Killer Apps and Killer Robots

An Ethical Framework for Answering Questions of Automation

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Abstract— **In the following paper, we carry out an examination of two related ethical quandaries concerning the increasing degree [1] of automation in the modern world. First, we consider the ethics of existing systems, exploring the case in which automated systems make choices apparently on their own, and what kind of moral reasoning we face in such situations. We consider the idea that systems may act as moral agents, or as proxy agents [2] for the humans involved in their design and deployment. Secondly, we examine a somewhat more fundamental issue: is it right to automate these tasks in the first place? Rather than trying to achieve answers both general and correct, we will instead lay out a framework which may be put to use in the pursuit of answerss for specific questions.**

I. Introduction

II. Background

Later on in our paper, we will put forth an ethical framework for use in answering questions related to automation and related tecchnologies. As an important part of that framework, we aim to analyze who may be affected by changes in the state of the art of technology, and how those effects may ripple out to change society at large. While such an analysis would be much simpler were it not the case, the fact of the matter is that technological innovation is part and parcel of human society, and advances in such technology cannot be extricated from the social conditions that led to those advances, or the consequences that result from those advances. Indeed, this very fact is the motivation behind this paper in the first place. If we wish to base our analyses in historical fact, it seems prudent to first review some basic history with an eye towards the factors we intend to consider. If we wish to see a preview of the impact that automation will have on the workforce, and consequently the society at large, it seems prudent to look at the ways automation shaped society as its effects on the economy were first made manifest.

It seems prudent to start with a look at a single, practical example of the early industrial process, proceeding thereafter to the broader patterns engendered by such an invention: To that end, let us consider the steam hammer. The steam hammer, a powered hammer for forging and stamping of metal parts, was invented in the mid-1800s as increasingly large and complex machines necessitated the fabrication of larger and heavier components. It made routine the construction of many works that would have been considered marvels of engineering and concerted human effort, only years before. It contributed to the construction of great ships, the production of delicate clockwork, and a massive increase in the industrial productivity of Western Europe. It also contributed [3] to a sharp decrease in the leverage that skilled engineers held over their employers, resulting in drastic consequences for working environments, and sharp increases in child-labor. James Nasmyth, one of those credited with the invention of the steam hammer, made the following statement in regard to the machinery he had helped introduce to the world in wake of widespread strikes in the 1850s:

“The characteristic feature of our modern mechanical improvements is the introduction of self-acting machinery. What every mechanical workman has now to do, and what every boy can do, is not to work himself, but to superintend the beautiful labour of the machine. The whole class of workmen that depend exclusively upon their skill

is now done away with. Formerly, I employed four boys to every machine. Thanks to these new mechanical combinations, I have reduced the number of grown-up men from 1,500 to 759. The result was a considerable increase in my profits." [4]

From this single example, we discover one of the early issues we'll have to tackle in the course of developing our ethical framework. In the case of the industrialization of the workforce of Western Europe, it has been the case that those who wish to deploy greater degrees of automation in their factories tend to be directly at odds with those who work in those factories. This is reflective of the effects of automation, not just on the market for the product they create, but also on the labor market. Labor, like any other commodity, has a price, which fluctuates based on supply, demand, and a number of other factors. When the owners of the factory can create more value from less work, the demand for that labor goes down, and its price drops. Those workers have less leverage, and, as observed by Gaskell, their working conditions suffer.

When balancing the gains in technology and standards of living that have resulted from this march of progress, we see that there are two sides of this coin we must consider. The society as a whole may benefit, but, what may we say of the morality of this society, if it is propped up on the backs of its lowliest citizens? Fortunately, it has also been the case that social and cultural pressures intervened in cases such as these. The labor movement, in an internationally coordinated effort, slowly but surely pushed many of their governments into enacting legislation that protected workers from unfair practices on the part of their employers.

And yet, we are faced with a somewhat tougher questions, when we step back and consider the broader context around the industrialization of Western Europe. Industrialization is a somewhat titanic effort, it requires the investment of massive amount of capital to begin to see the advantages resulting from leveraging the economies of scale that make automation profitable. Different societies have achieved such a concentration of wealth in different ways. China, in the course of The Great Leap Forward, began industrialization on a massive scale by nationalizing all production, taking central command of labor and distributing it according to a grand plan for industrialization of the workforce as a whole. The Soviet Union took a similar approach, nationalizing industry and placing it under central command, but then decentralized the industry geographically, exporting raw materials to nearby states as it absorbed them, thus creating a demand for the growth of industry in those formerly independent states that drove their growth further outward until they started bumping up against NATO countries. Western European countries accumulated wealth in privately held trading companies by establishing an early foothold in mercantile capitalism through the Triangle Trade. That is, they establishing trade routes between Europe, Africa, and the Americas, alternating in the shipment of slaves, raw materials (such as sugar cane grown by slaves), and manufactured goods (such as rum produced from last year's sugar cane).

In each of these situations, there exists a contradiction between the forces acquiring enough wealth to assemble an industrial base, and the people that had to give up that wealth. In China and the Soviet Union, the costs were paid by the citizens of those countries, and they reaped the benefits slowly as their standards of living increased fairly evenly. In Europe, the standards of living and availability of luxury goods skyrocketed much more rapidly: after all, the cost of automaton was offloaded to somewhere else: Africa and the American colonies. In the Soviet Union and China, the analysis looks simple: did the country gain more than it lost? China suffered a number of famines as the Great Leap Forward encountered organizational difficulties, but over a period of 30 years, the average lifespan of a Chinese citizen nearly doubled.

When, however, we look at a situation like British industrialization, we now find that we must take looks at a much more diverse selection of groups in analyzing the impact of technology on the society. As globalization has blurred the lines between nations, so too has information technology led to a vastly more interconnected world than

we have ever seen. A change in technology today can lead to nearly instantaneous changes through enormous swaths of society

OUTLINE

Probably add some kind of hook? Something we can use to connect back to the intro. Once we figure out what the intro looks like anyway.

Talk about how social issues are intimately connected to automation and industry. That is, we cannot disconnect any innovation from the changes it drives in society, and we seek to give examples of that sort of thing. (check)

compare industrial revolution to automation and such (check)

Talk about the Steam Hammer, a specific example. lead to the general case, that there is a necessary contradiction between the advance of technology, and the wellbeing of the workers it replaces. Connect this out to the framework.

Talk about how economics, and the concept of the economy of scale, demands ever-increasing levels of efficicency and innovation

(probably connect that to primitive accumulation to connect to the next bit)

Related to that, talk about the need for a concentration of capital. Specifically, discuss how Japan, the Soviet Union, China, and the West achieved it differently, and the costs related to each of those situations.

Talk about the legacy of those approaches, and how they inform our current economic status and sociopolitical climate. Name the winners and losers, and mention that we're going to keep an eye on history when we get to the point of identifying stakeholders.

Probably mention Elizaeth's point, in that there are many current groups who see the path we're on as reflective of certain different parts of history. That is, they each take particular lessons from that history, and the lesson they consider to be most important tells us something about their approach.

III. The Current Scenario

IV. A Review of Present Solutions

A. The Hope of the Singularity

B. Bill Joy

C. Jason Lanier

D. The Amish

E. Deep Green Resistance

Deep Green Resistance is a group primarily identified by their beliefs and behavior with regard to specifically environmental matters, rather than more general opinions about technology. Specifically, DGR subscribes to the notion that industrial civilization poses too great of a threat to life on the planet earth, both human and otherwise, to be allowed to survive. The ultimate goal of DGR is the destruction of industrial civilization and a return to an earlier stage of societal and economic development.

DGR's philosophy draws from the Deep Ecology movement, which holds that an anthropocentric analysis of ecology, defining other forms of life in terms of their utility to humankind, does not do an adequate job of describing the complexity of ecological systems. DGR takes this a step further, in declaring all life to be equal to human life. Starting at the problem of inequality among life, they turn to ideals similar to the political stance of anarcho-primitivism: the idea that human society, industrial capitalism in particular, cannot be reformed into a more beneficial form.

Such a philosophy stems from an agreement with Friedrech Engal's seminal anthropological work on early civilizations [5], specifically the assertion that early gatherer-hunter societies were unable to produce structural inequality without the ability to acquire surplus wealth. Unlike Engals, modern Marxists, and even their fellow anarchists, DGR and anarcho-primitivists do not believe that a society can ever reach a level of egalitarianism and freedom from oppression that they are comfortable with. Rather, they believes that the only truly equal societies that have ever existed were only able to function without the trappings of civilization. Therefore, they are willing to advocate

any means to right the wrongs they see with the world. To them, technology is not evil per se. Rather, technology is another product of a system with which they cannot make peace, and as such, it must fall by the wayside.

Later in our paper, we advance an ethical framework for the analysis of decisions regarding technology and automation. In so doing, we emphasize that we must look to the past when examining possible consequences of an action, basing, wherever we can, our reasoning on historical fact. In this case, we would be remiss if we did not qualify our description of the views of DGR with the caveat that their views ultimately reduce to something chillingly familiar. A return to pre-industrial levels of technology would necessitate either the death of billions, or the restriction of new births to a fraction of their current levels. Without modern medical technology, it becomes a disturbing fact that disabled people will not be able to survive in such a world: this means DGR endorses either genocide or eugenics.

V. A Coherent Ethical Framework

A. Identifying Stakeholders

B. General Classes of Stakeholders

C. Defining a Coherent Value System

D. Synthesis

VI. Self-Driving Cars: an Application of our Framework

VII. Conclusion

References

[1] Carl Benedikt Frey and Michael A Osborne, "The future of employment: how susceptible are jobs to computerisation," September 2013.

[2] Deborah G Johnson and Thomas M Powers, "Computers as surrogate agents," *Information technology and moral philosophy*, pp. 251–269, 2008.

[3] Peter Gaskell, *The manufacturing population of England, its moral, social and physical conditions*, Baldwin & Cradock, 1833.

[4] Karl Marx, "The strife between workman and machine," in *Capital*, vol. 1, chapter 15. 1867.

[5] Friedrich Engels and Tristram Hunt, *The Origin of the Family, Private Property and the State*, Penguin UK, 2010.