ROBOTS THAT LOOK LIKE US HOW DECEPTIVE DESIGN CAN SHAPE THE VALUE OF HUMAN LABOR

Abstract

Recent developments in artificial intelligence have renewed interest in humanoid robots, which are increasingly portrayed as potential substitutes for human labor—despite their clear technological immaturity for real-world applications. This contribution questions the symbolic design choice to endow robots with deceptively realistic human features and examines its impact on how we perceive human work. Building on broader socio-political debates around labor, power, and technological agency, I argue that designing robots to emulate human traits perpetuates a technocratic vision of progress—one that prioritizes centralized control and efficiency over human empowerment and ultimately seeks to render human labor obsolete. In response to the pressing challenges facing today's industries, I advocate for a functional approach to technology design—one that centers on human–machine collaboration to foster more resilient, adaptable, and inclusive production systems.

Keywords: robotics; AI; human-machine interaction; technology narratives

● Sarah Dégallier Rochat

● Institute for Human-Centered Engineering, School of Computer Sciences and Engineering Bern University of Applied Sciences, Switzerland

Introduction

Recent developments in artificial intelligence have renewed interest in humanoid robots, which are increasingly portrayed as ideal solutions for more agile production systems—systems capable of adapting to shifting market demands and learning new tasks, much like human workers. This renewed enthusiasm comes at a time when traditional automation, designed for fixed, repetitive operations, is often seen as too rigid, costly, and slow to respond to challenges such as market volatility, product customization, rapid technological change, supply chain disruptions, and pandemic-related uncertainties. In this context, AI-controlled humanoid robots are not only framed as flexible tools but are also increasingly presented as potential replacements for human labor in the future.

However, this is not the only path forward. Before the rise of AI-driven humanoids, an alternative model had emerged to increase automation agility: anthropocentric production systems (Romero et al., 2020; Tan et al., 2019). These systems, based on human-centered design of technology, aim to leverage the strengths of human workers and machines, combining the efficiency of machines with the flexibility of human labor. An example of such technology is the collaborative robot, or cobot—a robot that can safely interact with humans and be easily reprogrammed by non-experts (Villani et al., 2018). This approach emphasizes human-machine cooperation and augmented intelligence, offering a vision of automation that supports human empowerment. Yet realizing this vision requires a fundamental shift in the prevailing automation paradigm, which traditionally centralizes control in the hands of technical experts.

Interestingly, humanoid robots and collaborative robots are built on the same underlying technologies. What distinguishes them is not their technical foundation, but their design and the narratives that surround them. More precisely, these technologies exist along a continuum—from robots with selective human-like features that facilitate interaction to those designed to closely mimic human appearance and behavior, which I refer to as emulative humanoids. The two ends of this continuum reflect contrasting automation paradigms (Johnson & Acemoglu, 2023): (a) machine intelligence—machines designed to mimic and potentially compete with human capabilities; and (b) machine usefulness—technologies that augment human abilities and foster collaboration. Crucially, the choice between these paradigms is not dictated by technological constraints, but by political, economic, and social decisions. As shown by Jasanoff & Kim (2015), such decisions are deeply shaped by sociotechnical imaginaries—the shared symbolic frameworks through which societies interpret and give meaning to technology. These imaginaries are maintained and reproduced through the narratives of technology—encompassing both the ways we speak about technology and the ways we materialize it through design. As the social critic Ivan Illitch puts it, "it is not so much techniques and institutions that we need to free ourselves from, but rather the representations and modes of perception that they generate" (cited by Jarrige, 2016, p. 264).

In this article, I therefore critically examine the design of emulative humanoids and the narratives that underpin them, arguing that they reinforce a substitution-based model of automation—one that marginalizes human-centered approaches. By framing the machine not as a tool but as a replace-

ment for the human laborer, this narrative perpetuates existing hierarchies, consolidates control, and undermines the role of human agency in production —even though the technology remains far from fulfilling its promises. I start by presenting the central tenets of the critical theory of technology of the 1960s as they provide a valuable lens through which to analyze the contrasting narratives of collaborative and emulative technologies. Then, as now, grand technological visions—such as those centered on space colonization—cast technology as the unique, definitive path forward, shaping public imagination and policy alike while sidelining alternative futures grounded in human needs.

Technocriticism and Alternative Visions of Technologies

The great technological project of the mid-20th century was the colonization of space. Framed as a bold venture for humanity's future, it promised immense benefits—including the vision of a space economy with limitless growth. These promises were used to justify massive public investments, which diverted resources away from domestic welfare programs and other scientific fields such as biology, medicine, and environmental science (Ulnicane, 2023) and left systemic issues like education, healthcare, and economic inequality unaddressed (Waring and Odom, 2019). Ultimately, much of the government's spending primarily benefited private corporations, contributing to what Régnauld and Saint-Martin (2024) describe as astrocapitalism—a system that reinforces the dominance of tech actors without delivering direct societal benefits.

Despite its failure to fulfill many of its promises, the fascination with the Moon landing endures—immortalized in Neil Armstrong's iconic words: "That's one small step for man, one giant leap for mankind." Space colonization reflects the ideal of mastering nature through science and technology—an ideal first articulated by Francis Bacon (1561–1626), who envisioned such mastery as the pathway to human emancipation. In The Myth of the Machine, Lewis Mumford (1967) questions the validity of this stereotyped vision of progress, in which life-enhancing values are subordinated to a dominant narrative shaped by economic interests, techno-scientific ambitions, and political power. For him, space colonization is a "pathological manifestation" of a destructive culture—a technological façade for "infantile fantasies" (Dalton, 1976). He critiques what he calls "mega-machine": the combination of technological, social, and political structures that function in a coordinated and authoritarian manner to realize large-scale technological projects at the expense of human values and nature. Mumford further contends that history is not a linear march toward improvement, but a continuous struggle between democratic and authoritarian visions of society.

In their book Power and Progress, Johnson & Acemoglu (2023) arrive at a similar conclusion, arguing—based on historical evidence—that the direction of technological development is not inevitable but shaped by political, economic, and social choices. They distinguish between two competing paradigms reflecting Mumfords' authoritarian and democratic visions of society. The machine intelligence paradigm prioritizes the development of systems that imitate or replace human intelligence and work, concentrating power and economic gains among a technological elite while displacing workers and weakening democratic institutions. In contrast, the machine usefulness paradigm aligns with democratic values and emphasizes designing technologies that complement human capabilities and enhance worker productivity. Johnson and Acemoglu emphasize the central role of narrative in shaping the dominant technological paradigm. They identify the construction of new narratives as one of three key pillars for redirecting technology, alongside the strengthening of countervailing forces—such as democratic institutions, labor organizations, and civil society groups—and the implementation of inclusive policies.

The power of narrative is further illustrated in Meerman Scott and Jurek's (2014) Marketing the Moon, which explores how NASA and the U.S. government used public relations, media, and marketing strategies to build public support for the Apollo program. They argue that without effective storytelling and media engagement, the Moon landings might not have captured the world's imagination and, due to lack of funding, even happened at all.

Like space colonization, the humanoid robot is a powerful figure in our sociotechnical imaginaries. From the Jewish Golem to Mary Shelley's Frankenstein, Karel Čapek's robotic workers in R.U.R., and the replicants in Blade Runner, humanoid machines embody the ambition to create beings in our likeness, reflecting a godlike desire for creation but also for overcoming human's natural limitations, such as ageing and death (Cohen, 2025). Today, the emulative humanoid is the natural embodiment of Artificial General Intelligence (AGI): a speculative vision of a superhuman intelligence often portrayed as capable of solving humanity's most complex challenges. Like space colonization, AGI development is increasingly framed as a geopolitical race between democratic and autocratic nations—one that determines our survival (Bryson & Malikova, 2021). This narrative pressures societies to invest vast resources, and to do so hastily, without questioning regulation, who profits from technology, or its economic and ecological consequences (Cave & ÓhÉigeartaigh, 2018; Scharre, 2019).

Many scholars have raised concerns about the potential impact of the AGI narrative on democracy (e.g, Schaake, 2024). Gebru and Torres (2024) have shown that it is deeply rooted in a constellation of ideological currents—transhumanism, effective altruism, long-termism, and techno-solutionism—that collectively promote an authoritarian vision of progress led by small tech elite. In this sense, the AGI narrative is not merely a technological discourse but also an economic and political project— one that consolidates elite control while undermining democratic accountability (Crawford, 2021). As a society, we must therefore move beyond the fascination with humanoid robots and the entrenched belief that technological advancement inherently leads to human progress. While these machines may appear innocuous or even aspirational, their underlying narratives profoundly shape our perceptions of human labor and its value, often in detrimental ways.

Before examining the potential impact of humanoid robots on our perception of human labor, I begin by briefly introducing the concepts of collaborative robots and emulative humanoids, highlighting the key differences in their design and intended functions.

Same Technology, Different Designs: Collaborative Robots and Emulative Humanoids

While success stories of "dark factories"—production lines operating without human labor—may suggest that human workers are no longer part of the future of automation, this impression is misleading. The production industry still relies heavily on manual labor, not only due to economic or transitional factors, but because many tasks remain non-automatable in a viable way (Romero et al., 2020). Full automation is well-suited for long-term, high-volume production of standardized goods. However, it lacks the flexibility, adaptability, and cost-efficiency required for low-volume or highly customized manufacturing (Gan et al., 2023). Moreover, the high upfront investment, maintenance complexity, and limited scalability of fully automated systems make them inaccessible to many small and medium-sized enterprises—especially in the face of increasingly volatile and diversified markets (Grube Hansen et al., 2017). These challenges call for new automation paradigms that are more flexible and resilient.

This tension between the efficiency of full automation and the need for more flexibility is not new and led to the development in the 1990s of collaborative robots, or cobots, defined as "an apparatus and method for direct physical interaction between a person and a general purpose manipulator controlled by a computer" (Colgate et al., 1996). Unlike traditional industrial robots, which must operate in isolated, fenced-off areas for safety reasons, collaborative robots are designed to work safely alongside humans. This direct interaction between humans and robots comes at the cost of speed for security reasons, but it opens the door to entirely new forms of interaction that can be designed to leverage the complementarity between the human and the machine (Dégallier-Rochat et al., 2022). For example, cobots can be reprogrammed by physically guiding the robot arm along a desired trajectory—a method known as learning from demonstration (Billard et al., 2016)—or through intuitive interfaces that leverage the user's proximity to the robot (Villani et al., 2018). The interaction between the human and the robot can be designed to combine the strengths of both parties: the efficiency and consistency of machines with the adaptability, creativity, and task-specific expertise of humans (Blanc et al., 2023). This human-centered design philosophy is a key selling point for collaborative robotics companies, as illustrated in typical advertisement imagery from companies like Kuka in Figure 1 and in promotional materials like this marketing video (Tradesafe, 2024).

Figure 1. A human makes a high five with a collaborative robotic arm. Image: Daimler und Benz Stiftung; Jessen Oestergaard. CC-BY-SA-3.0-DE

Figure 2. Sawyer and Baxter Collaborative Robots from Rethink Robotics. Image: CC-BY-4.0

Cobots exist in various designs. Most cobot resemble their industrial counterpart and are simple manipulators, as the robot on Figure 1. Other cobots have human-like features—such as eyes, facial expressions, and gestures—that can enhance robot usability and acceptance, particularly for non-expert users. These features help guide attention through gaze, signal intent, and facilitate nonverbal communication through body language. A good example of a functional humanoid is the robot Baxter, shown in Figure 2. Its screen-based face, for instance, is designed to naturally direct the user's gaze toward the display, where important information may be presented—naturally enhancing the human-machine interaction.

Figure 3. Tesla Optimus Gen-2 Humanoid robot. Image: CC-BY-3.0

Recently, new types of robots have emerged that mimic the human body, such as the robot depicted on Figure 3. These machines, which I refer to as emulative humanoids, feature designs that aim to replicate human anatomy, including complex hands and legs, despite the fact that current technology remains far from matching human capabilities. This design approach is deceptive: it introduces unnecessary cost, complexity, and fragility without offering clear functional advantages, apart from reinforcing the illusion of human-likeness.

For example, while equipping a robot with legs may enable stair climbing, this capability is rarely necessary in industrial settings, where flat floors are the norm to accommodate equipment like pallet jacks. One might argue that legged robots can also operate on flat surfaces and offer potential for future applications. However, they are significantly slower, more prone to instability, and introduce unnecessary complexity. The cost difference is also substantial: the Optimus robot, for instance, is estimated to be five to ten times more expensive than conventional collaborative robots, despite offering limited functional advantages in typical industrial environments. Given these limitations, it is reasonable to question the rationale behind such costly and non-functional design choices for industrial use[1]. In the next section, I contend that emulative humanoids serve a symbolic function to reinforce a technocratic approach to automation.

[1] Of course, while the practical value of such robots in industrial settings remains debatable, their use in research—for instance, in the study of embodied cognition—is far more justifiable. Embodied cognition posits that developing human-like intelligence requires a human-like body, making humanoid robots valuable tools for exploring the relationship between physical embodiment and cognitive processes.

Automation as Ideology: Paradigms of Power and Design

In his book Against Automation Mythologies, Ramirez (2020) studies the difficulties encountered by the company MIT Rethink Robotics to enter the market with their first collaborative robot. According to one of Rethink's former investors, the problem was not in the product, but in the automation paradigm: what companies were looking for was a low cost robot that they could use to do the same task over and over again, not a flexible machine that could easily be reprogrammed by production workers. Rethink Robotics failed in the beginning, in a sense, because companies were not ready to "rethink robotics."

Collaborative robots—and human-centered approach to automation more broadly—require two fundamental paradigm shifts. The first concerns the purpose of automation: rather than designing highly optimized, expert-driven systems aimed at maximum efficiency, the focus shifts toward flexible, user-adaptable solutions. These systems may sacrifice some efficiency but gain in versatility and accessibility, enabling non-experts to adapt them to changing production needs. This shift paves the way for more resilient production environments that combine the strengths of automation with the adaptability of human labor.

The second, and more profound, shift involves the distribution of expertise and control between the expert and the operator. Traditionally, robotic solutions consist in expert, specialized systems designed to perform specific tasks with the highest possible reliability and precision. Machine interfaces are typically simplified as much as possible—operators are often expected to "just press a button"—to minimize the risk of human error. In contrast, collaborative robotics calls for a partial transfer of control to frontline workers—empowering them to adapt certain features of the production process to improve its flexibility and resilience. This redefinition of the "locus of expertise" opens the door to more democratic forms of technological governance, challenging long-standing hierarchies in industrial design.

The expert-operator division of work dates back to Frederick Winslow Taylor's scientific management approach to optimizing work processes, developed in the early 1900s. Taylorism involved breaking down complex tasks into simpler operations, which were optimized for speed (Ramirez, 2020). As a result, the expertise of the skilled workers who had initially carried out the tasks was transferred to scientific management experts and transformed into procedures. Henry Braverman (1998) described this process as a separation of the minds and the bodies of the workers, that is, as a separation of the conception of work with its execution.

Ramirez (2020) reports an infamous example where this separation between mind and body is pushed to its limits. In Amazon warehouses, the work schedule of the employee is defined by a handheld scanner. It locates the position of the item to be picked and counts down the second remaining for the workers to achieve the task in the allotted time, imposing a high pace and preventing any form of self-organization or planning for the workers. The human is turned into a mere body, with a machine brain. Several studies have reported the mental damages caused by this mechanization of the human worker (Delfanti, 2021 for the Amazon Case; Lu et al., 2021 for a more general treatment).

One might argue that the limitation of the operators' choices stems from modern demands for product standardization and quality assurance, which require high task repeatability. Yet, a compelling counterexample is the famous Toyota Production System (TPS), which emphasizes the active role of workers in continuous improvement (kaizen), quality control, and real-time decision-making. For instance, the andon system empowers employees to stop production lines when issues arise—reinforcing both product standards and worker agency. This approach gave Toyota a competitive edge

[2] Even Toyota's resilient system was eventually tested by the unprecedented scale of global supply chain disruptions, leading to temporary production cuts in late 2021. In response, the company adjusted its strategy to better balance lean efficiency with resilience—while preserving its core commitment to worker empowerment.

during the early stages of the COVID 19 pandemic, as workers quickly adapted processes and identified alternative solutions[2] . This case, supported by the finding of others (for instance, Armstrong & Shah, 2025; Daugherty & Wilson, 2022), illustrates that human-centered production systems are not merely about ergonomics or job satisfaction—they are also key to fostering resilience, adaptability, and innovation driven by human insight (Mnassri, 2024).

In a recent article in The Atlantic, Autor and Manyika (2025) argue that AI is mature enough to support meaningful human collaboration, and they challenge the prevailing, and often ineffective, focus on full automation. Building on this perspective, I contend that the persistence of the machine intelligence paradigm—despite its clear technical limitations—can only be fully understood through a broader socio-economic lens. Automation is frequently presented as a neutral tool for improving efficiency and productivity, yet it also

Figure 4. An example of the advertising campaign of the company Artisan with the slogan: Your Next Hire Isn't Human – The Era of AI Employees is Here. Image: David Ho, with permission.

Winner's example demonstrates that even imperfect technological substitutions can reinforce existing power structures and propagate authoritarian narratives. In a similar vein, I argue that emulative humanoids are not primarily designed to enhance automation efficiency, but rather to promote a vision of the future in which human labor is rendered obsolete. A recent advertising campaign by the company Artisan illustrates this point.

The company markets AI assistants—branded as "Artisans"—as virtual, human-like employees. The campaign openly touts the advantages of these AI workers with slogans such as "Artisans won't complain about life-work balance" and "Excited to work 70+ hours a week," clearly framing human labor as a liability. It even goes so far as to urge companies to "Stop hiring humans," culminating in the central message: "The Era of AI Employees is Here."

Yet, as Artisan's CEO himself acknowledges, this so-called 'era' remains speculative; the technology is still far from capable of replacing human labor. On the company's website, he concedes: "Eventually, we should live in a world where [...] you can truly stop hiring humans, but today is not that day" (Carmichael-Jack, 2024). The campaign, therefore, is less about marketing a functional product and more about promoting a particular vision of the future—one that aligns with the values and interests of the company and, more broadly, the tech elite.

While the advertising campaign was framed as deliberately provocative to capture attention, such narratives do more than provoke—they actively shape public perceptions of labor's value and reinforce the sense that a future without human work is both inevitable and desirable. Although the notion that humanoid robots will replace all forms of human labor remains speculative, its influence is anything but abstract. The power of this narrative lies not in its technical feasibility, but in its political and cultural resonance. By perpetuating the myth of inevitable human obsolescence, it diminishes the perceived worth of labor, undermines workers' rights, and legitimizes the erosion of labor protections. In doing so, it serves the interests of those who stand to gain from automation without bearing its social costs, cloaking structural inequalities in the language of technological progress.

Conclusion

Historically, automation has driven productivity gains by enabling displaced workers to transition into new roles. However, the current wave of automation presents a different picture: productivity growth has stagnated, while concerns about job displacement have intensified (Acemoglu & Restrepo, 2019). The authors describe this phenomenon as "so-so automation"—technological changes that disrupt employment without delivering meaningful improvements in productivity or service quality. Examples include self-checkout kiosks and automated customer service systems.

Several authors have argued that better outcomes from digital technologies could be achieved by prioritizing human collaboration over replacement (see, for instance, Autor & Manyika, 2025; Daugherty & Wilson, 2022; Dégallier-Rochat et al., 2022), notably through the further development of technologies such as collaborative robotics. This shift in priority implies a reframing of the dominant automation narrative, which centers on substituting human labor through machine intelligence—a vision sustained by the promises and hype surrounding artificial intelligence. Challenging these narratives is essential if we are to advance more inclusive and effective approaches to automation—ones that emphasize machine usefulness through human-machine synergy and shared value creation. This also calls for a critical reassessment of the design choices behind humanoid robots—choices

that, while seemingly benign, often reinforce technocratic narratives and subtly shape public perceptions of the human role in automated systems. As discussed throughout this article, automation approaches focusing on human-machine interaction are not merely theoretical—they are already being implemented. Toyota's experience, for example, demonstrates the value of designing technologies that work with humans to enhance the resilience and adaptability of production systems. A recent study on robotics and productivity concluded: "Companies are best served by a positive-sum automation that draws on the strengths of intelligent machines, managers, engineers, and line workers alike. The vision is not one without humans, but one in which automated systems make humans more capable and more vital at work" (Armstrong & Shah, 2025). This vision demands a fundamental rethinking of the role of the production worker—not as a liability or source of error, but as a vital contributor to innovation and adaptability. At the same time, this vision demands a critical examination of the power structures and financial incentives embedded in dominant automation narratives. Advancing toward more inclusive and democratic models of work begins with designing intuitive, user-friendly tools, investing in comprehensive training programs, and systematically integrating feedback from frontline employees (Armstrong & Shah, 2025). It also requires redefining success metrics to prioritize system resilience, human capital development, and team-based performance over narrow, short-term efficiency gains.

References

Armstrong, B., & Shah, J. (2025). A Smarter Strategy for Using Robots. Harvard Business Review. https://hbr.org/2023/03/a-smarter-strategy-for-using-robots

Autor, D., & Manyika, J. (2025, August 24). A Better Way to Think About AI. The Atlantic. https://www.theatlantic.com/technology/archive/2025/08/ai-job-loss-human-enhancement-google/683963/

Billard, A. G., Calinon, S., & Dillmann, R. (2016). Learning from Humans. In B. Siciliano & O. Khatib (Eds.), Springer Handbook of Robotics (pp. 1995–2014). Springer International Publishing. https://doi.org/10.1007/978-3-319-32552-1_74

Blanc, C., Boudry, L., Sonderegger, A., Nembrini, J., & Dégallier-Rochat, S. (2023). Empowering Production Workers to Program Robots: A No-Code, Skill-Based Approach. In H. P. da Silva & P. Cipresso (Eds.), Computer-Human Interaction Research and Applications (pp. 21–39). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-49425-3_2

Braverman, H. (1998). Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century. NYU Press. https://www.jstor.org/stable/j.ctt9qfrkf

Bryson, J. J., & Malikova, H. (2021). Is There an AI Cold War? Global Perspectives, 2(1), 24803. https://doi.org/10.1525/gp.2021.24803

Cave, S., & ÓhÉigeartaigh, S. S. (2018). An AI Race for Strategic Advantage: Rhetoric and Risks. Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society, 36–40. https://doi.org/10.1145/3278721.3278780

Cohen, J. (2025). Human Robots in Myth and science. Routledge. https://doi.org/10.4324/9781003634232

Colgate, J. E., Wannasuphoprasit, W., & Peshkin, M. A. (1996). Cobots: Robots for collaboration with human operators. ASME International Mechanical Engineering Congress and Exposition, 15281, 433–439.

Crawford, K. (2021). The Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence. Yale University Press. https://doi.org/10.2307/j.ctv1ghv45t

Dalton, J. (1976, May 16). Futurism and All That. The Harvard Crimson. https://www.thecrimson.com/article/1976/5/17/futurism-and-all-that-pbpbublic-lavoratories/

Daugherty, P., & Wilson, H. J. (2022). Radically Human: How New Technology Is Transforming Business and Shaping Our Future. Harvard Business Review Press.

Dégallier-Rochat, S., Kurpicz-Briki, M., Endrissat, N., & Yatsenko, O. (2022). Human augmentation, not replacement: A research agenda for AI and robotics in the industry. Frontiers in Robotics and AI, 9. https://doi.org/10.3389/frobt.2022.997386

Delfanti, A. (2021). Machinic dispossession and augmented despotism: Digital work in an Amazon warehouse. New Media & Society, 23(1), 39–55. https://doi.org/10.1177/1461444819891613

Fehrle, J., Lieber, M., & Ramírez, J. J. (2024). Marxism and the Technology Debate. In (De) Automating the Future (pp. 1–53). Brill. https://doi.org/10.1163/9789004703940_002

Gan, Z. L., Musa, S. N., & Yap, H. J. (2023). A Review of the High-Mix, Low-Volume Manufacturing Industry. Applied Sciences, 13(3), Article 3. https://doi.org/10.3390/app13031687

Gebru, T., & Torres, É. P. (2024). The TESCREAL bundle: Eugenics and the promise of utopia through artificial general intelligence. First Monday. https://doi.org/10.5210/fm.v29i4.13636

Grube Hansen, D., Malik, A. A., & Bilberg, A. (2017). Generic Challenges and Automation Solutions in Manufacturing SMEs: 28th International Symposium of the Danube Adrian Association for Automation & Manufacturing. Proceedings of the 28th DAAAM International Symposium, 1161–1169. https://doi.org/10.2507/28th.daaam.proceedings.161

Jarrige, F. (2016). Technocritiques: Du refus des machines à la contestation des technosciences. La Découverte.

Jasanoff, S., & Kim, S.-H. (2015). Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power. University of Chicago Press. https://doi.org/10.7208/9780226276663

Johnson, S., & Acemoglu, D. (2023). Power and Progress: Our Thousand-Year Struggle Over Technology and Prosperity. Hachette UK.

Lu, Y., Adrados, J. S., Chand, S. S., & Wang, L. (2021). Humans Are Not Machines—Anthropocentric Human–Machine Symbiosis for Ultra-Flexible Smart Manufacturing. Engineering, 7(6), 734–737. https://doi.org/10.1016/j.eng.2020.09.018

Mnassri, Y. (2024, July 1). Leadership, Sustainability, and Innovation: A Case Study of Toyota's Lean Manufacturing and Sustainable Practices. | EBSCOhost. https://openurl.ebsco.com/contentitem/gcd:183882480?sid=ebsco:plink:crawler&id=ebsco:gcd:183882480

Mumford, L. (1967). The myth of the machine. Secker & Warburg.

Ramirez, J. J. (2020). Against Automation Mythologies: Business Science Fiction and the Ruse of the Robots. Routledge. https://doi.org/10.4324/9781003056089

Régnauld, I., & Saint-Martin, A. (2024). Une histoire de la conquête spatiale: Des fusées nazies aux astrocapitalistes du New Space. La fabrique éditions.

Romero, D., Stahre, J., & Taisch, M. (2020). The Operator 4.0: Towards socially sustainable factories of the future. Computers & Industrial Engineering, 139, 106128. https://doi.org/10.1016/j.cie.2019.106128

Schaake, M. (2024). The Tech Coup: How to Save Democracy from Silicon Valley. Princeton University Press. https://doi.org/10.1515/9780691241180

Scharre, P. (2019). Killer Apps: The Real Dangers of an AI Arms Race. Foreign Affairs, 98, 135.

Tan, Q., Tong, Y., Wu, S., & Li, D. (2019). Anthropocentric Approach for Smart Assembly: Integration and Collaboration. Journal of Robotics, 2019, e3146782. https://doi.org/10.1155/2019/3146782

Tradesafe (Director). (2024). What are Cobots (Collaborative Robots)? [Video recording].

https://www.youtube.com/watch?v=KIw3iQKC6BE
Villani, V., Pini, F., Leali, F., & Secchi, C. (2018). Survey on human–robot collaboration in industrial settings: Safety, intuitive interfaces and applications. Mechatronics, 55, 248–266. https://doi.org/10.1016/j.mechatronics.2018.02.009
Winner, L. (1980). Do Artifacts Have Politics? Daedalus, 109(1), 121–136.

Acknowledgment and Statement on compliance with ethical standards
This research was funded internally by the research institution. The author is an advisor to a start-up company specializing in collaborative robotics and to a competence centre in cobotics. DeepL Write was used to improve the grammar, and DeepL Translate was used to translate sentences from French when necessary. Microsoft Co-Pilot was used in some cases to suggest improvements to the argument's flow.

About the Author:
Sarah Dégallier Rochat is the head of the BFH thematic field Humane Digital Transformation, an initiative to promote a development of technology centered on human needs. Her research focuses on designing empowering human-machine interactions. She is the advisor of the start-up Auto-Mate Robotics.