Title

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The Future Is Rosie?: Disempowering Arguments About Automation and What to Do About It

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Abstract

Many technologists who work in robotics and AI bristle at the idea that human worker displacement is problematic. Others wish to account for workers' needs, but face pervasive myths about the impacts of these technologies. This paper aims to clear the air by refuting five common arguments for automation: 1) the jobs being automated are undesirable, 2) labor shortages necessitate automation, 3) by "augmenting rather than automating" labor displacement will be prevented, 4) there will be new and better job creation, and 5) automation will give us all more leisure time. The advent of foundational models has led to an industrial gold rush, accelerating deployment without careful consideration of responsible and sustaiable design and deployment of these technologies. Despite technologists' best intentions, this path of pervasive automation we are on is not a good one, and we offer suggestions for how technologists, designers, and decision makers can push for worker-centered technological change moving forward.

CCS Concepts

• **Social and professional topics** → *Automation*; • **Human-centered computing** → **HCI theory, concepts and models**; • **Computer systems organization** → *Robotics*.

Keywords

automation, robotics, AI, labor, ethics, social theory, critical computing, future of work

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1 Introduction

Several scholars have argued that since the start of the COVID-19 pandemic, the pace at which automation is being used in industry has greatly accelerated [11]. Autor and Reynolds argue it has brought an "increasingly automation-intensive future closer to the present."

Technologically, we have seen large leaps forward in foundational models being used in AI and robotics to start to solve "wicked" problems previously unsolvable [23]. That is not to say these problems are solved, nor are these systems anywhere near ready or approriate to be deployed en masse, but Estlund [53] argues organizations and their workers are entering a " tournament economy" with machines. Companies are racing to embrace automation to retain their perceived competitiveness (i.e., "adopt AI or fail" [155]), which is leading to deleterious effects on the workforce.

Many governments and industries meet this moment with a combination of ethical AI principles some call "useless" [105] or "utopian" visions of abundant worlds of automation, leisure, and a population dependent on universal basic income [53]. With the exception of the European Union [54], progress on policies to protect and empower workers has been slow, often hampered by lobbying from industry that prefers to work unhindered by stakeholder input. This moment is particularly problematic for marginalized people in low wage jobs, who are already facing precarious working conditions within gigified work [96] and complex subcontractor arrangements that siphon the value workers create while making accountability complex [160].

As scholars who work in the fields of AI, robotics, and HCI, we frequently encounter five myths masquerading as arguments for automation in everyday conversations with technologists, including: 1) the jobs being automated are undesirable, 2) labor shortages necessitate automation, 3) by "augmenting rather than automating," we can prevent labor displacement, 4) there will be new and better job creation, and 5) automation will give us all more leisure time. These arguments are entrenched within sections of labor economics [53, 121], in sociotechnical imaginaries [28, 52], and in discourses of industrial capitalism and colonialism [10, 110]. We choose to counter these myths both because we frequently encounter them among peers, and because we wish to draw together resources from disparate fields to articulate a pro-labor, [169], social justice [40, 48, 174], and feminist [13] case against them.

In this article, we will explore and refute each of these claims, by drawing on research about robotics and AI, as well as older but relevant technologies from computer supported cooperative work, as well as critical computing related research such as feminist HCI and worker-centered HCI. The form of this paper draws from the labor organizing strategy of "inoculation," in which people introduce common ideas that mask unequal power relations and present counter-arguments and substantiating evidence. In a sense, this is a motivated literature review that recognizes that technologists participate in an uneven ideological field influenced by technology industry funding and state interests [4, 165]. The goal of this paper is to accelerate progress in worker-centered research and teaching

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by synthesizing important work both from within our field and beyond it for technologists, whether HCI researchers, tech workers, or students.

The myths this paper challenges are most dangerous in economies with highly financialized business sectors that have sufficient capital to invest in risky and costly automation, and where countervailing institutions such as the state or unions have struggled to reign in the speculative pursuit of automation. North America, where both authors reside, is one such place (see [120]). Ideologies of labor, of the state, and of corporate development of automation look very different in other regulatory and cultural contexts [6, 67, 68, 81, 115] and we hope scholars with accountabilities in those regions might decide whether this approach is relevant to workers' needs.

We note that despite technologists' best intentions, the path of pervasive automation we are on is not a good one, and it is critical to do something now to avoid a "dystopian, hyper-polarized future" [53]. Thus, we end the article with concrete suggestions for how technologists and decision makers can affect change moving forward.

1.1 Contributions

We contribute to human-computer interaction research that advances a worker-centered HCI [57] and technology that centers the most vulnerable and most impacted by technological change [47, 48, 81, 164]. By bringing together a multidisciplinary set of literatures to counter widespread claims about automation, including worker-centered HCI [169], feminist studies, economics, management, and social justice human robot interaction (HRI) [60, 112, 174], this paper can support both HCI researchers who work on critical AI topics, as well as those who may need to refute misconceptions about automation in the course of their work. Additionally, by discussing workers' experiences of automation across multiple sectors, including manufacturing, fulfillment, healthcare, and service, we call on researchers to slow down automation development so that a wider range of voices can shape the progress of these technologies, taking a more holistic and worker-centered approach.

We make these contributions by both synthesizing disparate literatures, as well as speaking from situated perspectives that draw on our own work (AI data production and assistive robotics). In doing so, we respond to calls by Wolf, Dombrowski, and Asad for "A labor-informed, or pro-labor, praxis" which "confronts – and fights against – capitalism's dehumanizing forces by centering workers, individual people whose dignity, care, self-determination, and flourishing are ambitions to be held in higher esteem than the accumulation of material goods" [169].

1.2 Positionality

One author is a roboticist, computer scientist, and designer, who also has training in the social sciences. The other author is a social science researcher, designer, and organizer, and is involved in a labor research center that collaborates with worker organizations, as well as has training as a computer scientist. In their work, they have found cultural corners of engineering that celebrate automation, while assuming lack of skill to those with less power, status, or wages in the workplace. And yet they also find those who genuinely seek to do good but are not specialists in social justice approaches to design and automation. This paper aims to synthesize research to support those who wish to make work better for workers, especially non-specialists who nevertheless seek support in countering these common myths.

2 Background

Before discussing and refuting common arguments made in favor of automation, it is important to introduce several key terms and concepts we will use throughout the article, and also briefly discuss their context within the workplace.

2.1 Key Technologies

2.1.1 Robotics and fauxtomation. A robot is a physically embodied system capable of enacting physical change in the world. Robots have effectors and actuators that support their ability to engage in manipulating objects in the environment and/or with mobility [131]. Robots operate with a range of autonomy, from fully autonomous (e.g., airport terminal trains), to semi-autonomous (e.g., autonomous vacuum cleaner robots where a person can take over control of tricky areas), to fully-teleoperated (e.g., underwater exploration vehicles).

Until recently, robots were largely separated from people by cages, where human and robot work was strictly bifurcated (for example, in automotive manufacturing). However, due to the advent of compliant actuators and lower cost and smaller sensing systems, humans and robots now work physically close together human workplaces and are widely deployed, in contexts ranging from picking items within warehouses [83], collaboratively harvesting field crops [152], and delivering items in hospitals [36].

Some recent advancements in the use of foundational models in robotics suggest substantial leaps forward in capability, such as via language and vision, enabling robots to generalize to new situations and support task specification and learning [23]. However, many key (possibly insurmountable) problems remain, including sufficient (and correct) real world data that can support learning (and methods to do so longitudinally), as well as issues with safety and robustness. This is due to the fact that human environments are unpredictable and always in flux, sensors are unreliable, and hardware breaks down all the time.

It is important to note that many advanced robotic systems deployed in the real world are actually *fauxtomation* [143]. Behind the scenes, there are either humans taking on the role of *robot wranglers*, either directly controlling them to make them work, or, if they are fully autonomous, scuttling around after them to fix them when they break. Thus, while some "automation anxiety" [53] can be lessened when it comes to concerns of widespread robot adoption any time soon, there are real concerns about the use of robotics in work that need to be addressed.

2.1.2 Automation. Automation is defined as the use of autonomous systems to support "efficiency, productivity, quality, and reliability," largely in structured environments, and typically longitudinally [76]. While roboticists largely consider the "autonomous systems" part of this definition to refer to automation coupled with physically-embodied systems, public discourse has shifted, and now the term

is broadly used to include any automated processes, including imagined ones, regardless of its physicality.

2.1.3 Artificial Intelligence (AI). AI is commonly used to refer to computing systems programmed to simulate or mimic human cognition, or ideological constructions of human cognition [137]. Classically, there are many kinds of AI systems: expert systems which employ pre-defined rules and knowledge bases; symbolic AI systems that attempt to produce intelligent behavior through the logical processing of conceptual maps; and search algorithms which use algorithms to search massive and growing data structures. However, over the last decade machine learning (ML) – one particular kind of artificial intelligence – has been the focus of most research and development efforts, and has attracted significant attention and investment. ML algorithms that learn without being explicitly programmed through interaction with data (often already categorized) and the environment.

AI, like robotics, can only interact with the world through electronic sense data processed mathematically through intensive computing resources and, often, human input at training and model evaluation phases. Much ML relies on data sets commandeered from digitized content produced for other purposes, such as social media posts, films, newspaper articles, or institutional documents. Like with robotics, some AI is fauxtomation [143] and most AI requires supply chains of human data annotation workers to produce training data and supervise algorithmic outcomes [64, 78].

2.2 Human Robot Interaction and Workers

Researchers in Human Robot Interaction have considered how robots may affect workers' experiences across multiple sectors, such as in the gas industry [91], manufacturing [161, 162], dairy farming [35], and service work [20, 33] While much early work in this field largely had an "acceptance framing" (see Section 2.1.3), the HRI community overall has started to shift to adopting social justice oriented research and design practices (c.f. [60, 85, 111, 167, 168, 174]).

Last year at HRI 2024, researchers organized the "First International Workshop on Worker-Robot Relationships" [173], which explored several related ideas, including how to foreground frontline workers in public deployments of robots [55], an exploration of how workers engage in knowledge hiding and territoriality against robots [99], etc. The workshop organizers argued in their proposal that most HRI research lacks critical stance on the social implications of worker-robot relations [173], citing a recent special issue on critical robotics research by Serholt et al. [129] that echoes this point. Our work addresses this gap, building upon the growing trend of social-justice oriented research practices in HRI, and we contribute by connecting worker-centered robotics with a wider frame of worker-centered HCI and cultural and historical analysis of automation discourses of which robotics is often a part.

2.3 Automation myths and engineers' imaginaries

In 2013, Bradshaw et al. [25] published "The 7 deadly myths of automation," and, in 2014, a follow up article with an analysis of catastrophic examples of missile errors leading to fratricide due to poor classification algorithms on an "AI-assistive" targeting system [71]. The articles largely focus on how we should appropriately conceptualize autonomy, and the critical importance of keeping humans centered within its use. Additionally, the authors are mindful of fauxtomation [25] (defined in Section 2.1.3, see also [77, 82], and argue that humans "on the loop" is insufficient to ensure safety in critical settings [71]. These problems persist to this day, famously in recent catastrophic "full self-driving" vehicle crashes [42, 43] and Boeing 737 Max crashes [45].

Bradshaw et al.'s excellent work emphasizes engineering and safety concerns primarily in contexts where failure is catastrophic. By contrast, our work centers workers' experiences and power in a wider range of work settings, including manufacturing, care delivery, and service work, where often more subtle forms of automation expansion do not become catastrophically visible.

Not all myths about automation lead to calamity, but can still cause disconnects in how technology creators consider its use and impacts. For example, ethnographer Both [24] spent three years embedded within a German autonomous driving team at FU Berlin. He discusses how some roboticists were prone to reductionism in their conceptualization of autonomy, viewing it as a series of subtasks to be solved (e.g., sensing, navigation, planning), while allowed them to convince themselves (and others) that a fully functional autonomous system was just around the corner. This sort of framing necessitates internalizing some automation myths to justify the purpose of the work in the first place.

Other HCI and STS work has explored engineers' imaginaries and their conceptualizations of autonomy. For example, in healthcare robotics, Breuer et. al [28] and Wright [170], discuss similar types of task reductionism in engineers' imaginaries, leading to care fragmentation (e.g., robots do the physical labor, humans do the emotional labor). This is opposed to adopting more holistic and value-centered care models, which is seen as key for ethically-grounded care delivery [28, 151].

Additionally, Breuer et. al [28] discuss how German roboticists often couch their work within "acceptance framing", e.g., workers are people who need to be convinced to accept robot use within their practice, as opposed to experts of their own work context who may have valid reasons for not wanting to adopt automation. This tension also can lead to engineers embracing solutionist myths around automation in order to perpetuate (and defend) a project's existence.

In Swedish contexts, scholars such as Eriksson [52], Rahm [119], and Toll [149] have highlighted vast differences in the sociotechnical imaginaries of end users and the engineers and other suppliers of automation technology, leading to complexity in organizational policy decision making. These disconnects in sociotechnical imaginaries have also been explored in agricultural robotics contexts, such as between farm workers and manufacturers, in North America, Europe, and Oceania [16, 35, 63, 66].

2.4 CSCW, social-technical gaps, and power

We build on the long history of close attention to bodies at work with machines in the fields of HCI and Computer Supported Cooperative Work.

The situation of robotics and AI at work today shares basic challenges identified decades ago: social needs or "requirements" are often mismatched with technical capabilities of systems. Mark Ackerman called this "The Intellectual Challenge of CSCW" [2]. A key approach to CSCW developed to understand how people coordinate group activities, in the workplace and beyond, and how they orient and towards or through digital systems in the process. Schmidt and Bannon [128] argued that the study of how people sustain activities in interaction would yield more robust designs than simply approaching individuals as users and designing applications.

Feminist researchers further noticed that power dynamics within organizations and societies, shaped by gender, race, and class, affect people's awareness of the work needed to produce successful outcomes, or what a successful outcome even is. A key set of debates in the field historically counterposed managerial understandings of work processes with workers' own understandings. Lucy Suchman and Susan Leigh Star, with many colleagues, drew attention to invisible work by which workers repair systems and organizations such that they appear to operate as managers expect [135, 138, 139]. It is this invisible work that managers and those less intimately familiar with the work fail to recognize, value, and compensate [138, 139]. Making this work visible, however, is not necessarily liberatory, Suchman argued, as visibilization can bring more surveillance and control of workers [139]. Suchman and Star built on the contributions of Scandinavian participatory design which brough Computer Scientists together with Nordic trade unions [49, 140], to counter deskilling in technological change (see Braverman [27]).

We build on these longstanding orientations to the social analysis of human-computer interactions to counter common misconceptions about AI and robotics with grounded realities of these diverse technologies at work. In doing so, we join and build on researchers who have demonstrated importance of the invisible work of janitors, hotel workers, bus drivers, and health workers, showing where it is required to make technology work and where it is impeded by technology to the detriment of customers, patients, and many others [5, 51, 58, 78, 100, 106].

3 Exploring and refuting the five common arguments in favor of automation

Common arguments in favor of automation circulate in the media and around kitchen tables as everyday stories through which we make sense of technology. As ideologies, they are most persuasive among those who do not have information that contradicts the story. The common myths we identify below are ones we hear among people of relative privilege as highly-remunerated professionals and knowledge workers. These stories cover up the realities less privileged people experience around automation and technological change while disempowering technologists from critically questioning the projects that we work on. The stories also often rely, as we will show, on cultural assumptions bound up in histories of industrialization, colonialism, and the value of different kinds of people and workers in a world order built to justify global exploitation [10, 110]. In that sense, the stories we describe below are ideological —highlighting one aspect of reality while erasing others in ways that support the powerful [123]. By challenging these ideologies, we hope to better prepare technology builders to engage in technology work that engages with workers' wider realities.

3.1 Claim 1: "No one wants those jobs anyway: It's better for robots do them."

One of the most common arguments in favor of the use of robotics (and AI) is to claim that a particular set of jobs is undesirable. Roboticists have a particular term for this, the "3Ds": dirty, dangerous, and dull jobs. This concept originated in Japan, the "3Ks" - *kitani, kitsui*, and *kiken* [38], describing jobs dominant assigned to migrant workers and those of lower class workers (e.g., *burakumin*) [38, 118, 170]. The concept resonates with longstanding Euro-American bourgeois conceptions of work that demean manual labor in relation to mental labor, and demean household and caring labor in relation to craft and production – devaluing work assigned to working class, feminized, and racialized people [175].

There is little dispute that highly toxic and dangerous jobs, such as cleaning up hazardous waste or demining war zones, are well-suited for robots. However, many of the jobs people might call "dirty" or "dull" are not inherently so but sometimes made so by exploitative social conditions and demeaning interpretations.

A majority of people working in these "dirty" and "dull" jobs are marginalized (e.g., women, people of color), and most are of low-SES status. They are in need of a paycheck, and have to overcome a lack of time and resources when they are able to push back [118]. Those employed in precarious "at will" employment positions also overcome the threat of losing their jobs when they speak up or resist [53]. Employers take advantage of worker vulnerability, including – whether fear of job loss or deportation (in the case of undocumented or employment visa holders), to sustain dangerous and exploitative working conditions, knowing workers enjoy fewer legal protections when they push back [158]. A dirty job – child and elder care, for example – might, by contrast, also be a caring and safe job when done with proper safety equipment, time, compensation, and respect for skill. A dull job might be more interesting when workers control the pace and conditions under which they do it, such as collaboratively with others or interspersed with other work for variation.

As if in rebuttal to those who degrade dirty work, social scientists have persistently found that workers in stigmatized occupations —for example, oil rig workers, sanitation workers, and gravediggers —usually see themselves in a positive light. They find that workers are supported by strong group identities fostered by other similarly positioned workers well aware of the stereotypes and stigmas of wider society [8].

Those who demean dirty work are often the ones who create it for others. Feminist scholars have demonstrated how middle- and upper-class notions of dignity, poise, and even femininity depend on the assignment of undesirable work to those over whom they have power, especially along racialized, gendered, and caste oppressed lines [10, 61]. Ethnic studies scholar Evelyn Nakano Glenn has shown how Black and immigrant servants made possible "the woman belle ideal for white middle class women" who employed them [61]. Building on these scholars, Irani has argued that in late capitalism, the entrepreneurial information and communications technology ideal of creative and innovative work rests on the work

these creatives selectively outsource to data annotation workers, Task Rabbits, and others to whom "creatives" can outsource work to with minimal pay, rights, or protections [79].

The stance, then, that robotics and AI will only replace dull and dirty jobs largely reflects a lack of acknowledgment of the societal inequities that create this kind of labor, the stereotypes that erase workers' conceptions [118], and its origination from colonialist, extractive labor [9]. Workers who do the job are in the best position to judge their jobs – what they value, what they want changed, and whether and how they want their job eliminated or transformed into a different role. We offer examples of this in our concluding discussion. (See Section 4.3).

What if robots and AI could serve to disrupt this disdain or stigma? Some researchers in the field of human-robot interaction (HRI) have proposed unique ways for robots to support workers in these jobs. For example, researchers have suggested robots can be used to disrupt hierarchies, such as giving nurses a voice to speak up against physician error [144], or to take on the role of the "out group member" to strengthen human group bonds [59]. Recently, HRI scholars have explored the possibility of how to interrupting these power dynamics [73, 168], which raises the question: might a robot be introduced, intentionally, as being a lower-than-human status in the hierarchy, and thus somehow lead to an improvement of conditions for human workers?

Boddington [22] suggests this can backfire in contexts like nursing. By using automation to "professionalize" work, nursing risks becoming viewed solely a series of billable technical and physical tasks, where the fuzzier aspects of care provision (e.g., connecting with patients) become a "luxury" by healthcare management [22, 29]. Technology is frequently introduced into healthcare with an initial goal of replacing nurses, devaluing the legitimacy of the profession, and care work in general [17, 148].

Finally, across many countries and sectors, it is worth noting that even exposing workers to robotics and automation provokes workers' concern about job security, even in sectors where automation does not threaten jobs [87, 172]. Thus, as HCI researchers, how we frame new technologies and introduce them can cause harm to the communities we wish to support, and it is important to be mindful of this. One way to mitigate this is by giving workers more control and say over the introduction of automation into the workplace, including automation-related research [46, 62].

3.2 Claim 2: "There's a labor shortage, therefore we need robots."

In government, industry, and research spaces, speeches and papers commonly open with cries of "labor shortage," citing statistics from their own region. These claims often adopt crisis discourse that seems to urge swift action, rather than careful negotiation with workers. While in different regions and times, there may be labor shortages across key economic sectors, the reasons for these shortages vary by sector. The reasons, however, are rarely technological.

Following the crisis discourse about labor shortages, government and industry leaders often then pivot to "the language of necessity" [15] wherein the use of automation is the only possible solution to a sector's labor shortage problem. This is then used as justification for heavy investment in automation technology development as opposed to supporting worker recruitment, training, re-skilling, or up-skilling [53, 97].

For example, in nearly all high and middle income countries, care work is becoming increasingly commodified, e.g., "the care economy" [114]. In Japan, there has been a push to displace human care labor with capital (robots), by opening new markets for existing robotics companies to transition their industrial robots to ones that provide care, and offering a global marketplace and helping the country gain its once global dominance in service robotics [170]. Automating care promises to let Japan turn a crisis of care for an aging population into an economic opportunity. In the United States, labor shortages offer a convenient excuse for technology solutions, but economists attribute the shortages to a problem of incentives. Conservatives want to reduce unemployment benefits to urge people back on payroll. Liberal economist and former Secretary of Labor Robert Reich counters that people need to stay home to avoid unsafe working conditions or because their pay is too low to afford child care and transportation to outside workplaces [124].

Within industries, there are complex root causes for labor shortages. The UC Berkeley Labor Center, for example, reports that low property and commercial taxes —taxes that benefit owning classes —result in smaller government budgets and perpetual public worker understaffing. Public workers leave the sector due to higher workloads, mandatory overtime, and the stress of offering services to residents with thin resources [70]. In some states, high cost of living also keeps workers from entering these lower wage industries. Teacher shortages similarly have been attributed to low pay relative to cost of living as well as burnout [26].

Approaching a labor shortage with technology can do harm. For example, there is a critical labor shortage of mental healthcare providers in many countries [39, 156]. This is due to several reasons, including a lack of funding for counseling, inadequate reimbursement rates, stigma against the profession, etc. [116]. However, rather than addressing these root causes, companies have promoted chatbots as mental health supports under the guise of extending access. Unsurprisingly, this has resulted in deleterious effects: the chatbots provided erroneous information and caused traumatic harm, such as encouraging people with eating disorders to starve themselves and people with suicidal ideation to harm themselves [56, 171].

While paying workers (including informal care givers) a better wage has political enemies, technology solutions find few [103]. These technologies, however, do not solve any of the root problems inherent in care work (or labor shortages therein), but rather exacerbates them. Unfortunately, key decision makers buy into the *efficiency myth* [147] and *AI hype* [18] they may purchase and deploy these systems without a clear understanding of their limitations (and dangers).

3.3 Claim 3: "We don't want to automate human work, we want to augment it."

Some argue that they have no wish to displace the human workforce, but rather augment it. Here, they suggest a robot assistant can lift heavy objects, fetch items, or perform repetitive work. The argument is that robots and people have complementary skill sets,

where robots can take on 3D/3K tasks, and human workers can spend their energies engaging in creativity and problem solving.

Unfortunately, these claims do not hold water from an employer's perspective. Raisch and Krakowski [121] frame this as "the automation–augmentation paradox". They note the two cannot be readily separated, and are interdependent. They give examples of two companies which began with a human augmentation approach, JP Morgan Chase (bank) and Symrise (fragrance company). HR staff at Chase and perfumers at Symrise respectively worked closely with AI tools to augment their jobs. After a year, once the AI tools were trained, the human workers had unwittingly automated key elements of their jobs.

For physical robots ("cobots"), anecdotally there are many stories across sectors from healthcare to manufacturing of robots becoming "million dollar coat racks" [98]. Robots were designed to augment skilled human work, such as by helping with patient lifting or stroke rehabilitation in healthcare, or robots helping workers on the assembly line in factories. However, once workers experience the realities of a robot's poor usability, large maintenance load, and unfit work contextualization, they abandon the robot. In healthcare, Wright [170] gives an example of this with the Hug patient-transfer robot deployed at a nursing home in Japan. While a great idea in theory (it could potentially save care workers from serious back injuries), within several days of use it had been relegated to the closet. Neither residents nor care workers liked it - residents found it uncomfortable, and care workers found it to decrease the single most important characteristic of their job: "caring with one's own hands" to maintain both kinship and skinship with residents [170].

3.4 Claim 4: "Robots and AI will create new/better jobs."

Another frequent argument in favor of automation is that it will create a series of new and better jobs [109]. The claim goes that automation will change how work is done, shift work to "higher value tasks", and that automation will create "more meaningful and productive careers for employees" [32, 65]. This is known as the reinstatement effect [1], where automation creates new jobs that give workers a "comparative advantage". Thus far, this has not borne out, and displacement effects have been outweighing reinstatement effects for the last 30 years [53].

Further, the logic of "better" and "higher value" jobs implicitly denigrates jobs in ways that can be unfair. Empirically, sociologists in the United States have found that the wages of an occupation negatively correlate to the number of women in the occupation, even controlling for specialized education and skills [37, 92]. This is called the "devaluation theory" of wage setting and has been tested against other explanations of gender gaps in wages. (Evidence on race suggests that discrimination preventing Black workers from entering higher wage occupations is the more dominant mechanism of white supremacy suppressing Black wages [74].) Women and Black workers are in putatively lower value jobs, but the invisible hand of the value-determining market is discriminatory. Put another way, is it fair that the labor of failed startup founders are typically valued higher than farm workers or carpenters who provide for essential needs of life?

The value attributed to jobs also depends a great deal not on skill or human capital investments, but on trade policies and corporate practices. The reason a designer is valued more highly than a rubber worker is global exploitation. Since the 1980s, corporations have adopted a hierarchical "value chain" form of production in which they reorganize their production to control their competitive advantage (what makes them unique in customers' eyes) while outsourcing the rest [80, 88]. Companies like Nike, for example, keep what they see as their core value (branding, advertising, marketing, and design) within the corporate center. The rest —molding, cutting, sewing, gluing, assembly —they outsource through supply chains of extraction and manufacturing enabled by free trade zones and capital mobility.

The value earned by these different aspects of products is hierarchical not because logos are more useful than shoe soles, but because corporations and formerly colonizing countries have mechanisms to secure markets and stimulate desire for their brand among those with money to spend and invest. They also pay as little as the local workforce, made vulnerable by other processes, will bear. In short, the higher value assigned to jobs in branding, finance, and software than in manufacturing and agriculture has more to do with trade policy and domination than it does with the inherent quality or worth of the work.

When new jobs do emerge around robotics and AI, there is little evidence that these jobs are better. The way work is shifting is not into a utopia, but rather into roles of automation managers and robot wranglers. This invisible labor is what the "automation charade" (aka "fauxtomation") rests on [104, 143, 163]. In the service industry, the labor of automation managers is becoming increasingly visible in grocery self-checkout, hotel front desks, and at passport control stations. Automation managers flutter from station to station, punching in override codes, cleaning the glass, and repositioning items for the machine's scanners. In many cases, when an autonomous system fails (as they often do), automation managers take over the work of the system, generally engaging in more work than they would have had they just been doing the original human-led process themselves. These forms of automation also create new kinds of labor for consumers, who now must learn the interface and perform their own data entry [113]. In short, management is placing the burden of successful automation integration onto consumers and frontline workers [93], forcing workers to take on new roles including tech support and additional emotional labor in the service sector.

In robotics, the automation charade is well known but rarely discussed. From giving demos to local school children to conducting high profile events with world leaders, roboticists understand the necessity of robot wranglers to support successful demos (and, ultimately, successful deployments). The world is full of physical and sensor obstacles which few robots are equipped to handle entirely independently; let alone mundane problems such as an unreliable WiFi connection stopping a robot in its tracks. And, of course, the robots themselves need maintenance like any built system, including its wheels, motors, batteries, etc. In short, autonomous systems are brittle and fragile, and physically embodied systems with sensors and actuators, like robots, even more so.

Those who must manage and maintain these fragile systems are termed by Munn as a "digital underclass", who engage in "precarious

and exploitive piecework" [104]. Fox et al. studied workers in an automated recycling facility and described a wide range of ways workers supervise, repair, and anticipate processing problems in real time. Machine parts wear over time, or a rainy day confuses the AI with wet bags. They call this work "patchwork," as workers must ongoingly patch automated systems [58].

Robot wrangling will always be necessary, but can it lead to good jobs? Autor and Reynolds [11] note that when automation reduces demand for workers in low-paid jobs it does not result in demand for these same workers to take on middle-paid jobs. They also note that the few workers who remain in their jobs can experience a reduction in pay. And for those that wish to transition to new positions, they lack experience and training, and thus may experience significant hardship during the transition.

Facing this, automation champions largely counter with an argument that people will be retrained for new jobs. However, a large-scale study by McKinsey surveyed over 300 executives at a range of companies, and while the majority found re-skilling and up-skilling of upmost importance, very few actually invested in such programs [97]. And even with increased training and education, workers will need to be "constantly retaining and remarketing themselves" to compete with the accelerated pace of how automation will shift work [53], which is both exhausting and assumes bodyminds capable of maintaining this frenetic pace.

Evidence from Amazon suggests that robotically augmented work is not better work. Amazon makes workers wear devices that direct them where to meet robotic, mobile shelves; workers pick the product from the shelf then packing it to ship.. The algorithmically paced work creates high rates of injury and prevents workers from learning to anticipate what will happen next since shelves constantly move [44, 122]. Workers have demanded breaks for safety, less surveillance, and even a cessation to the selling of non-essential goods during the pandemic [153]. A good job can mean many things, and the workers in Amazon's warehouses have many visions.

Work by Whittaker et al. [166] highlights how not only automation affects the quality of work [122], but also who gets hired as a worker at all. They cite the example of HireVue, an automated video-based screening tool which considered non-disabled body minds as "the norm", massively discriminating against people with disabilities that affect their facial expressions and voice, including speech disorders, having had a stroke, deafness, and blindness [166]. Systems like these reinforce ableist, medical models of disability, and rarely include disabled people as collaborators in the AI design process [108]. What new jobs may be created, then, will not necessarily be available at all, let alone be accessible to a huge percentage of people with disabilities (which is 25% of the world's population).

Good jobs accompany automation when workers have labor protections and institutional power. Journalist Simon Head compares how automation plays out in Germany, a country with a strong craft tradition and workers at the table in corporate governance versus in the United States where corporations prefer command and control over workers [69]. The Treuhand workshop in Chemnitz, Germany, presents one possibility. The shop uses advanced machining systems to manufacture components, but strong trade unions facilitate worker control over their labor. Managers send specifications to workers trained in craft-apprentice traditions and those workers decide how to use machine tools to design the component. Managers check for quality only just before shipment. The Treuhand workers augment their craft with automation without falling under managerial microcontrol from a distance.

By contrast, the US workers Head observes at Caterpillar and John Deere are commanded by engineer managers who specify parts and process in detail. Machinists then execute the plan. Little collaboration transpires between machinists, who know the machines intimately, and the managers who detail the work. When machining the materials inevitably reveals design problems, the distance between workers and managers stymies resolution. With their command-and-control structure, the American workshops do not meet the design and quality standards German companies achieve with empowered machinists. The problem lies with the ways automation entrenches command-and-control relationships between managers and workers.

Head argues that Germany became a leader in precision machining while US manufacturing quality suffered with automation [69]. Thus, automation might create some new jobs, or it might change existing jobs. But those jobs may be worse for workers and even worse for product and service quality.

3.5 Claim 5: "Automation will give us more leisure time"

Automation by itself does not produce leisure time. Leisure time depends a great deal on power and access to sufficient resources to live. In a capitalist system, as investors and owners seek continue growing the value of their capital, they search for new ways to produce value and that often means finding new ways of squeezing value out of people —more customer support calls, cleaner storefronts, more bugs cleared, or (beyond the domain of work) higher rent, for example. It does not reduce work hours, and also creates a faster pace of work [30, 157].

The story of household technologies is instructive here. Scholars broadly agree that the time spent on housework in the United States did not decrease with industrialization, despite the invention of refrigerators, washing machines, dishwashers, and other forms of household mechanization [41, 102]. Historian Ruth Schwartz Cohen showed that as mechanization sped up certain forms of housework, it did not reduce the amount of time women spent at work in the household. Cultural standards of cleanliness changed, along with commercial products to produce such cleanliness and hygiene [41] (see also Brumberg [31]). Women —some paid as servants, some unpaid —reallocated hours saved from mechanization to work towards these changing standards.

The broader principle is that leisure time in capitalist systems is a product of power that enables people to keep the housing, food, and water they need for a basic living. While in the US, politician Bernie Sanders [127] and the United Auto Workers union [84] have called for a 30 hour work weeks to accompany productivity gains from automation, workers will not gain this leisure time without the power to demand living wages or a roof over their heads.

In short, introducing time freed by technology tends to get filled with different kinds of work, little of which is pleasant for low wage workers. In a sense, it mirrors the concept of "induced demand" in transportation planning: expanding lanes on a highway ironically

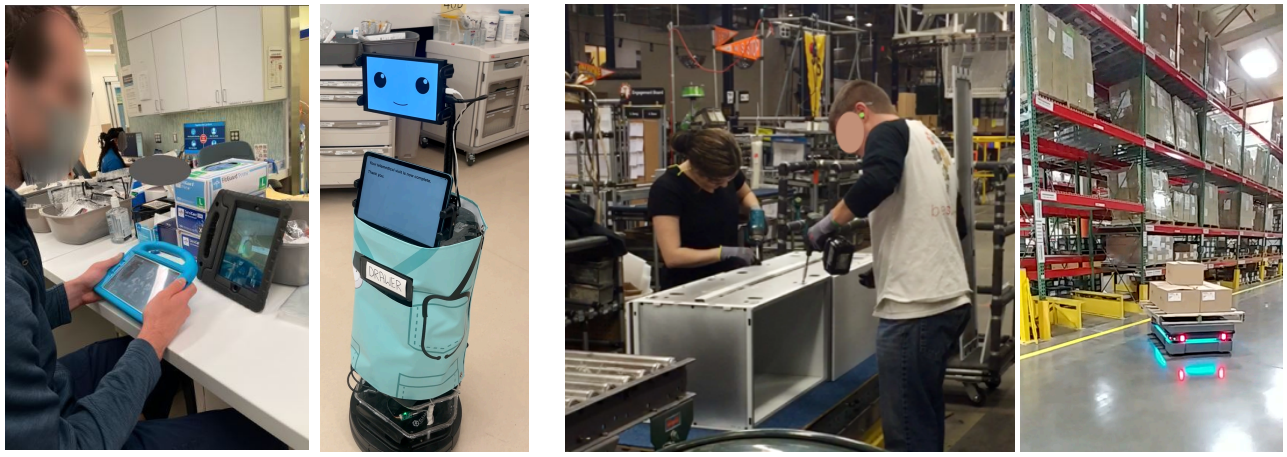

Figure 1: Real world work contexts where we have engaged in participatory research with workers who considered and tested robot prototypes. *Left, healthcare*: A clinician directs a robot to deliver items to patients within a hospital. *Right, manufacturing*: Workers in a factory engage in assembly manufacturing tasks, while a robot retrieves items on the other side of the factory. In both contexts, workers expressed significant concerns about job displacement, while also reimagining ways robots could be used to improve their working conditions [94, 95, 144, 145, 162].

creates more traffic than less, here, employers are using automation to extract more labor from workers under the guise of making their worklife better.

The leisure narrative persists through the efforts of public relations work. In Germany, arguments in favor of autonomous driving are situated within "a narrative of emancipation of the masses" [24], i.e., they will provide more time for leisure rather than being stuck in traffic. Because two thirds of the German population is against autonomous driving, engineers have had to develop a series of "innovation communication" [72, 117] strategies to convince the public that their work is of value and attempt to cultivate positive attitudes towards it [24]. Thus, promoting the claim of leisure is a part of perpetuating this narrative.

4 Worker-centered practice within capitalism

HCI scholars Wolf, Dombrowski, and Asad [169] have identified a range of challenges in achieving HCI goals of design that is good for people within a capitalist system organized around extraction of value from workers, land, and non-humans. Here, we propose pitfalls and ways forward building worker-centered technologies and building worker power over technologies.

4.1 Why does building "tech for good" require engaging with collective and institutional power?

When technologists engage in real-world deployments of robotics and AI, they often have good intentions: they want to solve a problem in the real world. From those who come from human-centered fields, such as HCI and HRI, they may have embarked on participatory research practices to identify these problems, and feel like their use of technology in a particular context is well-justified. Getting to good in a profit-driven economy, however, is more complex than making the particular users in the study happy —especially when users perceive the technology as to management's advantage.

Recently, one of the authors deployed a robot prototype in a busy urban hospital setting in North America to explore workers' perceptions of it and consider the ways in which it might support their work (See Figure 1, left). In [86, 94, 95, 144–146], we describe the multi-year collaborative design process and technical elements which led to the deployment. In our recent work, the robot was used by multiple interprofessional clinicians (e.g., physicians, nurses), as well ancillary staff (e.g., technicians, assistants). Participants engaged in think aloud, completed several questionnaires (e.g., SUS, TLX), and participated in semi-structured interviews with researchers, to which we then employed reflective thematic analysis.

Upon arriving at the hospital to do some technical setup, the very first thing a nurse said to our team was, "Oh, you're here to take my job away." This was followed by a slew of individuals complimenting how "cute" the robot was and wanting to take selfies with it.

One of the individuals who took a selfie with the robot was ironically wearing a pin that read "Trust Nurses, Not AI", which a slogan of recent campaigns by National Nurses United (NNU) to shape how AI is deployed in nursing (See Figure 2). NNU is the largest nursing union in the United States, and has recently organized protests at Kaiser Permanente and ACH Health to bring attention to the dangers of AI in nursing.

NNU has also published research on the on-the-ground impacts and dangers of AI systems finding their way into healthcare settings [150]. Cathy Kennedy, registered nurse and president of the California Nurses Association stated that human expertise and clinical judgment "are the only ways to ensure safe, effective, and equitable nursing care…No patient should be a guinea pig and no nurse should be replaced by a robot" [21]. Their activities highlight the

importance of fully including nurses in any decisions that affect their work and patient care.

Given this context, we were not surprised when our robotics research team heard offhand comments from healthcare workers like, "Look what [ANON] is spending money on instead of paying us better." Nurses have voiced (and research shows) understaffing as an issue that impedes patient care and job quality [90, 134, 141], and it is understandable money used for experimental robotics might be seen as money better spent on staff.

However, we also encountered an overall positive response from the healthcare workers who participated in our study, including nurses. They viewed the co-designed robot as a way of "making their life easier", and returning time to them to "perform the joyful parts" of their jobs: interacting with patients. This situation demonstrates the complexity of designing and deploying robots in what nurses correctly see as a very uneven playing field.

Even when union members desire ways to make their worklife better, their unions very rarely have research and development resources to direct experimental technology development. This leaves workers facing the participatory design challenge that technologies most often come off-the-shelf from major technology companies, rather than designed from the ground up with stakeholders [12]. Creating working systems requires navigating complex institutions – compliance requirements, legal, labor relations, etc [75]. Wolf, Dombrowski, and Asad [169] observe that workers' organizations find it difficult to justify such risky technology development investments when workers face daily labor issues like workplace safety, inadequate wages, high housing costs, or flagging health from overwork. Without public resource distribution towards workers visions and needs [142], we face severe limits in achieving the goals of design justice [40] or community-based participatory research [159]. A collective of CSCW researchers published an essay "Defund Big Tech, Refund Community" calling on for resistance to the accumulation of power by "big tech" and "a redistribution of Big Tech revenues" to reimagine digital infrastructures [14]. We echo this call, which itself will require imagination, organizing, and institutional transformation. Funding for worker-accountable technology development mechanisms — both research and investment — would be a good place to start. This is particularly the case in North America where research is predominantly technocentric and capability-focused [34, 129, 174].

The question of AI and automation is one institutional, economic, and ideological power, rather than good or bad technologies *power* [50]. Historian James Resnikoff documents a long history of how US corporations coined the word automation to promise a better future for all through technology, obscuring the dominant thrust of the technologies within US political economy to degrade and deskill jobs [125]. In the United States, for example, research funding on science and technology has historically prioritized intellectual property and economized goals such as national economic competitiveness, rather than the reduction of inequality or improvement of worker well being [19].

HCI scholars and technologists have much to gain from political economists who analyze the social forces and institutions that structure possibilities for the technologies we study, design, and contest. AI, for example, relies on cloud infrastructure and high-concentrations of capital, aligning with tendencies towards monopoly [107]. We do not design and deploy under conditions of our own making, and other fields illuminate the social forces we contend with.

4.2 How can we counter Global North tactics by learning from Global South efforts?

"Designing for social good" has been critiqued in the HCI for development (HCI4D) community, as it tends to espouse a deficit framing and perpetuate colonialism and savorism [3], and can both "solve" the wrong problem and generate new ones [130]. Philip et al. call to reverse the assumed flow of technology from north to south, looking for flows of innovation in the opposite direction [115].

AI decolonization efforts demonstrate inspiring pathways for countering mythologies as ideologies that mask power. For example, dozens of international scholars have adopted a "manyfesto" approach to approach, where multinational voices and approaches are celebrated (https://manyfesto.ai/), and relational and locally adaptive understandings of AI ethics are furthered. In Latin America, Tierra Común in Latin America (https://www.tierracomun.net) works to decolonize data, and connect activists, journalists, scholars, and citizens together, through workshops, meetings, newsletters, etc. Masakhane (https://www.masakhane.io) in Africa is a grassroots effort for/by African NLP researchers to preserve and integrate African languages, which have been woefully underrepresented within Global North technology companies.

These global south networks can connect with global north efforts. The Distributed AI Research Institute has published a Data Workers Inquiry (https://data-workers.org/), in which AI supply chain workers from Kenya, Syria, Venezuela, and the United States speak to one another about their working conditions and build relationships with labor organizations further up the supply chain. These data workers are joining in efforts to counter the corporate imaginaries of Amazon through global coalitions to transform the narratives by which we understand AI and challenge the policies that sustain corporate power over technologies.

4.3 How can we design for job quality and quality outcomes rather than productivity, efficiency, or profit?

When making decisions over the adoption of automation, managers frequently frame decisions around perceived productivity and efficiency gains at the unit or organizational level. These gains, however, often do not measure invisible labor that makes production possible or of high quality. For example, the time nurses spend coordinating with one another, or empathizing with and dialoguing with patients may be deemed an inefficiency, even if it improves patient experience and health outcomes [89, 136]. They also do not consider job quality — what workers prefer to do and where they need help.

For example, one of the authors spent several years engaging in participatory research in an assembly manufacturing context in North America (See Figure 1, right). We conducted over 52 interviews with line workers, asking about their work, and perceptions of robots in general and in their workplace. We also conducted informal interviews with managers over the course of several years

Figure 2: An image from a recent nurse union protest at Kaiser Permanente in San Francisco. The nurses are holding red signs which read, "Patients are not algorithms" and "Trust Nurses, not AI". Credit: Jaclyn Higgs, California Nurses Association

of the project. We describe our methodology and analysis methods in detail in [162].

Managers sought to replace a slow manual work process, item replenishment, with mobile robots. However, our work showed that item replenishment was the job workers most loved, as it provided workers social interaction opportunities that helped strengthen bonds and improve the overall work experience for all [162]. Instead, workers re-envisioned the robot to take on a dangerous job they hated and feared –moving carts of sharp and heavy sheet metal around the factory. Thus, productivity and efficiency are not just about time saved or units produced, but also about the nature of the work itself and worker's feelings about it. By proposing to displace their favorite job (item replenishment) rather than their most dangerous job (sheet metal transport), management risked burning out their already precarious workforce.

We propose considering job quality as a wider set of issues: safety, wages, job stability, a sense of fairness and respect on the job, craftsmanship, or other qualities relevant to workers themselves. Labor-oriented policy strategists talk about "high road" development as strategies that bring workers, companies, and policy makers together to devise win-win models where businesses can profit, workers can have good jobs, and communities benefit from sustainable economic development models. "Low road" approaches, by contrast, place profit and efficiency above all else, treating workers, communities, and the environment as disposable – and are often not sustainable in the long run [154]. We suggest engineers and designers push for "high road" approaches to design and deployment of advanced technologies, but do so clear eyed about how power dynamics between workers and companies may mean organizing and advocacy will be necessary to achieve it.

Technologists embarking on partnerships with firms would do well to alert relevant worker organizations to technological explorations and advocating for them to be brought on board early on. Some HCI researchers have fruitfully formed partnerships with workers, unions, and the companies that employ them to facilitate collaborative technology design, analysis, and configuration [5, 87, 132, 133]. This could mean building relationships with worker organizations who could be impacted by emerging technologies in your area of practice and, following community based participatory research principles, take their guidance on what problems and questions need research attention [101]. Robotics, AI, and automation have a role to play in the futures of work, but that role will likely be low road and guided by profit motive if those closest to the work are not informed, setting the agenda, and co-developing the solutions.

4.4 How can we engage with automation in our own work lives?

It is highly likely that the readers of this paper are themselves workers or workers-in-training, whether as teachers, engineers, researchers, designers, or students. How do attempts at automation target your own work and learning processes? What claims are made about your work in the name of that automation?

As we encounter these technologies, we can draw on questions framed by HRI researchers led by Šabanović et al. [126] to clarify what counts as good and ethical for whom. They stress the importance of framing "good" technology through an honest and clear vision of the true capability and limitations of robots and AI. That analysis should directly inform aims for societal good. The authors propose 10 questions researchers can use to ask to assess if a technology is actually good, including: who might be helped and who might be harmed, which stakeholders in an organizational hierarchy were involved (executives vs. front-line workers), and ways to consider protecting those most vulnerable to being harmed by the technology. These questions are directly applicable in the context of deliberating on, designing, deploying, and maintaining robotics, AI, and automation in the workplace and in our communities.

We can join efforts of community organizations and worker organizations, including through committees of unions, labor committees, worker centers, or religious community groups. We can counter these myths and open up new ways to encounter and shape automation, and we can amplify pro-labor perspectives through practices of writing, organizing teach ins, or otherwise being in community as a critical learning practices. This can be part of cultivating a wider practice of interdependence, solidarity, and care that, as other HCI scholars have argued, neoliberal practices and ideologies have eroded [169].

5 Conclusion

We have argued that common myths that circulate about robotics, AI, and automation justify the development of technology in ways that benefit companies while obscuring the meaning, value, dignity, and actual needs of workers impacted by technological change. This has been a truly interdisciplinary endeavor, combining evidence and analysis from economics, organizational sciences, and cultural and humanistic ways of understanding gender, race, and class. We urge technologists involved in the development of these advanced technologies to understand themselves as not only as "experts" but as workers and find opportunities to act in solidarity with workers implicated in projects of technological change, even if it means challenging managers and administrators to collaborate

in ways that are not comfortable or do not promise the greatest short-term gain. Sometimes, this may require opening design to worker involvement to prefigure preferred futures for which we can collectively strive [7]. Other times, it might involve standing with workers to resist some futures so we may collectively strive for others [164].

References

[1] Daron Acemoglu and Pascual Restrepo. 2020. Robots and Jobs: Evidence from US Labor Markets. *Journal of Political Economy* 128, 6 (June 2020), 2188–2244. https://doi.org/10.1086/705716

[2] Mark S. Ackerman. 2000. The intellectual challenge of CSCW: the gap between social requirements and technical feasibility. *Hum.-Comput. Interact.* 15, 2 (sep 2000), 179–203. https://doi.org/10.1207/S15327051HCI1523_5

[3] Muhammad Sadi Adamu. 2023. No More "Solutionism" or "Saviourism" in Futuring African HCI: A Manyfesto. *ACM Transactions on Computer-Human Interaction* 30, 2 (April 2023), 1–42. https://doi.org/10.1145/3571811

[4] Alex Ahmed and Lilly Irani. 2020. Feminism as a design methodology. *interactions* 27, 6 (2020), 42–45.

[5] Hunter Akridge, Bonnie Fan, Alice Xiaodi Tang, Chinar Mehta, Nikolas Martelaro, and Sarah E Fox. 2024. "The bus is nothing without us": Making Visible the Labor of Bus Operators amid the Ongoing Push Towards Transit Automation. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*. Association for Computing Machinery, New York, NY, USA, 1–16. https://doi.org/10.1145/3613904.3642714

[6] Mohammad Amir Anwar and Mark Graham. 2020. Digital labour at economic margins: African workers and the global information economy. *Review of African Political Economy* 47, 163 (Jan. 2020), 95–105. https://doi.org/10.1080/03056244.2020.1728243

[7] Mariam Asad. 2019. Prefigurative Design as a Method for Research Justice. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (Nov. 2019), 1–18. https://doi.org/10.1145/3359302

[8] Blake E. Ashforth and Glen E. Kreiner. 1999. How can you do it? Dirty Work and the Challenge of Constructing a Positive Identity. *Academy of Management Review* 24, 3 (July 1999), 413–434. https://doi.org/10.5465/AMR.1999.2202129 Publisher: Academy of Management.

[9] Diamond Ashiagbor. 2021. Race and colonialism in the construction of labour markets and precarity. *Industrial Law Journal* 50, 4 (2021), 506–531.

[10] Neda Atanasoski and Kalindi Vora. 2015. Surrogate Humanity: Posthuman Networks and the (Racialized) Obsolescence of Labor. *Catalyst: Feminism, Theory, Technoscience* 1, 1 (2015), 1–40. https://scholar.archive.org/work/i7dzdgrpqvgynmdwolcovur4im/access/wayback/https://catalystjournal.org/index.php/catalyst/article/download/ata_vora/21420

[11] David Autor and Elisabeth Reynolds. 2020. *The nature of work after the COVID crisis: Too few low-wage jobs.* Technical Report. The Hamilton Project, Brookings.

[12] Liam J Bannon and Pelle Ehn. 2012. Design Matters in Participatory Design. In *Routledge International Handbook of Participatory Design*, Jesper Simonsen and Toni Robertson (Eds.). Routledge, -, 27.

[13] Shaowen Bardzell. 2010. Feminist HCI: taking stock and outlining an agenda for design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, -, 1301–1310. http://dl.acm.org/citation.cfm?id=1753521

[14] Wolmet Barendregt, Christoph Becker, EunJeong Cheon, Andrew Clement, Pedro Reynolds-Cuéllar, Douglas Schuler, and Lucy Suchman. 2021. Defund Big Tech, Refund Community. *Tech Otherwise* 0, 0 (Feb 5 2021), 1. https://techotherwise.pubpub.org/pub/dakcci1r.

[15] Zygmunt Bauman. 1990. Modernity and ambivalence. *Theory, Culture & Society* 7, 2-3 (1990), 143–169.

[16] Patrick Baur and Alastair Iles. 2023. Inserting machines, displacing people: how automation imaginaries for agriculture promise 'liberation'from the industrialized farm. *Agriculture and Human Values* 40, 3 (2023), 815–833.

[17] Emily Bender and Alex Hanna. 2024. Episode 37: Chatbots Aren't Nurses (Feat. Michelle Mahon), July 22 2024 - Mystery AI Hype Theater 3000.

[18] Emily Bender and Alex Hanna. 2025. *The AI Con.* Harper, -.

[19] Elizabeth Popp Berman. 2014. Not just neoliberalism: Economization in US science and technology policy. *Science, Technology, & Human Values* 39, 3 (2014), 397–431.

[20] Samia C Bhatti, Aarushi Jain, and Lionel P Robert. 2024. Working with Robots in Restaurants: Job Responsibility and Work Motivation Changes. In *2024 33rd IEEE International Conference on Robot and Human Interactive Communication (ROMAN)*. IEEE, IEEE, -, 1216–1221.

[21] Karen Blum. 2024. California Nurses Protest 'Untested' AI as It Proliferates in Health Care. https://healthjournalism.org/blog/2024/08/california-nurses-protest-untested-ai-as-it-proliferates-in-health-care/.

[22] Paula Boddington. 2016. Robots Doing Our Dirty Work: Moralisation of Health, Routine Care Work, and Machines | Ethics for Artificial Intelligence. https://www.cs.ox.ac.uk/efai/2016/12/31/robots-doing-our-dirty-work-moralisation-of-health-routine-care-work-and-machines/

[23] Rishi Bommasani, Drew A. Hudson, Ehsan Adeli, Russ Altman, Simran Arora, Sydney von Arx, Michael S. Bernstein, Jeannette Bohg, Antoine Bosselut, Emma Brunskill, Erik Brynjolfsson, Shyamal Buch, Dallas Card, Rodrigo Castellon, Niladri Chatterji, Annie Chen, Kathleen Creel, Jared Quincy Davis, Dora Demszky, Chris Donahue, Moussa Doumbouya, Esin Durmus, Stefano Ermon, John Etchemendy, Kawin Ethayarajh, Li Fei-Fei, Chelsea Finn, Trevor Gale, Lauren Gillespie, Karan Goel, Noah Goodman, Shelby Grossman, Neel Guha, Tatsunori Hashimoto, Peter Henderson, John Hewitt, Daniel E. Ho, Jenny Hong, Kyle Hsu, Jing Huang, Thomas Icard, Saahil Jain, Dan Jurafsky, Pratyusha Kalluri, Siddharth Karamcheti, Geoff Keeling, Fereshte Khani, Omar Khattab, Pang Wei Koh, Mark Krass, Ranjay Krishna, Rohith Kuditipudi, Ananya Kumar, Faisal Ladhak, Mina Lee, Tony Lee, Jure Leskovec, Isabelle Levent, Xiang Lisa Li, Xuechen Li, Tengyu Ma, Ali Malik, Christopher D. Manning, Suvir Mirchandani, Eric Mitchell, Zanele Munyikwa, Suraj Nair, Avanika Narayan, Deepak Narayanan, Ben Newman, Allen Nie, Juan Carlos Niebles, Hamed Nilforoshan, Julian Nyarko, Giray Ogut, Laurel Orr, Isabel Papadimitriou, Joon Sung Park, Chris Piech, Eva Portelance, Christopher Potts, Aditi Raghunathan, Rob Reich, Hongyu Ren, Frieda Rong, Yusuf Roohani, Camilo Ruiz, Jack Ryan, Christopher Ré, Dorsa Sadigh, Shiori Sagawa, Keshav Santhanam, Andy Shih, Krishnan Srinivasan, Alex Tamkin, Rohan Taori, Armin W. Thomas, Florian Tramèr, Rose E. Wang, William Wang, Bohan Wu, Jiajun Wu, Yuhuai Wu, Sang Michael Xie, Michihiro Yasunaga, Jiaxuan You, Matei Zaharia, Michael Zhang, Tianyi Zhang, Xikun Zhang, Yuhui Zhang, Lucia Zheng, Kaitlyn Zhou, and Percy Liang. 2022. On the Opportunities and Risks of Foundation Models. arXiv:2108.07258 [cs.LG] https://arxiv.org/abs/2108.07258

[24] Göde Both. 2020. *Keeping autonomous driving Alive: An ethnography of visions, masculinity and fragility.* Verlag Barbara Budrich, -.

[25] Jeffrey M Bradshaw, Robert R Hoffman, David D Woods, and Matthew Johnson. 2013. The seven deadly myths of" autonomous systems". *IEEE Intelligent Systems* 28, 3 (2013), 54–61.

[26] Hailey Branson-Potts. 2023. California's Teacher Shortage Is Dire. https://www.governing.com/education/californias-teacher-shortage-is-dire Section: Education.

[27] Harry Braverman. 1989. The degradation of work in the twentieth century. *Monthly Review* 41, 5 (Oct. 1989), 35–48. https://go.gale.com/ps/i.do?p=AONE&sw=w&issn=00270520&v=2.1&it=r&id=GALE%7CA8021733&sid=googleScholar&linkaccess=abs Publisher: Monthly Review Foundation, Inc..

[28] Svenja Breuer, Maximilian Braun, Daniel Tigard, Alena Buyx, and Ruth Müller. 2023. How Engineers' Imaginaries of Healthcare Shape Design and User Engagement: A Case Study of a Robotics Initiative for Geriatric Healthcare AI Applications. *ACM Transactions on Computer-Human Interaction* 30, 2 (April 2023), 1–33. https://doi.org/10.1145/3577010

[29] Jackie Bridges, Caroline Nicholson, Jill Maben, Catherine Pope, Mary Flatley, Charlotte Wilkinson, Julienne Meyer, and Maria Tziggili. 2013. Capacity for Care: Meta-Ethnography of Acute Care Nurses' Experiences of the Nurse-Patient Relationship. *Journal of Advanced Nursing* 69, 4 (April 2013), 760–772. https://doi.org/10.1111/jan.12050

[30] Jacob Browne and Laurel Green. 2022. The future of work is no work: A call to action for designers in the abolition of work. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*. ACM, -, 1–8.

[31] Joan Jacobs Brumberg. 1997. *The body project: an intimate history of American girls / Joan Jacobs Brumberg.* (1st ed. ed.). Random House, New York.

[32] Erik Brynjolfsson and Andrew McAfee. 2014. *The second machine age: work, progress, and prosperity in a time of brilliant technologies.* WW Norton & Company, -.

[33] Youngjoon Choi, Miju Choi, Munhyang Oh, and Seongseop Kim. 2020. Service robots in hotels: understanding the service quality perceptions of human-robot interaction. *Journal of Hospitality Marketing & Management* 29, 6 (2020), 613–635.

[34] Henrik Christensen, Joydeep Biswas, Martin Buehler, Todd Danko, Maria Gini, Pramod Khargonekar, Maja Mataric, Allison Okamura, Nikos Papanikolopoulos, Bill Smart, Mike Tolley, Holly Yanco, and Wenlong Zhang. 2024. *A Roadmap fpr US Robotics - Robotics for a Better Tomorow.* Technical Report. UC San Diego, Computing Community Consortium and Engineering Research Visioning Alliance, La Jolla, CA.

[35] Nazli Cila, Irene González González, Jan Jacobs, and Marco Rozendaal. 2024. Bridging HRI Theory and Practice: Design Guidelines for Robot Communication in Dairy Farming. In *Proceedings of the 2024 ACM/IEEE International Conference on Human-Robot Interaction* (Boulder, CO, USA) *(HRI '24)*. Association for Computing Machinery, New York, NY, USA, 137–146. https://doi.org/10.1145/3610977.3634991

[36] Bonnie Clipper, Joyce Batcheller, Andrea L. Thomaz, and Agata Rozga. 2018. Artificial Intelligence and Robotics: *A Nurse Leader's Primer. Nurse Leader* 16, 6 (Dec. 2018), 379–384. https://doi.org/10.1016/j.mnl.2018.07.015

[37] Philip N. Cohen and Matt L. Huffman. 2003. Individuals, Jobs, and Labor Markets: The Devaluation of Women's Work. *American Sociological Review* 68, 3 (June 2003), 443–463. https://doi.org/10.1177/000312240306800307 Publisher: SAGE Publications Inc.

[38] John Connell. 1993. *Kitanai, Kitsui and Kiken: The Rise of Labour Migration to Japan.* Economic & Regional Restructuring Research Unit, University of Sydney, Sydney.

[39] Lisa Cosgrove, China Mills, Justin M Karter, Akriti Mehta, and Jayasree Kalathil. 2020. A critical review of the Lancet Commission on global mental health and sustainable development: Time for a paradigm change. *Critical Public Health* 30, 5 (2020), 624–631.

[40] Sasha Costanza-Chock. 2020. *Design Justice.* The MIT Press, Cambridge. https://doi.org/10.7551/mitpress/12255.001.0001

[41] Ruth Schwartz Cowan. 1983. *More work for mother: the ironies of household technology from the open hearth to the microwave / Ruth Schwartz Cowan.* Basic Books, New York.

[42] M Cummings. 2024. Assessing readiness of self-driving vehicles. In *The 103rd Transportation Research Board (TRB) Annual Meeting, Washington, DC.* TRB, "Washington, DC", 16.

[43] M.L. Cummings and Ben Bauchwitz. 2024. Identifying Research Gaps through Self-Driving Car Data Analysis. *IEEE Transactions on Intelligent Vehicles* In Press, In Press (2024), 1–10. https://doi.org/10.1109/TIV.2024.3506936

[44] Alessandro Delfanti. 2021. *The Warehouse: Workers and Robots at Amazon - University of California Berkeley.* Pluto Press, London, UK.

[45] Seref Demirci. 2022. The requirements for automation systems based on Boeing 737 MAX crashes. *Aircraft engineering and aerospace technology* 94, 2 (2022), 140–153.

[46] Anna Dobrosovestnova, Glenda Hannibal, and Tim Reinboth. 2022. Service Robots for Affective Labor: A Sociology of Labor Perspective. *AI & SOCIETY* 37, 2 (June 2022), 487–499. https://doi.org/10.1007/s00146-021-01208-x

[47] Lynn Dombrowski, Adriana Alvarado Garcia, and Jessica Despard. 2017. Low-Wage Precarious Workers' Sociotechnical Practices Working Towards Addressing Wage Theft. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (Denver, Colorado, USA) *(CHI '17)*. Association for Computing Machinery, New York, NY, USA, 4585–4598. https://doi.org/10.1145/3025453.3025633

[48] Lynn Dombrowski, Ellie Harmon, and Sarah Fox. 2016. Social Justice-Oriented Interaction Design: Outlining Key Design Strategies and Commitments. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems* (Brisbane, QLD, Australia) *(DIS '16)*. Association for Computing Machinery, New York, NY, USA, 656–671. https://doi.org/10.1145/2901790.2901861

[49] Pelle Ehn. 1988. *Work-oriented design of computer artifacts.* Almqvist & Wiksell International, Unk. http://www.diva-portal.org/smash/record.jsf?pid=diva2:580037

[50] H. R. Ekbia and Bonnie A. Nardi. 2017. *Heteromation, and other stories of computing and capitalism.* MIT Press, Cambridge, MA. OCLC: 985461245.

[51] Madeleine Clare Elish and Elizabeth Anne Watkins. 2020. Repairing Innovation: A Study of Integrating AI in Clinical Care | Policy Commons. *Data & Society* N/A, N/A (2020), 62. https://policycommons.net/artifacts/12435146/repairing-innovation/13331701/

[52] Kalle Eriksson. 2024. *Politicising Automation: Ideas on Work, Technology, and Agency in the Swedish Political Debate.* Department of political science, Umeå University, Umeå.

[53] Cynthia Estlund. 2021. *Automation Anxiety: Why and How to Save Work.* Oxford University Press, New York, NY.

[54] EU. 2024. Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text with EEA Relevance).

[55] Mary Ellen Foster, Shaul Ashkenazi, Andrew Blair, Andres Ramirez-Duque, Samina Ali, Patricia Candelaria, Summer Hudson, Jennifer Stinson, Lauren Harris, Sasha Litwin, et al. 2024. Including Front-Line Workers as Primary Stakeholders in Public-Space HRI. *First International Workshop on Worker Robot Relationships @ HRI 2024* -, - (2024), 6.

[56] Geoffrey A Fowler. 2023. AI is acting 'pro-anorexia' and tech companies aren't stopping it. *The Washington Post* -, - (2023), NA–NA.

[57] Sarah E. Fox, Vera Khovanskaya, Clara Crivellaro, Niloufar Salehi, Lynn Dombrowski, Chinmay Kulkarni, Lilly Irani, and Jodi Forlizzi. 2020. Worker-Centered Design: Expanding HCI Methods for Supporting Labor. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '20)*. Association for Computing Machinery, New York, NY, USA, 1–8. https://doi.org/10.1145/3334480.3375157

[58] Sarah E. Fox, Samantha Shorey, Esther Y. Kang, Dominique Montiel Valle, and Estefania Rodriguez. 2023. Patchwork: The Hidden, Human Labor of AI Integration within Essential Work. *Proc. ACM Hum.-Comput. Interact.* 7, CSCW1 (April 2023), 81:1–81:20. https://doi.org/10.1145/3579514

[59] Marlena R. Fraune. 2020. Our Robots, Our Team: Robot Anthropomorphism Moderates Group Effects in Human–Robot Teams. *Frontiers in Psychology* 11, - (2020), –. https://doi.org/10.3389/fpsyg.2020.01275

[60] Pratyusha Ghosh, Belén Liedo, and Laurel D Riek. 2024. The problem of ableist paternalism in assistive robotics. *HRI 2024 Workshop on Assistive Applications, Accessibility, and Disability Ethics (A3DE)* -, - (2024), 4.

[61] Evelyn nakano Glenn. 1985. Racial Ethnic Women's Labor: The Intersection of Race, Gender and Class Oppression. *Review of Radical Political Economics* 17, 3 (Sept. 1985), 86–108. https://doi.org/10.1177/048661348501700306 Publisher: SAGE Publications Inc.

[62] Anna Godollei. 2022. *Hoping for the best, preparing for the worst: employee reactions to automation at work.* Ph. D. Dissertation. University of Waterloo.

[63] Sandhiya Gounder, Karly Burch, and Mira O'Connor. 2024. Will Migrant Pacific Workers Be a Part of Aotearoa New Zealand's Farming Futures? A call to design future agritech industry transformation plans with a reciprocal framework. *Policy Quarterly* 20, 2 (2024), 37–45.

[64] Mary L. Gray and Siddharth Suri. 2019. *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass.* Houghton Mifflin Harcourt Publishing Company, Boston.

[65] Andrew Grima. 2021. Robots Taking Jobs, But Creating Careers | Digital Skills and Jobs Platform. https://digital-skills-jobs.europa.eu/en/community/online-discussions/robots-taking-jobs-creating-careers.

[66] Mascha Gugganig, Karly Ann Burch, Julie Guthman, and Kelly Bronson. 2023. Contested agri-food futures: Introduction to the Special Issue. *Agriculture and Human Values* 40, 3 (2023), 787–798.

[67] Hemangini Gupta. 2020. Postcolonial assembly protocols for unnamed automation projects. *Catalyst: Feminism, Theory, Technoscience* 6, 2 (Nov. 2020), 1–14. https://doi.org/10.28968/cftt.v6i2.34456 Publisher: Catalyst Project.

[68] Anita Hammer and Suparna Karmakar. 2021. Automation, AI and the Future of Work in India. *Employee Relations: The International Journal* 43, 6 (Oct. 2021), 1327–1341. https://doi.org/10.1108/ER-12-2019-0452

[69] Simon. Head. 2013. *Mindless : why smarter machines are making dumber humans / Simon Head.* Basic Books, New York.

[70] Sarah Hinkley. 2024. California's public sector staffing crisis. https://laborcenter.berkeley.edu/californias-public-sector-staffing-crisis/

[71] Robert R Hoffman, John K Hawley, and Jeffrey M Bradshaw. 2014. Myths of automation, part 2: Some very human consequences. *IEEE Intelligent Systems* 29, 2 (2014), 82–85.

[72] Maja Horst. 2013. A field of expertise, the organization, or science itself? Scientists' perception of representing research in public communication. *Science Communication* 35, 6 (2013), 758–779.

[73] Yoyo Tsung-Yu Hou, EunJeong Cheon, and Malte F. Jung. 2024. Power in Human-Robot Interaction. In *Proceedings of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI '24)*. Association for Computing Machinery, New York, NY, USA, 269–282. https://doi.org/10.1145/3610977.3634949

[74] Matt L. Huffman and Philip N. Cohen. 2004. Racial Wage Inequality: Job Segregation and Devaluation across U.S. Labor Markets. *Amer. J. Sociology* 109, 4 (Jan. 2004), 902–936. https://doi.org/10.1086/378928 Publisher: The University of Chicago Press.

[75] Liesbeth Huybrechts, Henric Benesch, and Jon Geib. 2017. Institutioning: Participatory Design, Co-Design and the public realm. *CoDesign* 13, 3 (July 2017), 148–159. https://doi.org/10.1080/15710882.2017.1355006

[76] IEEE. 2024. About RAS - IEEE Robotics and Automation Society. https://www.ieee-ras.org/about-ras.

[77] Lilly Irani. 2012. Microworking the Crowd. *Limn* -, 2 (Feb. 2012), 63–63. https://limn.press/article/microworking-the-crowd/ Publisher: Limn Press.

[78] Lilly Irani. 2015. The cultural work of microwork. *New media & society* 17, 5 (2015), 720–739. https://doi.org/10.1177/1461444813511926 Place: London, England Publisher: SAGE Publications.

[79] Lilly Irani. 2015. Difference and Dependence among Digital Workers: The Case of Amazon Mechanical Turk. *South Atlantic Quarterly* 114, 1 (2015), 225–234. http://saq.dukejournals.org/content/114/1/225.short

[80] Lilly Irani. 2019. *Chasing innovation: Making entrepreneurial citizens in modern India.* Princeton University Press, Princeton.

[81] Lilly Irani, Janet Vertesi, Paul Dourish, Kavita Philip, and Rebecca E. Grinter. 2010. Postcolonial computing: a lens on design and development. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* ACM, -, 1311–1320.

[82] Lilly C. Irani and M. Silberman. 2013. Turkopticon: Interrupting worker invisibility in amazon mechanical turk. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* ACM, -, 611–620. http://dl.acm.org/citation.cfm?id=2470742

[83] Frederic Jacob, Eric H. Grosse, Stefan Morana, and Cornelius J. König. 2023. Picking with a Robot Colleague: A Systematic Literature Review and Evaluation of Technology Acceptance in Human–Robot Collaborative Warehouses. *Computers & Industrial Engineering* 180 (June 2023), 109262. https://doi.org/10.1016/j.cie.2023.109262

[84] Sarah Jaffe. 2024. A 32-Hour Workweek Is Ours for the Taking. *In These Times* -, - (April 2024), –. https://inthesetimes.com/article/unions-4-day-work-week-uaw-covid-strike-demands-labor

[85] Sandhya Jayaraman, Dagoberto Cruz-Sandoval, Alyssa Kubota, and Laurel D Riek. 2024. What a healthcare worker wants, what a disabled person needs: Exploring stakeholder design tensions in assistive robotics. *HRI 2024 Workshop on Assistive Applications, Accessibility, and Disability Ethics (A3DE)* -, - (2024), –.

[86] Sandhya Jayaraman, Elizabeth K Phillips, Daisy Church, and Laurel D Riek. 2024. Privacy and utility perceptions of social robots in healthcare. *Computers in Human Behavior: Artificial Humans* 2, 1 (2024), 100039.

[87] Esther Y. Kang and Sarah E. Fox. 2022. Stories from the Frontline: Recuperating Essential Worker Accounts of AI Integration. In *Proceedings of the 2022 ACM Designing Interactive Systems Conference (DIS '22)*. Association for Computing Machinery, New York, NY, USA, 58–70. https://doi.org/10.1145/3532106.3533564

[88] Bruce Kogut. 1985. Designing Global Strategies: Comparative and Competitive Value-Added Chains. *MIT Sloan Management Review* 26, 4 (1985), 15–28. http://sloanreview.mit.edu/article/designing-global-strategies-comparative-and-competitive-valueadded-chains/

[89] Elvira V Lang. 2012. A better patient experience through better communication. *Journal of radiology nursing* 31, 4 (2012), 114–119.

[90] Karen B Lasater, Linda H Aiken, Douglas M Sloane, Rachel French, Brendan Martin, Kyrani Reneau, Maryann Alexander, and Matthew D McHugh. 2021. Chronic hospital nurse understaffing meets COVID-19: an observational study. *BMJ Quality & Safety* 30, 8 (2021), 639–647.

[91] Hee Rin Lee, Xiaobo Tan, Wenlong Zhang, Yiming Deng, and Yongming Liu. 2023. Situating Robots in the Organizational Dynamics of the Gas Energy Industry: A Collaborative Design Study. In *2023 32nd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. IEEE, New York, 1096–1101. https://doi.org/10.1109/RO-MAN57019.2023.10309385

[92] Asaf Levanon, Paula England, and Paul Allison. 2009. Occupational Feminization and Pay: Assessing Causal Dynamics Using 1950–2000 U.S. Census Data. *Social Forces* 88, 2 (Dec. 2009), 865–891. https://doi.org/10.1353/sof.0.0264

[93] Alexandra Mateescu and Madeleine Elish. 2019. AI in context: the labor of integrating new technologies. *Data & Society Research Institute* -, - (2019), 1–54.

[94] Sachiko Matsumoto, Pratyusha Ghosh, Rabeya Jamshad, and Laurel D. Riek. 2023. Robot, Uninterrupted: Telemedical Robots to Mitigate Care Disruption. In *Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction* (Stockholm, Sweden) *(HRI '23)*. Association for Computing Machinery, New York, NY, USA, 495–505. https://doi.org/10.1145/3568162.3576994

[95] Sachiko Matsumoto, Sanika Moharana, Nimisha Devanagondi, Leslie C Oyama, and Laurel D Riek. 2021. Iris: A low-cost telemedicine robot to support healthcare safety and equity during a pandemic. In *International Conference on Pervasive Computing Technologies for Healthcare*. Springer, -, 113–133.

[96] Jamie K. McCallum. 2020. *Worked Over: How Round-the-Clock Work Is Killing the American Dream*. Basic Books, -.

[97] McKinsey. 2018. *Retraining and Reskilling Workers in the Age of Automation | McKinsey*. Technical Report. McKinsey.

[98] Daniel A. Menchik. 2020. Moving from Adoption to Use: Physicians' Mixed Commitments in Deciding to Use Robotic Technologies. *Work and Occupations* 47, 3 (Aug. 2020), 314–347. https://doi.org/10.1177/0730888420919792

[99] Alabak Merve, Raquel Salcedo Gil, Anna-Sophie Ulfert, Sonja Rispens, and Pascale Le Blanc. 2024. Knowledge Hiding in Worker-Robot Relationships. *First International Workshop on Worker Robot Relationships @ HRI 2024* -, - (2024), 1–3.

[100] Joy Ming, Srujana Kamath, Elizabeth Kuo, Madeline Sterling, Nicola Dell, and Aditya Vashistha. 2022. Invisible Work in Two Frontline Health Contexts. In *Proceedings of the 5th ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS '22)*. Association for Computing Machinery, New York, NY, USA, 139–151. https://doi.org/10.1145/3530190.3534814

[101] Meredith Minkler and Nina Wallerstein. 2003. *Community based participatory research for health / edited by Meredith Minkler and Nina Wallerstein ; foreword by Budd Hall*. Jossey-Bass, San Francisco, CA.

[102] Joel Mokyr. 2000. Why "More Work for Mother?" Knowledge and Household Behavior, 1870–1945. *The Journal of Economic History* 60, 1 (March 2000), 1–41. https://doi.org/10.1017/S0022050700024633

[103] Evgeny Morozov. 2013. *To save everything, click here: The folly of technological solutionism*. PublicAffairs, New York.

[104] Luke Munn. 2022. *Automation Is a Myth*. Stanford University Press, Stanford.

[105] Luke Munn. 2023. The Uselessness of AI Ethics. *AI and Ethics* 3, 3 (Aug. 2023), 869–877. https://doi.org/10.1007/s43681-022-00209-w

[106] Luke Munn. 2024. Digital Labor, Platforms, and AI. In *Introduction to Digital Humanism: A Textbook*, Hannes Werthner, Carlo Ghezzi, Jeff Kramer, Julian Nida-Rümelin, Bashar Nuseibeh, Erich Prem, and Allison Stanger (Eds.). Springer Nature Switzerland, Cham, 557–569. https://doi.org/10.1007/978-3-031-45304-5_35

[107] Devika Narayan and Benjamin Shestakofsky. 2024. Relationships That Matter: Four Perspectives on AI, Work, and Organizations. *The Journal of Applied Behavioral Science* 60, 4 (Dec. 2024), 639–651. https://doi.org/10.1177/00218863241285456 Publisher: SAGE Publications Inc.

[108] Denis Newman-Griffis, Jessica Sage Rauchberg, Rahaf Alharbi, Louise Hickman, and Harry Hochheiser. 2023. Definition Drives Design: Disability Models and Mechanisms of Bias in AI Technologies. *First Monday* -, - (Jan. 2023), 1–38. https://doi.org/10.5210/fm.v28i1.12903

[109] Irmgard Nübler. 2018. 3. New Technologies, Innovation, and the Future of Jobs. In *Confronting Dystopia: The New Technological Revolution and the Future of Work*, Eva Paus (Ed.). Cornell University Press, Ithaca, 46–75. https://doi.org/10.7591/9781501719868-004

[110] Ruth Oldenziel. 1999. *Making technology masculine: men, women and modern machines in America, 1870-1945*. Amsterdam University Press, Amsterdam.

[111] Anastasia K Ostrowski. 2023. *How Do We Design Robots Equitably? Engaging Design Justice, Design Fictions, and Co-Design in Human-Robot Interaction Design and Policymaking Processes*. Ph. D. Dissertation. Massachusetts Institute of Technology.

[112] Anastasia K Ostrowski, Raechel Walker, Madhurima Das, Maria Yang, Cynthia Breazea, Hae Won Park, and Aditi Verma. 2022. Ethics, equity, & justice in human-robot interaction: A review and future directions. *2022 31st IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)* -, - (2022), 969–976.

[113] Michael Palm. 2017. *Technologies of consumer labor: a history of self-service*. Routledge, -. OCLC: 948669080.

[114] Ito Peng. 2019. The Care Economy: A New Research Framework. *hal-03456901* -, - (2019), 24.

[115] Kavita Philip, Lilly Irani, and Paul Dourish. 2012. Postcolonial Computing A Tactical Survey. *Science, Technology & Human Values* 37, 1 (2012), 3–29.

[116] L. Phillips. 2023. A Closer Look at the Mental Health Provider Shortage. https://www.counseling.org/publications/counseling-today-magazine/article-archive/article/legacy/a-closer-look-at-the-mental-health-provider-shortage.

[117] Ursula Plesner and Maja Horst. 2012. Selling the selling point: How innovation communication creates users of virtual worlds architecture. *Convergence* 18, 1 (2012), 49–70.

[118] Eyal Press. 2021. *Dirty Work: Essential Jobs and the Hidden Toll of Inequality in America*. Farrar, Straus and Giroux, -.

[119] Lina Rahm. 2019. *Educational imaginaries: A genealogy of the digital citizen*. Vol. 214. Linköping University Electronic Press, -.

[120] K Sabeel Rahman and Kathleen Thelen. 2019. The rise of the platform business model and the transformation of twenty-first-century capitalism. *Politics & society* 47, 2 (2019), 177–204.

[121] Sebastian Raisch and Sebastian Krakowski. 2021. Artificial intelligence and management: The automation–augmentation paradox. *Academy of management review* 46, 1 (2021), 192–210.

[122] Ellen Reese and Juliann Emmons Allison. 2023. *Unsustainable: Amazon, warehousing, and the politics of exploitation*. Univ of California Press, -.

[123] Jan Rehmann. 2013. *Theories of ideology: The powers of alienation and subjection*. Vol. 54. Brill, -. https://doi.org/10.1163/9789004252318

[124] Robert Reich. 2023. There is no US labor shortage. That's a myth. *The Guardian* -, - (Jan. 2023), 1. https://www.theguardian.com/commentisfree/2023/jan/15/there-is-no-us-labor-shortage-thats-a-myth

[125] Jason Resnikoff. 2024. Contesting the Idea of Progress: Labor's AI Challenge. *New Labor Forum* 33, 3 (2024), 6–14.

[126] Selma Šabanović, Vicky Charisi, Tony Belpaeme, Cindy L Bethel, Maja Matarić, Robin Murphy, and Shelly Levy-Tzedek. 2023. "Robots for good": Ten defining questions. *Science Robotics* 8, 84 (2023), eadl4238.

[127] B. Sanders. 2024. NEWS: Sanders Introduces Legislation to Enact a 32-Hour Workweek with No Loss in Pay » Senator Bernie Sanders. https://www.sanders.senate.gov/press-releases/news-sanders-introduces-legislation-to-enact-a-32-hour-workweek-with-no-loss-in-pay/

[128] Kjeld Schmidt and Liam Bannon. 1992. Taking CSCW seriously. *Computer Supported Cooperative Work (CSCW)* 1, 1 (March 1992), 7–40. https://doi.org/10.1007/BF00752449

[129] Sofia Serholt, Sara Ljungblad, and Niamh Ní Bhroin. 2022. Introduction: special issue—critical robotics research. *AI & SOCIETY* 37, 2 (2022), 417–423.

[130] Priya Seshadri, Cole Hatfield Joslyn, Morgan M Hynes, and Tahira Reid. 2019. Compassionate design: Considerations that impact the users' dignity, empowerment and sense of security. *Design Science* 5 (2019), e21.

[131] B Siciliano. 2008. Springer handbook of robotics. *Springer-Verlag* 2 (2008), 15–35.

[132] Franchesca Spektor, Sarah E. Fox, Ezra Awumey, Ben Begleiter, Chinmay Kulkarni, Betsy Stringam, Christine A. Riordan, Hye Jin Rho, Hunter Akridge, and Jodi Forlizzi. 2023. Charting the Automation of Hospitality: An Interdisciplinary Literature Review Examining the Evolution of Frontline Service work in the Face of Algorithmic Management. *Proc. ACM Hum.-Comput. Interact.* 7, CSCW1 (April 2023), 33:1–33:20. https://doi.org/10.1145/3579466

[133] Franchesca Spektor, Sarah E Fox, Ezra Awumey, Christine A. Riordan, Hye Jin Rho, Chinmay Kulkarni, Marlen Martinez-Lopez, Betsy Stringam, Ben Begleiter, and Jodi Forlizzi. 2023. Designing for Wellbeing: Worker-Generated Ideas on Adapting Algorithmic Management in the Hospitality Industry. In *Proceedings*

of the 2023 ACM Designing Interactive Systems Conference (DIS '23). Association for Computing Machinery, New York, NY, USA, 623–637. https://doi.org/10.1145/3563657.3596018

[134] Joanne Spetz, Lela Chu, and Lisel Blash. 2021. *The Impact of the COVID-19 Pandemic on California's Registered Nurse Workforce: Preliminary Data*. Technical Report. UCSF Health Workforce Research Center on Long-Term Care. 9 pages.

[135] Star and Strauss. 1999. Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work. *Computer Supported Cooperative Work (CSCW)* 8, 1 (March 1999), 9–30. https://doi.org/10.1023/A:1008651105359

[136] Richard L Street Jr, Gregory Makoul, Neeraj K Arora, and Ronald M Epstein. 2009. How does communication heal? Pathways linking clinician–patient communication to health outcomes. *Patient education and counseling* 74, 3 (2009), 295–301.

[137] L. Suchman. 1994. Do categories have politics? *Computer Supported Cooperative Work (CSCW)* 2, 3 (1994), 177–190.

[138] Lucy Suchman. 1994. Working relations of technology production and use. *Computer Supported Cooperative Work (CSCW)* 2, 1 (March 1994), 21–39. https://doi.org/10.1007/BF00749282

[139] Lucy Suchman. 1995. Making work visible. *Commun. ACM* 38, 9 (1995), 56–ff.

[140] Yngve Sundblad. 2010. UTOPIA: Participatory Design from Scandinavia to the World. In *History of Nordic Computing 3: Third IFIP WG 9.7 Conference, HiNC 3, Stockholm, Sweden, October 18-20, 2010, Revised Selected Papers 3*. Springer, Springer, Stockholm, 176–186. https://doi.org/10.1007/978-3-642-23315-9_20

[141] Melissa Suran. 2023. Overworked and Understaffed, More Than 1 in 4 US Nurses Say They Plan to Leave the Profession. *JAMA* 330, 16 (10 2023), 1512–1514. https://doi.org/10.1001/jama.2023.10055

[142] Udayan Tandon, Vera Khovanskaya, Enrique Arcilla, Mikaiil Haji Hussein, Peter Zschiesche, and Lilly Irani. 2022. Hostile Ecologies: Navigating the Barriers to Community-Led Innovation. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (Nov. 2022), 443:1–443:26. https://doi.org/10.1145/3555544

[143] Astra Taylor. 2018. The Automation Charade. *Logic(s) Magazine* 5, 1 (2018), –.

[144] Angelique Taylor, Hee Rin Lee, Alyssa Kubota, and Laurel D Riek. 2019. Coordinating clinical teams: Using robots to empower nurses to stop the line. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–30.

[145] Angelique Taylor, Michele Murakami, Soyon Kim, Ryan Chu, and Laurel D Riek. 2022. Hospitals of the future: Designing interactive robotic systems for resilient emergency departments. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (2022), 1–40.

[146] Angelique M Taylor, Sachiko Matsumoto, Wesley Xiao, and Laurel D Riek. 2021. Social navigation for mobile robots in the emergency department. *2021 IEEE International Conference on Robotics and Automation (ICRA)* -, - (2021), 3510–3516.

[147] Edward Tenner. 2019. *The efficiency paradox: what Big Data can't do*. Vintage, -.

[148] Stephen Timmons. 2003. Nurses Resisting Information Technology. *Nursing Inquiry* 10, 4 (2003), 257–269. https://doi.org/10.1046/j.1440-1800.2003.00177.x

[149] Daniel Toll. 2022. *SOCIOTECHNICAL IMAGINARIES OF THE AUTOMATED MUNICIPALITY*. FiF-avhandling - Filosofiska Fakulteten – Linköpings Universitet, Vol. 129. Linköping University Electronic Press, Linköping. https://doi.org/10.3384/9789179293093

[150] National Nurses United. 2023. A.I.'s impact on nursing and health care | National Nurses United. https://www.nationalnursesunited.org/artificial-intelligence

[151] Núria Vallès-Peris and Miquel Domènech. 2020. Roboticists' imaginaries of robots for care: the radical imaginary as a tool for an ethical discussion. *Engineering Studies* 12, 3 (2020), 157–176.

[152] Juan P Vasconez, George A Kantor, and Fernando A Auat Cheein. 2019. Human–robot interaction in agriculture: A survey and current challenges. *Biosystems engineering* 179 (2019), 35–48.

[153] Nantina Vgontzas. 2022. Toward Degrowth: Worker Power, Surveillance Abolition, and Climate Justice at Amazon. *New Global Studies* 16, 1 (April 2022), 49–67. https://doi.org/10.1515/ngs-2022-0008 Publisher: De Gruyter.

[154] Anthony P. Vigor. 2002. COWS: The Center on Wisconsin Strategy. *Local Economy* 17, 4 (Nov. 2002), 273–288. https://doi.org/10.1080/0269094022000019817 Publisher: SAGE Publications Ltd.

[155] VML. 2024. *Adopt or Fail: Why Business Needs AI*. Technical Report. VML. https://www.vml.com/insight/adopt-or-fail-why-business-needs-ai

[156] Milton L Wainberg, Pamela Scorza, James M Shultz, Liat Helpman, Jennifer J Mootz, Karen A Johnson, Yuval Neria, Jean-Marie E Bradford, Maria A Oquendo, and Melissa R Arbuckle. 2017. Challenges and opportunities in global mental health: a research-to-practice perspective. *Current psychiatry reports* 19 (2017), 1–10.

[157] Judy Wajcman. 2020. *Pressed for time: The acceleration of life in digital capitalism*. University of Chicago Press, Chicago.

[158] Harsha Walia. 2021. *Border & rule: global migration, capitalism, and the rise of racist nationalism / Harsha Walia ; [foreword by Robin D.G. Kelley ; afterword by Nick Estes]*. Haymarket Books, Chicago, Illinois.

[159] Nina Wallerstein, Bonnie Duran, et al. 2017. The theoretical, historical and practice roots of CBPR. *Community-based participatory research for health: Advancing social and health equity* -, - (2017), 17–29.

[160] David Weil. 2019. Understanding the present and future of work in the fissured workplace context. *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5, 5 (2019), 147–165.

[161] Astrid Weiss and Andreas Huber. 2016. User experience of a smart factory robot: Assembly line workers demand adaptive robots. *arXiv preprint arXiv:1606.03846* -, - (2016), 1–3.

[162] Katherine S Welfare, Matthew R Hallowell, Julie A Shah, and Laurel D Riek. 2019. Consider the human work experience when integrating robotics in the workplace. *2019 14th ACM/IEEE international conference on human-robot interaction (HRI)* -, - (2019), 75–84.

[163] Grace Whitfield, James Wright, and Kate Hamblin. 2024. AI in care: a solution to the'care crisis' in England? In *Handbook on Public Policy and Artificial Intelligence*. Edward Elgar Publishing, -, 383–396.

[164] Cedric Deslandes Whitney, Teresa Naval, Elizabeth Quepons, Simrandeep Singh, Steven R Rick, and Lilly Irani. 2021. HCI Tactics for Politics from Below: Meeting the Challenges of Smart Cities. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. Association for Computing Machinery, New York, NY, USA, 1–15. https://doi.org/10.1145/3411764.3445314

[165] Meredith Whittaker. 2021. The steep cost of capture. *Interactions* 28, 6 (Nov. 2021), 50–55. https://doi.org/10.1145/3488666

[166] Meredith Whittaker, Meryl Alper, Cynthia L Bennett, Sara Hendren, Liz Kaziunas, Mara Mills, Meredith Ringel Morris, Joy Rankin, Emily Rogers, Marcel Salas, et al. 2019. Disability, bias, and AI. *AI Now Institute* 8 (2019), 1–32.

[167] Tom Williams and Ruchen Wen. 2021. Human Capabilities as Guiding Lights for the Field of AI-HRI: Insights from Engineering Education. *AAAI Fall Symposium on AI-for-HRI* -, - (2021), 1–7. https://par.nsf.gov/biblio/10312684

[168] Katie Winkle, Donald McMillan, Maria Arnelid, Katherine Harrison, Madeline Balaam, Ericka Johnson, and Iolanda Leite. 2023. Feminist Human-Robot Interaction: Disentangling Power, Principles and Practice for Better, More Ethical HRI. In *Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction (HRI '23)*. Association for Computing Machinery, New York, NY, USA, 72–82. https://doi.org/10.1145/3568162.3576973

[169] Christine T. Wolf, Mariam Asad, and Lynn S. Dombrowski. 2022. Designing within Capitalism. In *Designing Interactive Systems Conference*. ACM, Virtual Event Australia, 439–453. https://doi.org/10.1145/3532106.3533559

[170] James Adrian Wright. 2023. *Robots Won't Save Japan: An Ethnography of Eldercare Automation*. Cornell University Press, Ithaca. https://doi.org/10.1353/book.100465

[171] Chloe Xiang. 2023. 'He Would Still Be Here': Man Dies by Suicide After Talking with AI Chatbot, Widow Says. *Vice* -, - (2023), 1.

[172] Kai Chi Yam, Pok Man Tang, Joshua Conrad Jackson, Runkun Su, and Kurt Gray. 2023. The Rise of Robots Increases Job Insecurity and Maladaptive Workplace Behaviors: Multimethod Evidence. *The Journal of Applied Psychology* 108, 5 (May 2023), 850–870. https://doi.org/10.1037/apl0001045

[173] Cristina Zaga, Maria Luce Lupetti, Deborah Forster, Dave Murray-Rust, Micah Prendergast, and David Abbink. 2024. First International Workshop on Worker-Robot Relationships: Exploring Transdisciplinarity for the Future of Work with Robots. In *Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction* (Boulder, CO, USA) *(HRI '24)*. Association for Computing Machinery, New York, NY, USA, 1367–1369. https://doi.org/10.1145/3610978.3638156

[174] Yifei Zhu, Ruchen Wen, and Tom Williams. 2024. Robots for Social Justice (R4SJ): Toward a More Equitable Practice of Human-Robot Interaction. In *Proceedings of the 2024 ACM/IEEE International Conference on Human-Robot Interaction* (Boulder, CO, USA) *(HRI '24)*. Association for Computing Machinery, New York, NY, USA, 850–859. https://doi.org/10.1145/3610977.3634944

[175] Shoshana Zuboff. 1988. *In The Age Of The Smart Machine: The Future Of Work And Power*. Basic Books, New York.