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The Modern Luddite: A Comparison of Societal Responses Between the Industrial Revolution and AI Revolution

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Abstract

The founder and chairman of the World Economic Forum Klaus Schwab popularized the term, “Fourth Industrial Revolution,” to describe the rapid technological and industrial advancement of the 21st century with his 2016 book of the same name. Artificial intelligence in particular is seeing major breakthroughs and investment from both public and private interests, stirring up concerns over the role individuals and their labor will have in this changing economic climate. Artificial intelligence has elicited a wide range of debate over the relationship between humanity and technology, especially in the academic sphere. In this paper, I examined how the fears over technology’s changing role were similar during the First Industrial Revolution in the 19th century and of today. Using historical scholarship, contemporary reporting, and statistical data, I conclude that both eras experienced strikingly similar widespread fears of job replacement, uncertainty over future employment, and a cultural rejection of technology.

Keywords: Industrial Revolution, AI Revolution, technology, employment, artificial intelligence, Luddism, Neo-Luddism, new Luddism

The Modern Luddite: A Comparison of Societal Responses between the Industrial Revolution and AI Revolution

A term that has arisen for our current age is “The Fourth Industrial Revolution,” popularized by the founder of the World Economic Forum, Klaus Schwab, in his 2016 book of the same name (Marr, 2016). Schwab defined the term by saying, “The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres” (Schwab, 2016). Since the publication of his book, arguably the most significant blurring of the line between the digital and biological spheres occurred: the introduction of generative artificial intelligence (GenAI).

For the first time, technology can imitate what is often considered a uniquely human ability: the ability to create. Before, computers were only able to do fairly simple logical operations that did not require subjective reasoning such as mathematics, hence the name, “Computer.” But now GenAI can write music lyrics, draft essays in seconds that otherwise would have taken hours, and ChatGPT even wrote the subtitle of this very paper. As with any profound change, GenAI stirred a wide array of responses within society. These developments prompted the historian in me to ask, “How does this compare with the First Industrial Revolution of the late 18th and early 19th century? How was this different?” I then asked myself a question, “Did people back then have the same feelings towards the technological change that was happening around them as we have today?”

The thesis for this paper is that the societal reactions to rapid technological change today and in the Industrial Revolution were very similar. Through statistical analysis and historical research, I have discovered two main trends of both revolutions that are strikingly similar: A fear of unemployment and an aversion towards technology. The first section will be a comparison of the emergence of the Luddite movement in the late 18th century with the 2023 Hollywood Writers Guild strike, arguing that both were predicated on the same fear of losing their jobs to technology. The second section will compare Romanticism and Transcendentalism to movements of today, arguing that both stem from the same rejection of technology.

Methods

There were two main avenues of research taken in the formation of this work: data gathering and qualitative analysis of existing literature. Both were done through the use of online search engines, primarily JSTOR, the UC Library system, and Google. For data gathering, this meant finding reputable sources that conducted public opinion polls such as Pew Research or Gallup and seeing if they had done any surveys that focused on social attitudes towards technology. Data gathering also included seeking out academic studies of technology’s effects on job availability, automation, education, and economics. The qualitative analysis was done by using Google to find online news sources that discussed contemporary reactions to technology and provided examples. The quantitative analysis also

included using JSTOR and the UC Library system to identify reliable secondary historical sources made by current day academics that covered the Luddites, the First Industrial Revolution, Romanticism, and Transcendentalism for use in this project.

Labor

A strikingly similar response during both the Industrial Revolution and today's AI revolution is the fear that machines will spark mass unemployment and inconceivable changes to an individual's relationship to their labor. In this section, I will examine how individuals of both revolutions experienced a major fear of overall job loss and how it elicited action either in terms of strikes or violence as well as changes in attitudes toward education.

Given the recent scholarship that has been published regarding automation and employment, it is not surprising that fears of an imminent unemployment crisis are mounting. In his report on artificial intelligence's effects on white collar workers for the Canada based Macdonald-Laurier Institute, researcher Philip Cross (2023) provides a litany of studies that predict a foreboding future for human workers. They ranged from a 2016 study conducted at Ryerson University which stated that, "nearly 42 per cent of the employed Canadian labour force is at high risk of being affected by automation over the next 20 years" (p.10) to a 2020 Oxford University analysis that expected 47% of all US jobs would be lost to automation by the year 2030 (p.11).

It also has not helped that results such as these have been shared across various media outlets. In a Forbes article, senior contributor Paola Cecchi-Demeglio (2023) reiterated a statistic in the World Economic Forum's May 2023 Future of Jobs Report that:

As AI use expands, workers in marketing and advertising, accountants and tax preparers, mathematicians, various analysts, writers, web designers, lawyers, and many others may be displaced. And those robots that will keep taking jobs from humans are now supercharged with AI. How imminent is this takeover? 44% of skill[ed labor] will likely be disrupted over the next five years.

Chris Vallance (2023) of the BBC reported an estimate by the investment bank Goldman Sachs that, "Artificial intelligence (AI) could replace the equivalent of 300 million full-time jobs," and, "It [AI] could replace a quarter of work tasks in the US and Europe..." Even though these same reports equally projected counter arguments, as it is difficult to definitively dispute projected negative statistics, the population is left with a sense of dread over their own state of employment.

Polls indicate that these woes over technology have been adopted by the public at large. In one May 2023 Gallup poll that surveyed 5,458 American adults (Marken & Nicola, 2023), 75% stated that AI will reduce the total number of jobs in the US. In a March 2024 YouGov survey of 1,073 US adults (Ballard, 2024), 57% of respondents answered that AI would decrease the overall number of US jobs while only 10% said it would cause an increase (Question 13). In another Gallup poll of American workers (Saad, 2023), the percentage that feared "FOBO" (fear of becoming obsolete) due to technology rose from 15% in 2021 to 22% in 2023, the same timeframe ChatGPT was released.

However, in some cases, these fears inspire action. The clearest example being the 2023 Hollywood writers' strike. In a Brookings Institute report on the strike (Kinder, 2024), TV writer and former president of the Writers Guild of America West said that:

It really was not until we got into negotiations in the late winter and early spring [2023] that suddenly people were talking about generative AI. People started to use ChatGPT in casual ways and were just so impressed with it. And then people with imagination recognized, 'Wait a second—if this gets better, can this actually replace writers? Can the companies use this to generate scripts that are good enough to cut writers out of the process entirely?' And that was the fear. It snowballed.

In the same article, the creator of the critically acclaimed comedy series *Bojack Horseman*, Raphael Bob Waksberg, summarized his thoughts by saying:

This is something that unites workers across all industries: the fear that automation is going to take over our jobs . . . I hope other unions were paying attention. Workers are going to demand similar things in their industries, because this affects all different kinds of people—it's not just about TV writing.

These reflect a core motivator behind the strike, as the agreement with the studios had unique stipulations regarding AI such as arranging for biyearly meetings between the studios and union over how AI can be used in cinematic productions and giving writers legal authority to sue if their work is used in AI training models (Reuters 2023).

To see how this compares to the industrial revolution, one must look at the beginnings of the Luddite movement in the mid-to-late 18th century. In his book *The Battle Against the Luddites: Unrest in the Industrial Revolution During the Napoleonic Wars*, historian Paul Dawson provides multiple instances where mechanization directly correlated to civil unrest over fears of unemployment. His first example being in the adopting of the "Spinning Jenny". In the processing of wool into fiber, there are two main phases: carding the fleece of any knots into a usable web using a brush and spinning said web into finished yarn (p. 44). In 1769, wool workers in the English city of Lancashire began to adopt the Spinning Jenny, a machine which greatly reduced the amount of time and labor needed in the spinning portion of the wool process. On the 14th of June that same year, workers who feared being outcompeted by this invention formed a mob and went about destroying every Spinning Jenny they could find. In the city of Turton, a mob of fifty workmen and women did the same and smashed five machines.

Dawson then continues by showing how carding machines were the next target after their invention in 1775 by Joseph Arkwright (p. 45). In 1779, "... a mob around Blackburn demolished every carding machine and all "jennies" that used more than twenty-four spindles," and this group now had a name: Luddites. Despite this public outcry, the technology continued to be developed and starting in the 1780s, steam powered scribbling and carding machines were being introduced. Between 1774 and 1786, the West Riding region of Yorkshire witnessed an explosion in the number of mechanized mills, going from 6 to 170 during the twelve-year period (p. 46). It wasn't long before the same fears over job loss came to the community, as, "Bramley Mill [was] attacked by women who had been

made unemployed by the machines . . . In the summer of 1786, a petition appeared in the Leeds Mercury stating thousands were now destitute because of the new machinery.”

Dawson gives an example of the kind of sentiment at the time with an article written by author of The Leeds Mercury newspaper (p. 46) who passionately wrote that:

Men of common sense must know, so many machines in use, take the work from the hands employed scribbling. How are these men, thus thrown out of employ to provide for their families; - and what are they to put their children apprentice to, that the rising generation may have something to keep them at work, in order that they are not vagabonds strolling about in idleness? Some say, begin and learn some other business. – suppose we do; who will maintain our families whilst we undertake the arduous task; and when we have learned it, how shall we know we shall be any better for our pains; for by the time we have served our second apprenticeship, another machine may arise, which may take away that business also.

This fear of job loss coinciding with uncertainty over education is also present in today’s world. In a March 2024 YouGov poll of 1,073 American adults (Ballard, 2024, Question 14), when asked, “How necessary do you think it is for K-12 students to learn AI-related skills for their future careers,” 21% stated that it was “Very Necessary,” and 34% respondent that it was “Somewhat necessary,” compared to only 10% saying that AI skills were, “Not at all necessary,” and 14% saying AI skills were, “Not very necessary.” In another survey of 1,022 Americans (AIPI, 2024, 7), 66% voiced support for legislation that would provide training specifically for workers made unemployed by AI.

These fears have even pervaded into young people’s career decisions. A November 2023 research paper by the IZA Institute of Labor Economics (Goller, 2023, 6) found that:

...with the launch of ChatGPT the supply of potential apprentices, in the form of search queries for apprenticeship positions, decreases substantially by, on average, about 8 percent. While this speaks for a general uncertainty about which skills will be made redundant by generative AI in the future, we see substantial heterogeneity for different occupations according to cognitive requirements ... Occupations using primarily cognitive tasks are particularly affected by the shock in perception, with the largest decline in supply. Similarly, those occupations with the highest language requirements experienced the sharpest decrease in supply.

The study looked at over four million search inquiries of young people looking for apprenticeships and found that interest in both manual and cognitive based apprenticeships was stable, until the introduction of ChatGPT, wherein both nosedived. What this change signals is how ChatGPT creates a sense of fear over job prospects, influencing career decisions.

What we can conclude from this section is that the First Industrial Revolution and current AI revolution have shared a fear of job loss and future employment opportunities. It has been shown how current trends in artificial intelligence have created considerable public concern over current and future job prospects, concerns which ring similar to those which

spurred the Luddite movement in the 18th century. It was shown how the fear of future job loss brought concerns over education during both eras. Next, we will examine how technological change spurred anti-technology sentiments in both time periods.

Distrust of Technology

In this second section, I will show how the technological changes of both the Industrial and AI revolutions brought with them a common aversion towards technology. I will first define the Romantic movement of the 18th and 19th centuries and the movement's roots in anti-technological and Luddite thought. This will be followed by a thorough exploration of the Transcendentalist branch of Romanticism and the intense focus it held towards anti-technological thought. Then, I will provide recent statistics and an example to illustrate how people of today hold the same fears of technology and aversion towards it that the Romantics had. By the end of this section, you should see how the modern fear and aversion toward technology mirrors that of the First Industrial Revolution.

In the late 18th and early 19th centuries as the Industrial Revolution was ramping up, according to historian Alison Stone (2011):

Despite – or perhaps in resistance to – the industrialization, urbanization and class divisions of the time, nineteenth-century thought became decisively shaped by Romantic ideas [...] The intellectual climate was likewise shaped by Romantic re-evaluations of nature, sentiment and art and by Romantic preferences for the organic over the mechanical, the concrete over the abstract, unique individuality over uniformity. (p. 2)

Poets of this era such as William Blake wrote of the, “‘dark Satanic mills’ that threatened to despoil ‘England’s green & pleasant land’” (Duff, 2018, p. 55). There was a sense that the traditional, rural way of life that had been the norm for centuries was coming to an end with what the poet William Wordsworth lamented as the, “‘increased accumulation of men in cities,” brought about by industrialization (p. 54). James Watt’s steam engine had transformed England’s fabrics industry and created a “factory system” that spurred the rapid growth of industrial cities in northern England during the late 18th and early 19th centuries (p. 55). This growth was so strong that between 1801 and 1811, British cotton demand doubled to feed these burgeoning industries. These developments mixed with the economic hardships brought by the Napoleonic wars and Enclosure acts which greatly diminished common land available, created a population that struggled to make ends meet. 1811 witnessed a massive Luddite riot erupt in Nottinghamshire that required the deployment of British troops, allegedly surpassing the number fighting Napoleon in Iberia at the time.

One branch of the Romanticist movement that held a particularly strong

anti-technology stance was the Transcendentalists of the United States. Preached by Ralph Waldo Emerson and Henry David Thoreau from the 1820s to 1850s, Transcendentalism called upon its followers to reject the modern industrialized world and instead to, “Trust thyself”, through an individual reconnection with nature (Gross, 2021, p. XII-XIV). Thoreau’s “Walden” is perhaps the perfect encapsulation of this ideal. The 23 year old Harvard graduate in the spring of 1841 was unemployed and living in Emerson’s home as a caretaker when he decided, “to go soon and live away by the pond where I shall hear only the wind whispering among the reeds” (p. 587-588). Thoreau achieved this dream in September 1844 when Emerson bought an 11-acre patch of land on the bank of Walden pond and invited Thoreau to live there, which Thoreau accepted (p. 593). Thoreau lived on that land for two years, two months, and two days as an “experiment in simple living, to lead a life according to nature and to determine the real necessities of life” (Richardson, 2004). His other motivation being that, “He observed in passing that ‘our factory system is not the best mode by which men may be clothed,’ for it denigrated the operatives who tended the spindles and looms, and its ruling principle was not that ‘mankind may be well and worthily clad, but unquestionably that the corporation may be enriched’” (Gross, 2021, p. 598). This Luddite-esque philosophy of rejecting industrialization and embracing nature caught on, garnering a following to this day.

The people of our era share with the Romanticists a distrust of the emerging technologies around them. In one survey in 2024 of US adults (AIPI, 2024, Question 4), when asked, “Which of the following describes how you feel about advances in artificial intelligence (AI)? Select all that apply,” the most common responses were the most negative. 54% picked “Cautious”, 49% picked “concerned,” 40% said they were “skeptical”, 22% responded that they were “scared”, while the most chosen positive word was “curious” at 29%. In one Pew survey, the percentage of Americans who were more concerned than excited for changes in AI jumped from 38% in 2022 to 52% in 2023, the same timeframe ChatGPT was released (Tyson & Kikuchi, 2023). In a May 2023 Gallup poll (Marken & Nicola, 2023), only 10% of Americans responded that AI “Does more good than harm,” compared to 40% that said the opposite. As can clearly be seen, there is a pattern across multiple studies that the general population holds a fear of modern technological advances.

These fears have inspired some to, like Thoreau, retreat from the modern technological world and towards a more natural one. The New York Times in 2022 reported on a unique collection of New York City students that began what they dubbed the “Luddite Club” (Vadukul, 2022). Noticing the negative effects technology was having on her life, 17-year-old Logan Lane decided to give up technology to experience the world in her own eyes, and not through a screen. They praised figures such as Jon Krakauer, who’s 1996 book *Into the Wild* told the true story of Chris McCandless, an American born into privilege who rejected being a part of the modern world and moved to the Alaskan wilderness. This modern equivalent of Walden was seen as an inspiration, and one of the Club’s members

remarked that, “We’ve all got this theory that we’re not just meant to be confined to buildings and work. And that guy was experiencing life. Real life. Social media and phones are not real life.” Espousing other techno-skeptic works such as Kurt Vonnegut’s novel, “Player Piano” and shunning the use of any phones, even to the point of only using flip-phones, the group has gained a modest following and even inspired similar clubs at other schools. While this is one, isolated example, the motives and means behind it mirror that of the Romanticist and Transcendentalist movements and hint at an underlying fear of how technology can transform the contemporary society.

In summary, this section discussed the existence of a fear and aversion towards technology in both our age and the First Industrial Revolution as well as the similarities between how these feelings manifest. It is shown that the Romantics and people today share a common fear and unease towards ongoing technological developments as well as a desire to escape said developments.

Conclusion

In section one, it was established through examples from academic journals, mainstream news sources, and public opinion polls that there exists in today’s society a fear that artificial intelligence will bring about mass unemployment. The 2023 Writers’ Guild Strike and the fears of automation that inspired it, exemplified by interviews with participating strikers and the inclusion of special agreements on AI’s use, further proves that there exists a fear of losing jobs due to emerging technologies. After the fact that there exists a fear of losing jobs to artificial intelligence was proven, a comparison was made with the emergence of the Luddite movement of the late 18th century. It was shown how, like with the Writer’s Guild Strike, the workers of England perceived new modes of automation as existential threats to their employment security. Just like the writers, these workers strongly protested this technological change and voiced their concerns. Then, it was shown that people of both eras held reservations over their and their children’s future employment and educational prospects.

In section two, a connection was made between the Romanticist movement of the Industrial Revolution with the ongoing concern over technology. Then, the context of the Romanticist and Transcendentalist movements being based on anti-technology sentiments was set. This was followed up by recent survey data which proved that the general populace today holds a similar distrust and dislike of technology. After that, the Luddite Club of New York city was introduced as a mirror image of Henry David Thoreau and his Transcendentalists, further cementing the similarities between the Romanticist movement and opinions of today.

To conclude, survey data and historical analysis suggests that people both today and during the Industrial Revolution experienced waves of fear and insecurity centered around

the potential loss of jobs and the individual's innate humanness due to technological advancements. What we can take away from this finding is that there appears to be a pattern in how societies react to periods of technological change that requires further research.

There are a few avenues of research this finding can hopefully inspire. One future project could study how periods of rapid technological change influence the gender, racial, age, religious, class, political, or socioeconomic dynamics or relations within a society. A second possible future project could be that although academic studies on AI and employment usually include a section that shows how AI would result in a net increase in the number of jobs, the public seems to only see the potential loss of jobs, so a study on why that is could be insightful. Future work should extend the analysis to investigate if the same pattern is present during other periods of technological change.

The main shortcoming of this project was the availability of statistics that dated back to the Industrial Revolution. Since modern surveys and statistics did not really exist during the late 18th and early 19th centuries, there is no way to get exact data on public opinion from that time. This project relied on the available archival documents to judge public support of opposition during the First Industrial Revolution, both of which could mischaracterize the true public opinion of people at the time.

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