Gig Worker Status in California,'" St. Louis University School of Law, Legal Studies Research Paper Series, No. 2021-03, 2021, 1, https://scholarship.law.slu.edu/cgi/viewcontent.cgi?article=1552&context=faculty.

126. Dara Kerr, "Proposition 22, Backed by Uber and Lyft, Passes. Drivers Say They'll Keep Fighting," *CNET*, 4 November 2020, https://www.cnet.com/news/proposition-22-backed-by-uber-and-lyft-passes-drivers-say-theyll-keep-fighting/.

127. Shane A. Le Master and Robert T. Dumbacher, "Alameda Superior Court Judge Rules Proposition 22 Unconstitutional," *National Law Review* 11, 251 (2021), https://www.natlawreview.com/article/alameda-superior-court-judge-rules-proposition-22-unconstitutional.

workers in the gig economy. Similarly, OPSEU has in its most recent labour strike taken the lead in recognizing that the immediate precarious working conditions of its members undermine the stability of all other workers. Other unions should take notice. Strategies are needed in an era of growing precarity that is intertwined with increasing reliance on AI. Unions need to not only develop new strategies for collective bargaining but also build solidarity across the working class.[128] This may include continued legal battles, not as a replacement for organizing but alongside it. History has shown that when organized labour fights for better working conditions, those gains can be extended to all workers – such as with the right to a 40-hour work week eventually extending to all workers with the *Fair Labor Standards Act* in the United States, or where an alliance between the women's movement and CUPW led to a victory for maternity leave that became extended to workers in Canada.[129] It appears that CUPW is again leading an important charge in redefining workers' rights in Canada. Overall, our research highlights that Canadian labour is making substantial contributions to strategy, public policy, and public and political discourse around automation. Such interventions are urgently needed, as they challenge the narrative put forward by mainstream institutions and several scholarly accounts of the future of work. Crucially, organized labour does not agree with the neo-Luddite perspective that technology "often plays a detrimental role in working life."[130]

This study is the beginning of a comprehensive look at the perceptions, attitudes, and strategies of unions organizing in Canada toward automation and AI. While it is impossible to review everything that unions in Canada have written about the topic, this is an overview of the key themes that have emerged from this discussion. More in-depth studies of expanded scope and methods are needed to further understand how labour in Canada and elsewhere is anticipating the impact of workplace automation and developing strategies to protect the interests of union members. The CLC, provincial labour organizations, and local labour councils, as well as interviews with workers and their union representatives, are all additional areas to explore. There is plenty more room for interdisciplinary exploration, with science and technology studies (STS) and communication scholars working with labour scholars and organizations to gain insight on the intersection of technology and labour. Each discipline brings unique philosophical foundations and methods of historicization. Recognizing that research currently favours business-focused perspectives, further studies from the perspective of labour would contribute

128. Lewchuk, "Political Economy."

129. Jonathan Grossman, "Fair Labour Standards Act of 1938: Maximum Struggle for a Minimum Wage," *Monthly Labour Review* 101, 6 (1978): 22–30; Leslie. J. Nichols, "Alliance Building to Create Change: The Women's Movement and the CUPW Strike," *Just Labour: A Canadian Journal of Work and Society* 19 (Autumn 2012): 59–72, doi:10.25071/1705-1436.26.

130. Mueller, *Breaking Things at Work*, 2.

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to an understanding of potential impacts on workers and their communities and how to fight back. Labour's weakened position has compromised its ability to counterbalance the growth of precarious work with the advent of technological development, given the growth of the gig and micro-work economy. Overcoming this will require building on old and developing new strategies that strengthen both union power and wider working-class solidarity to combat the bigger challenges to come.

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## Appendix A

| Organization Name | Discussion |
|---|---|
| Air Canada Pilots Association (ACPA) | No |
| Air Line Pilots Association, International (ALPA) | Yes |
| Alliance of Canadian Cinema, Television and Radio Artists (ACTRA) | Yes |
| Amalgamated Transit Union (ATU) | Yes |
| American Federation of Musicians of the US and Canada (AFM) | No |
| Association of Canadian Financial Officers (ACFO) | Yes |
| Bakery, Confectionery, Tobacco Workers and Grain Millers' International Union (BCTGM) | Yes |
| British Columbia Government and Service Employees' Union (BCGEU) | No |
| British Columbia Teachers' Federation (BCTF) | Yes |
| Canadian Association of Professional Employees (CAPE) | Yes |
| Canadian Farmworkers Union (CFU) | No |
| Canadian Federation of Nurses Unions (CFNU) | Yes |
| Canadian Office and Professional Employees Union (COPE) | No |
| Canadian Postmasters and Assistants Association (CPAA) | No |
| Canadian Union of Brewery and General Workers (CUBGW) | No |
| Canadian Union of Postal Workers (CUPW) | Yes |
| Canadian Union of Public Employees (CUPE) | Yes |
| Communications Workers of America – Canada (CWA Canada) | Yes |
| Congress of Union Retirees of Canada (CURC) | Yes |
| Elementary Teachers' Federation of Ontario (ETFO) | No |
| Glass, Molders, Pottery, Plastics and Allied Workers International Union (GMP) | No |
| International Alliance of Theatrical Stage Employees, Moving Picture Technicians, Artists and Allied Crafts of the United States, its Territories and Canada (IATSE) | Yes |
| International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers (ABSORIW) | No |
| International Association of Fire Fighters (IAFF) | No |
| International Association of Heat and Frost Insulators and Asbestos Workers (IAHFIAW) | No |

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|---|---|
| International Association of Machinists and Aerospace Workers (IAMAW) | Yes |
| International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers (IBB) | Yes |
| International Brotherhood of Electrical Workers (IBEW) | Yes |
| International Federation of Professional and Technical Engineers (IFPTE) | No |
| International Longshore and Warehouse Union (ILWU) | Yes |
| International Longshoremen's Association (ILA) | Yes |
| International Plate Printers, Die Stampers and Engravers' Union of North America (IPPDSEU) | No |
| International Union of Bricklayers and Allied Craftworkers (BAC) | No |
| International Union of Operating Engineers (IUOE) | No |
| International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW) | Yes |
| International Union of Painters and Allied Trades (IUPAT) | Yes |
| Laborers' International Union of North America (LIUNA) | No |
| National Union of Public and General Employees (NUPGE) | Yes |
| National Union of the Canadian Association of University Teachers (NUCAUT) | No |
| Office and Professional Employees International Union (OPEIU) | Yes |
| Ontario English Catholic Teachers' Association (OECTA) | No |
| Ontario Secondary School Teachers' Federation (OSSTF) | No |
| Professional Institute of Public Service of Canada (PIPSC) | Yes |
| Public Service Alliance of Canada (PSAC) | Yes |
| Seafarers' International Union of Canada (SIU) | No |
| Service Employees International Union (SEIU) | Yes |
| Shipyard General Workers' Federation of British Columbia (SGWBC) | No |
| United Association of Journeymen Apprentices of Plumbing and Pipe Fitting Industry of the United States and Canada (UA) | No |
| United Food and Commercial Workers (UFCW) | Yes |
| UNITE HERE! | Yes |
| United Mine Workers of America - Canada | No |
| United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied-Industrial and Service Workers International Union (USW) | Yes |