

### Work in the Future: Technological Opportunity or Human Obsolescence in Science Fiction and Reality



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Everybody knew what was supposed to happen. Technological forecasters predicted it. Economic prognosticators confirmed the warnings. Politicians viewed with alarm. The displacement of flesh and blood works by ugly, anthropomorphic machines meant violence! The Luddites would rise again, and the factory aisles would run sticky with lubricating oil. But it didn't happen.

Frederick Pohl's *Midas World* (1983:29)

Conversation starter questions such as “what kind of work do you do?” or “what do you do for a living?” are commonplace as people often assume a person occupies time with some sort of work activity. Why that work is performed may be due to financial security, a sense of purpose, a need to serve/help, or simply the work opportunity arose (Duncan; Gross). Initially, a person will learn specific jobs tasks and often spend years maintaining employment in a particular occupational field. Yet with the introduction of new advanced technologies meant to provide greater efficiency, reduction of the more repetitive and mundane job tasks, and safer working conditions, it is possible that various forms of work will be transformed or at risk for elimination in the future. None of this is new knowledge, as history has shown technological advancements often reshape how people work and live. From the First Industrial Revolution (mid-1700s to early 1800s), the use of steam engines and mechanization increased productivity, making some manual labor jobs no longer needed; to the Second Industrial Revolution (late 1800s to early 1900s), where electricity, telephones, and automobiles created new job positions and simultaneously eliminated other ones (Olsen). The Third Industrial Revolution, referred to as the Digital Age, from the 1960s to 2000s, brought in computers, various electronics, automated processes, and the Internet which altered how jobs were performed, while also creating a more globally accessible job market and eliminating occupations that a computer could do more efficiently. The Fourth Industrial Revolution, referred to as the Second Machine Age, from 2010 to our present, has introduced the world to more advanced AI, robotic machines, smart technology, and other scientific innovations that are currently reshaping work experience in both beneficial and problematic ways (Byrnjolfsson and McAfee; Penprase; Schwab).

By focusing on AI and robotic machine technology associated with the Fourth Industrial Revolution (4IR), this paper draws attention to the transformation of jobs across the business, healthcare, entertainment, restaurant, and government sectors as expectations and anxieties arise with the evolving relationship people have to their new technological collaborators and potential rivals. Reality based examples and science fiction/speculative fiction stories of mundane, utopian, and dystopian futures provide evidence and possibilities of what job seekers of tomorrow may need to consider.

### **Hype, History, and the Current State of Technology**

As societies are becoming more attune to these new 4IR technologies reshaping work and everyday life, the voices of the corporate tech leadership are also gaining attention. There are frequent announcements of the inevitability of AI and robotic tech reach; technologies' beneficent power to improve the world; and, in some cases its dangers to society while concurrently gaining more publicity. When Bill Gates, cofounder of Microsoft, was interviewed on a late-night show in 2025, he said that AI would "solve problems, enable us to work fewer days, and offer free and commonplace medical advice and tutoring." He also suggested that we will "not need humans for most things, but we will decide what those things are" (Gates). Other tech leaders have proclaimed AI agents, also called Agentic AI systems, are the future of personal assistants and members of the workforce (Huskins). These autonomous AI entities will work for us using all the available Internet data, software tools, and personal information gathered to meet any business needs in order to serve us better (Metz and Weise). And Jeff Bezos, founder of Amazon and Blue Origin, has suggested that tech will increase human labor and opportunity, though his distribution centers seem to do the opposite as robotic automation replaces human jobs (Bezos; McCallum; Weise).

With much of the techno-optimism rhetoric, there is a great deal of utopian thinking around the new technologies, though some are cautioning governments, businesses, and society to consider the potential unwanted consequences. In the book *The Workplace of the Future: The Fourth Industrial Revolution, the Precariat and the Death of Hierarchies*, it's suggested that we are entering a more insecure job market as robotization and digitization replace the human workforce. We could say that job displacement due to new technologies has always been a concern from the earlier industrial revolution with the Luddite Movement (1811-16) to Karl Marx addressing the impact of industrial capitalism (*Das Kapital*, 1867), and 19<sup>th</sup> and 20<sup>th</sup> century laborers protesting railroads, assembly lines, and other machine technology impacting traditional forms of work of the time (Johannessen). There is even a 1930s term, 'technological unemployment, coined by the economist John Maynard Keynes to describe the effect, though in his essay, "Economic Possibilities for our Grandchildren," he also envisions an optimistic future where this technology replacing human effort is a temporary step to a better standard of living with humans working less (Schwab; Keynes 1930:363).

Many technological advancements have historically led to changes in the workspace, yet this technological age is different for some critics. It has been described as more disruptive because it can transform jobs associated with creativity, knowledge, and information processing, once a domain of mainly human minds. In books such as *Only Humans Need Apply, Winners & Losers in the Age of Smart Machines* by Davenport and Kirby, concerns are raised about jobs associated with "knowledge workers" that include lawyers, accountants, doctors, scientists, and various white-collar professions. And now, due to the generative AI text and image programs, even creative artists are feeling their occupational livelihood threatened.

Are these alarm bells we should pay attention to, or is it just a matter of perspective? For example, Sam Altman, CEO of Open AI, has an optimistic spin on the AI revolution, suggesting

it is not a new industrialization period but should be seen as more of a renaissance, a time of enlightenment (Barlow). Elon Musk, CEO of Tesla and SpaceX, expects that AI will continue to do things better than humans and his humanoid robots like Optimus Bot will be deployed everywhere in society and many industries (Elon Buzz; Carter). Tech leaders often talk favorably about these new AI and robotic machine technologies, referring to the machines as collaborators, assistants, and agents that will augment us and make the world better. I've also heard educators, professionals from various fields, and everyday individuals refer to AI positively as a partner, therapist, mentor, companion, and even as a friend (Brockes; Tangermann; Williams). In addition, educational institutions and cities are championing greater investment, knowledge, and skill building with AI tools and technology company partnerships. For example, *The Chronicle of Higher Education* articles and webinars feature AI-themed literature and virtual forums (e.g., "AI on Campus"; "New Academic Programs"). Florida State University has promoted an Artificial Intelligence Initiative across the curriculum with donor support from NVIDIA (Southworth et al.). Harvard Business School's online blog includes advice about the future of AI-powered businesses (Gibson). California State Universities have joined numerous leading tech companies (i.e., OpenAI, Intel, Meta, etc.) on advisory boards "to help identify AI skills needed in the California workforce and provide advice on how best to teach them" (Watanabe). Cities such as Palm Springs, California have hosted an annual AI Expo (2025-2026) to "explore artificial intelligence's potential to reshape the desert community's economic future" (Palm Springs Chamber of Commerce; Valley Voice Media) and according to a World Economic Forum article, various global cities in Argentina, Netherlands, Singapore, United States are incorporating AI strategies for projects (North).

As AI and robotic technologies become more embedded in every aspect of work and social life, opting out might prove increasingly difficult (Bilton). In the book *Working with AI: Real Stories of Human-Machine Collaboration* (2022), Davenport and Miller identify a number of employers who have adopted AI-based systems. For example, in the underwriter profession, where customers apply for life insurance policies, these businesses can use an AI system that automatically reviews applications and client information, simultaneously cross-referencing data about risks and underwriter rules, enabling a quicker turnaround (Davenport and Miller 36:2022). This process allows the business to reserve human labor for the more complex decision-making, something often repeated when advocating for AI (Davenport and Miller 37:2022). While the cost-saving benefits are present, there are downsides, such as what if people are not given entry-level work, how will they gain the experience to become the experts who deal with complex decision-making. And when AI and robotics are used in workplaces, it does raise the question of who truly benefits in the long term. Will we all benefit from the outsourcing, augmenting, and leveraging of new technologies to solve problems or are there consequences we should pay attention to? In the marketing and creative industry field, producers of generative AI content iterate quicker, with multiple versions/designs/ideas delivered to customers and consumers, but at what point do the graphic designers, writers, and marketing individuals no longer have their jobs or find themselves in lower pay or lower skill jobs monitoring AI systems versus engaging

in creative thinking. In addition, in the health industry, AI systems are employed in diagnostic imaging, medical transcription, and other services, which seems promising alongside human expertise, but does it mean radiologists and therapists need to reconsider their job market opportunities along with hospital nurses who may find their duties shifted to more management of technologies (Ackermann).

### **Futuristic Scenarios Sprinkled with Reality**

Possibly, this is all just another stage in human evolution where we will adapt and carry on in the 4IR-Renaissance age outsourcing, augmenting, and leveraging our new technologies to solve problems before we enter Ray Kurzweil's 5<sup>th</sup> and 6<sup>th</sup> epoch stages of the singularity; or maybe we should pay attention to what may become irreversible consequences of these technological advancements (Kurzweil 2005). By building a futures focused mindset that includes some science fiction and speculative fiction stories, it may help us better envision those preferable, probable, possible, or seemingly impossible scenarios associated with work in the future (Balagtas 2024:78).

In the short video, "TempBot" (2006), directed by Neill Blomkamp, a humanoid robot is trucked in to perform temp work at a credit union. Human office workers barely pay attention to the walking metal robot as it uses the copy machine and types on a computer while sitting in a cubicle. As the audience, we see the robot's perspective through its computer screen vision, a Version 3.02 model, overlaid with task commands and drop-down menus of information interpreting human words, actions, and materials. The workload and productivity speed for the humans and robot are initially equivalent. Then one day, the robot speeds up its productivity as it becomes obsessed with the new human HR manager who pays attention to it. It works faster to impress her while also stalking her like a jealous romantic mate, that is until a work social event when it inappropriately touches the HR manager's breast, leading to a demotion back to the realm of robots-only offices. This particular story of a robot working in an office is humorous and not too spectacular nor much to fear, apart from its unexpected sentient misconduct.

From a real-world perspective, maybe robots will take on human jobs, but is it something we should be more worried about? In a 2025 news story/podcast from the *NPR Short Wave* science program, it mentions that humanoid robots are not actually at this level of functioning independently, as it takes many hours to build and train due to changing environments (Brumfiel et al.; Brumfiel). A Berkeley scientist and cofounder of Ambi Robotics, Ken Goldberg, further suggests that with robots, it's not the same as with the AI chatbots where "they scooped up pretty much the entire Internet to train themselves how to write sentences and draw pictures," whereas with robot data, it is limited (Brumfiel et al.; Brumfiel). However, there is plenty of robot hype in the news with robotic demonstrations, tech conferences, humans reclassified in jobs as robot wranglers and robot trainers/cyber-laborers in arm farms, along with the extensive research presented in Morgan Stanley's financial investment report about the top 100 companies that could contribute to advanced humanoid development (Christopher "Delivery robots"; "Why hundreds"; Morgan Stanley; Zhou and Lo). On the other hand, with the generative AI programs, it does seem

that knowledge workers should be worried as AI systems often can research, reason, compute, and output patterns and decisions based on data much more efficiently than humans.

If this is a harbinger of the future, what can humans do to save their jobs from machines in the future? In the science fiction animation, “Seniors 3000” (2022), directed by Julien David, the solution for technology taking jobs is to adapt oneself into a robotic cyborg. The story opens with an office boss requiring his employees to be digitally savvy, and if they can’t, then they need to retire. Marlene, an older office worker cannot handle the Bluetooth element of the newest copiers. She is forced to leave her job. She finds her old printer which somehow alters her DNA, transforming her into a printer cyborg that can scan, copy, print, upload .pdf copies, and spit out paper copies instantly through her mouth. The boss then greedily profits from her robotic adaptation. He soon realizes that Marlene can also transform others into cyborgs. He markets her to the French government’s Minister of Work and Profit, saying that he can create workers “requiring no payroll taxes, no paid vacations, and it’s all voluntary.” More retirees are transformed into cyborgs as TVs, floor fans, robotic surgeons, and other technology. But soon after, Marlene’s tech body disfunctions, and she is disposed of with other obsolete humans who have become cyborgs. Eventually, Marlene fights back, leading these obsolete cyborgs in a revolution against those in power. A science fiction story like “Seniors 3000” visually entertains, while also engages audiences to reflect on the embedded social commentary related to themes of aging, human obsolescence, and worker resistance.

Another speculative example is “B.E.N. Bionically Engineered Nursing” (2016), sponsored by the Society of Saint-Vincent-De-Paul. This short video raises the question, what jobs should be given over to AI and robots? On-screen, we see B.E.N., a white, puffy humanoid robot with big, circular, dew-drop black eyes, wearing a blue nurse’s shirt. It cares daily for an older woman named Claudine in her family home, providing nutritious meals, administering medicines, and even entertaining her with dancing. One morning, we see Claudine lying in bed and staring absently ahead in a way that could be interpreted as feeling sad and lonely, as the night before we saw a picture on her nightstand of what could have been her former husband. Upon seeing her in bed, the robot repeatedly says, “Claudine, would you like to get up now, I am here to assist you” and Claudine, physically unresponsive, maintains her absent stare. Later, at the breakfast table, Claudine tells B.E.N. she needed that quiet moment earlier in the morning. The robot, while helpful, doesn’t seem to provide nuanced emotional support apart from what it’s programmed to do. At the end of the short video, a service message appears on the screen displaying the text, “Today, companion robots are being introduced to assist lonely people,” followed by “At Society of Saint-Vincent-De-Paul, we think that only human beings can help in fighting loneliness.” This speculative public service announcement in 2016 reflected a particular perspective of the times, but we can now see more recently that attitudes are changing in the healthcare sector as various AI and robotic models are utilized in reality.

Robots are currently featured in healthcare articles about medical care facilities and home healthcare services. In a *Nurse.org* article, “This Humanoid AI Robot Is Being Tested in Hospitals-Plus 7 More Transforming Healthcare” by Sarah Falcone, the robots are described

as “collaborators, not replacements” and are said to “free up nurses to perform specialized interventions.” One robot featured was Moxi from the US-based Diligent Healthcare, which is said to roam autonomously, deliver lab specimens, and greet patients (Burke, Falcone). Other types of robots mentioned help answer people’s questions, provide emotional support (e.g., robot seal Paro and robot Pepper) and transport supplies, food trays, and samples in the healthcare setting (Burke, Falcone). And for seniors needing home healthcare, the ElliQ by Intuition Robotics is promoted as a social and health coach device initially provided to healthcare organizations (Broadbent et al.). Some recent testimonies by customers in health news websites and on the ElliQ company site suggests a digital companion can help with loneliness and overall wellbeing (ElliQ, Lynn).

In a different work sector, the restaurant industry, AI and robotic implementation is also being promoted. *The Spoon*, a food technology podcast and website, has featured tech innovations, from AI drive-thru translator assistants at Wendy’s fast food to other robotic AI culinary technology (Wolf). While it’s not clear if everyone welcomes the AI and robotic technology in the kitchen, it is used in some restaurants. A restaurant in South Korea called Munmak uses a ramen-preparing robotic machine. A worker interviewed said, “It reduced the workload,” but also suggested there is a “loss of feeling pride in cooking the food” (Kim, “Robot Chefs”). In Japan, the DAWN Avatar robot café uses humanoid robots to serve, greet, and make food recommendations. These robots are not autonomous, but rather, are operated remotely by disabled humans (Steen). With this interconnectedness of AI and robotic machines in the food industry, it seems possible that humans in the future could work alongside robots or in some situations be replaced by them.

The science fiction short video “The Chef” (2021), directed by Hao Zheng and written by Ithaca Deng and Leqi Vanessa Kong, challenges this use of robotic technology and the potential replacement of humans in restaurants. It begins with a restaurant owner escorting William, a humanoid robot, to the kitchen to train under the older chef named Chef Pu. Initially, the chef is reluctant in teaching this machine as he says, “Chinese cooking is not science; it’s a feeling” as William asks for specific measurements in cooking braised meatball and tofu dish and other recipes. Meanwhile, the young human cooking assistant to the chef glares repeatedly at this humanoid assisting the chef. Later, the chef joins the human kitchen staff outside and comforts the younger assistant saying, “Don’t worry, cooking is meant for humans... just work harder, you won’t be replaced.” We soon overhear in a broadcast news story that humans are being replaced as “factory workers, farmers, and truck drivers protest worsening conditions” and others are organizing protest movements that advocate destroying robots in order to get jobs back. As time passes, we see the chef taking a liking to William as it is shown to be more reliable, curious, and attentive than the human assistant. In a scene at the food night market, the chef and William walk together while the chef cheerfully and nostalgically talks about ingredients and recipes. He also seems to be considering William as his eventual replacement when he retires. Shortly after the walk, protestors see the chef with William and attack and destroy the humanoid William. One of these protesters is the chef’s human kitchen assistant, who afterwards offers a saddened chef a ride home on a motorbike.

It’s a little confusing in the story and in a real-world sense whether we should welcome or

despise these AI and robotic machines. What do we want from our machines? Maybe it's efficiency and reliability, or perhaps it fills an emotional void where humans feel neglected. For a business owner, the financial cost-saving aspect of machines prevails. For others, it may be that AI or robotic machines provide something else, such as assistance and companionship, where humans are not as dependable. A story like "The Chef" draws attention to many of these issues as well as the concern about robots taking jobs of younger workers and how human attitudes may change with time and perspective.

A science fiction story about a different work sector, the arts industry, is "Real Artists" (2017), a short video directed by Cameo Wood and written by Cameo Wood and Ken Liu. The camera follows a young twenty something female filmmaker/graphic designer/storyteller interviewing for an entertainment industry job. It seems like a promising opportunity until she learns the film process involves an AI machine called Big Semi. The machine collates the emotional data of people in order to generate multiple film versions that eventually becomes what is considered the best film version. Upon seeing these other creative types sitting in a dark screening room, digitally connected to the AI machine via external body gadgetry on the temple and wristband, the interviewee incredulously comments, "I'm sorry all of Semafore films are essentially made by an AI?" The executive proudly responds, "It's a process that works—nudging responses to fit a known emotional cord is nothing more than an optimization problem, and Big Semi is excellent at solving them."

This filmmaking process depicted in "Real Artists" involves humans as mere cogs in an AI machine, no longer individuals but instead part of a hive mind linked to the AI machine. It's explained to the interviewee that the human mind is repeatedly erased to create a tabula rasa, a blank slate. This process enables the machine to collect fresh, emotional data daily to generate multiple iterations of a story concept and basic plot all rendered using stock characters and dialogue till the best film is statistically achieved.

By reflecting on today's real-life generative AI software landscape in the U.S. and globally, we can see how these tools are becoming more widely accepted in creative fields like the entertainment and marketing sectors. And for many, this technology is eagerly welcomed. For example, in a *MIT Technology Review* issue about creativity in the age of AI, the South Korean cartoonist Lee Hyun-se envisions AI giving his archival data of 5000 comics a "kind of immortality" in that AI can be used to develop future iterations of his characters and worldview (Kim, "Generative AI"). For other visual artists and writers, these large language model systems that generate AI art forms are useful but it has been suggested they are not as personally gratifying when art is reduced to an AI calculation (Kim, "Generative AI"). In recent years, writers, actors, animators, and artists have even reacted by protesting and boycotting AI work (Lee).

Maybe this is the future we can't avoid. Plenty of science fiction and speculative fiction stories show us these utopian and dystopian versions of a world where AI and robots are in the workforce, and some of these scenarios reflect a bit of our reality. Though I hope we are not on the road to Frederick Pohl's *Midas World* (1983), but it might be helpful to familiarize oneself

with the literature where human adoption of AI and robotics ultimately leads to a government run by machines and humans no longer needed. From simple factory and household chore robots to doctors and government leader robots, the robots in this book are shown displacing humans. In chapter 3, “Servant of the People” of *Midas World*, originally published in Analog magazine, a human Congressman named O’Hare believes a human touch will always be needed, even with the abundance of robots. He’s unconcerned about his competitor, a small city robot Mayor campaigning for his seat. In a debate, O’Hare believes he is winning over voters; however, the robot seems to appeal to the crowds equally and can even switch out its data modules for whatever knowledge or memory reference is required. The robot, at one point, praises its human opponent for sponsoring Robot ERA rights and the elimination of mechanical and organic status in the voter records. It comments on how human beings have been freed “from one more onerous and difficult task—namely, the job of selecting their elected officials” and if a robot is elected, “human life can be pure pleasure!” (Pohl 101). This robot politician, having learned everything about human communication, emotion, work, expectations, and way of life, is adept at using whatever mode is needed to win votes. The oblivious O’Hare, physically and mentally limited by his humanness and blinded by his past record of success, continues to campaign without realizing that not only is his competition a highly adaptable robot, but many of his constituents are now also robots.

### **Is This the End or Is it the Beginning of Something Else**

Are we living in a time in which our technology could lead to such an existential threat? While humans have often dealt with vulnerabilities around job security, a robot government as described in the *Midas World* isn’t a reality-based worry. Yet, there are those, such as the late Catholic Pope Leo XIII (1810-1903) and the recent Pope Leo XIV, who have raised concerns about how technological shifts can upend different forms of work and society (Esparza; Hamilton). In Pope Leo XIV Encyclical Letter 2026, it offers guidance around AI, acknowledging the need to develop safeguards for humanity as technological growth is rapid (Leo XIV 106). In contrast, many technology companies are looking for worldwide adoption of AI with an attempt to encourage more positive examples of the advanced technologies. For example, a Google AI Initiative program encourages short film development of stories about the coexistence of AI and humans that may counteract the more dystopian versions commonly referenced in popular culture (Lane, Lee). In the US, the government is trying to integrate AI tools in defense, law enforcement, and administrative work (Hooshidary et al.). The US House of Representatives governing branch passed a bill that would “ban states from enforcing laws regulating artificial intelligence for 10 years” as a way to give breathing room for innovators and the AI marketplace, and then the Senate dropped it after complaints from states (Hendrix and Lima-Strong; Brown and O’Brien “House Republicans include”; “Senate pulls AI”). Internationally, countries are taking steps to promote greater incorporation of AI such as with Japan initiating strategies to build more AI into their Society 5.0 vision; South Korea promoting AI development with AI Basic Act to reduce regulatory guardrails; and China developing their AI + plan to help them “create higher-quality, beautiful lives” through increased AI productivity ability (Spremborg et al; Kim “Why do South Koreans”; Wang).

While some societies and work sectors are optimistic about recent technological innovation in AI and robotics, there are others voicing concerns about the growing technological reach. It might prime the questions, should people be worried about the technologies and possibilities of growing dependence on machines; or with governments advocating more use of it; or should our concerns be directed at the tech leaders profiting and claiming their technology will solve all problems. If job opportunities are limited and economic security is impeded, it may be time to consider a combination of future solutions such as, regulating tech companies, requiring a percentage of human labor for jobs, or government financial supplements like Universal Basic Income for people, though even these potential safeguards are flawed in their application if moral responsibility is overridden by special interests or funding is unavailable. On an individual level, the onus might be on the worker who will need to be prepared to upskill, reskill, augment with technologies, and stay cognizant of how jobs could be restructured and what new jobs are accompanying the technological changes. So, how do we best navigate the future of work? We can try not to inflate or overestimate the potential of AI and robotic technologies. At the same time, we should not ignore its growing impact on society and the workforce; but rather prepare ourselves for potential futures we want or don't want by consuming and/or creating more science fiction and speculative fiction that gives us a taste of what might be possible.<sup>1</sup>

## Notes

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