

Extended Project Qualification

Capitalism and Robotics

Will Robotics be the end of Capitalism?

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Abstract

In the book *'The End of History and the Last Man'* political scientist Francis Fukuyama argued that mankind has reached the final form of human government. Fukuyama argued that there was another better system than a liberal democracy, one major aspect of a liberal democracy is the capitalist system. What Fukuyama is also implying is that capitalism is the final economic system and there is no greater system than it. It is important to note however, Fukuyama was writing his book just after the collapse of the Berlin Wall and of the Soviet Union, that is probably why Fukuyama believed that capitalism had "won". Nonetheless, Fukuyama failed to predict the future, some have argued that since the credit crunch and the economic recession of 2008, traditional economic liberal policies such as laissez-faire have been abolished, with many calling for an end to liberal economics and an increase in economic intervention, in essence modifying what is meant by 'capitalism'. French economist Thomas Piketty describes in his book *'Capital in the Twenty-First Century'*, the idea that free markets have enlarged class gaps and reduced incomes and that this is a major reason for why the citizens of Greece and Hungary and calling for dramatic change, to the current capitalist system. This essay will seek to answer the question, will robotics provide a bigger 'push' to evolve capitalism, or will capitalism remain the same?

Capitalism is an economic system, in which the means of production are privately owned.¹ Over the years capitalism has developed into numerous denominations. One major development or evolution of capitalism is attributed to the works of two Scottish philosophers: David Hume and Adam Smith, whom denounced the newly mercantilist ideology and its belief that wealth can only increase from the expense of another nation.² This challenge led to what we call 'industrial capitalism', which really fired up the robotic and automation age.

Automation, is the application of machines to tasks once performed by human beings or, increasingly, to tasks that would otherwise be impossible.³ Automation is a key aspect of the 'Information Age'

The 'Information Age' is the evolutionary set from the Industrial Revolution, the information age began in the 1970s with the introduction of personal computers and with the ability to

¹ <https://www.britannica.com/topic/capitalism>

² Hume, D. 1752: *Political Discourses*. A. Kingaid and A. Donaldson

³ <https://www.britannica.com/technology/automation>

transfer data quickly.⁴ Robotics is the product of two ages, the industrial age and the information age.

Robotics is the term used to describe the design, construction, operation, and application of robots.⁵ Robots, on the other hand, refer to any automatically operated machine that replaces human effort.⁶ The idea that robots replace humans isn't at all a new concept it was first popularised by the Luddite, who were a group of English workers who destroyed machinery due to their belief that it was a threat to their job.⁷ In the 21st century the displacement of jobs to robotics is becoming more of a reality and some are even questioning whether this is the end of capitalism.

Post-capitalism - what next?

Paul Mason, an English journalist, explores the threat posed to capitalism by the information age, in his book 'PostCapitalism: A Guide to our Future'. Mason criticises capitalism, but also explores the future of capitalism with automation and robotics. Mason argues that the robotic age has the power to reshape production and the workforce and also eliminate the idea of an economy based on free markets and private ownership, which is central to the concept/theory of capitalism.⁸ If you remove the principle of private ownership, you no longer have capitalism, you have what Henri de Saint-Simon, Charles Fourier, Étienne Cabet, and Robert Owen called 'utopian socialism'. Mason uses examples, such as, digital currencies, self-managed online spaces, and Wikipedia as evidence to back up his theory. Mason believes capitalism is at its end.

Mason states that as the digital/information economy expands, the human labour is replaced and the work should abate: *"Today, the main contradiction in modern capitalism is between the possibility of free, abundant socially produced goods, and a system of monopolies, banks and governments struggling to maintain control over power and information. That is, everything is pervaded by a fight between network and hierarchy"* (PostCapitalism: A Guide to our Future, pg. 144).

Mason states that since information is available in the digital world, for free and is also free from control (such as Wikipedia, which is community-run), corporations and monopolies are

⁴ <http://www.yourdictionary.com/digital-age>

⁵ <https://en.oxforddictionaries.com/definition/robotics>

⁶ <https://www.britannica.com/technology/robot-technology>

⁷ <https://en.oxforddictionaries.com/definition/luddite>

⁸ Mason, P. 2015: *PostCapitalism: A Guide to our Future*. Allen Lane

then unable to control the market and therefore cannot strive towards their main objective, profit maximisation.

Baumol's cost disease, is the concept of when a rise in wages has no lead to an increase in labor productivity.⁹ This concept is most visible in the field of education, the rise in the cost of professors has not lead to an increase in their productivity. The solution could be robotics. Currently, many universities are starting to create MOOCs or “Massive Open Online Courses”, which is increasing the amount of consumers available to attend a university without need to physically attend, lowering consumer’s barriers to consume.¹⁰ Although, robotics is not currently being used at university, they have already make their place at pre-school. Robots are teaching students the English language, it is only a matter of time that they will begin to teach undergraduates. Computer researcher Terry Sejnowski stated, “By developing a very sophisticated computational model of a child’s mind, we can help improve that child’s performance.”¹¹ Despite the evidence that robots are being used in the classroom, the Huffington Post claims that technology isn't going to replace teachers. According to the newspaper, since teachers play many roles, robotics will never be able to replace them. The Huffington Post does however state that robotics will play a part in the classroom, but it won't be the most vital role.¹² What the newspaper fails to comprehend is the business objective of firms in a market, a firm exists to make profit that includes schools such as academies which are run by a business, therefore business will want to keep costs low to maintain high profit margins, one way to do this is to invest, the cheapest form of labour is robots and therefore firms will displace their human labour with “non-human labour”. Some economists have argued that the future of business is also changing and therefore so could their main business objective.

⁹ <http://www.economist.com/node/21563714>

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<http://www.economist.com/news/leaders/21605906-cost-crisis-changing-labour-markets-and-new-technology-will-turn-old-institution-its>

¹¹ <http://www.livescience.com/5576-robots-replace-teachers.html>

¹² http://www.huffingtonpost.com/jeff-dunn/teachers-technology_b_4130200.html

Technocapitalism - the new evolutionary step?

Luis Suarez-Villa, coined the term ‘technocapitalism’ in his book entitled *‘Technocapitalism: A Critical Perspective on Technological Innovation and Corporatism’*. Villa argues that “*a major feature that sets technocapitalism apart from previous eras is the vital need to commodify creativity. The commodification of this most intangible and elusive human quality has characteristics separating it from the commodification of other resources in previous stages of capitalism.*”¹³

What Villa is arguing here, is that a new form of capitalism creates new and different forms of corporate organisation, which are designed to exploit intangible things such as knowledge and creativity. We will no longer have traditional manufacturing and industrial business, we are moving away from physical goods. According, to the World Bank, seventy-nine percent of the UK’s GDP is based on services, and agriculture makes a messily 0.68%. Villa continues explaining that the new firms are heavily reliant on intellectual property, to maintain profit and therefore they will try to increase the barriers to entry.

Journalist Tom Goodwin illustrates the rise in a information and digital based economy very well in his *Techcrunch* article: “*Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate. Something interesting is happening.*”¹⁴

Villa explains that this evolution is actually present due to the fact, we as citizens of a society are, without realising shifting away from companies to provide us with information, we remove the ‘middleman’.¹⁵ This has been evident with the closing of many travel agents and video rental clerks.¹⁶ In addition, sites such as Wikipedia have opened up collaboration, which contradicts the nature of capitalism. Adam Smith would argue that capitalism does focus on a person’s self-interest and yes it views that work is cynical, however, Smith came up with a metaphor, known as the “invisible hand” which demonstrates how the capitalist world (sometimes described as the ‘cynical world’), actually provides a greater benefit to society at large. In Smith’s book entitled *‘An Inquiry into the Nature and Causes of the Wealth of Nations’*,

¹³ Suarez-Villa, L. 2009: *Technocapitalism: A Critical Perspective on Technological Innovation and Corporatism*. Temple University Press

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<https://techcrunch.com/2015/03/03/in-the-age-of-disintermediation-the-battle-is-all-for-the-customer-interface/>

¹⁵ <http://www.canadianbusiness.com/innovation/death-of-the-middlemen/>

¹⁶ <https://www.theguardian.com/business/2013/mar/06/thomas-cook-uk-jobs-travel-agencies>

he states: “every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good.”¹⁷

Smith explains that an economy can only work well if its government leaves people free to do act however they desire. If the economic agents are able to trade freely, their self-interest will allow for market competition which will lead to a positive output. This effect is a cause of the law of demand, the law states that a consumer will buy from the firm who hold the lowest prices, revenue is an incentive for firms to continue producing goods and services, therefore making society elated.¹⁸ Per contra, forms of government intervention such as an introduction of a minimum wage has not resulted in a lost of jobs, it has actually resulted in greater demand for goods and services, increasing the consumer's purchasing power.¹⁹ This demonstrates the inaccuracy of the invisible hand, its premise that the government intervention is just incorrect. Government intervention has actually resulted in a better economy and society, meaning greater happiness.

Villa goes on to develop his theory on technocapitalism in his book *Globalization and Technocapitalism: The Political Economy of Corporate Power and Technological Domination*. In this book Villa discusses the emergence of technocapitalism to globalisation and the growing market power of corporations utilising technocapitalism.²⁰ In this book, Villa not only looks at intangibles such as creativity, knowledge and intellectual property. But also, the effect that globalisation is having on technocapitalism and corporations. The fourth industrial revolution is closing the gap by eliminating the need for labour to operate as “middlemen”. This will have a great impact on the developing economies and society, since many business open up in developing countries for that low-skill and low-pay work. However, the fourth industrial

¹⁷ Smith, A. 1776: *An Inquiry into the Nature and Causes of the Wealth of Nations*. W. Strahan and T. Candell, London

¹⁸ <http://economictimes.indiatimes.com/definition/invisible-hand>

¹⁹

<http://www.forbes.com/sites/timworstall/v2015/03/11/adam-smiths-invisible-hand-really-isnt-what-you-think-it-is/#77a980931bbf>

²⁰ Suarez-Villa, L. 2012: *Globalization and Technocapitalism: The Political Economy of Corporate Power and Technological Domination*. Ashgate Publishing

revolution will not only impact developing countries such as India and Bangladesh, it will also impact developed western nations. Self-driving cars will replace taxi drivers, drone-delivery reduce the need of traditional postal services. In addition, due to services such as Netflix, Blockbuster went into administration.²¹

Firms in Germany have already be trying to removed ‘middlemen’ in this case IT firms. The German government, whose manufacturing makes up 22% of its GDP, have launched a government initiative called ‘*Industrie 4.0*’ (meaning ‘Industry 4.0’), to promote the computerisation of the manufacturing sector. Many German firms, such as, BMW, Audi and Daimler have started to buy out old IT firms, changing the face of capitalism, as we now know it.²² It is not only consumers who are removing ‘middlemen’, even if firms are doing it.

Is capitalism actually changing?

Political economist Robin Hahnel argues that capitalism is going to be replaced with a new politico-economic system called ‘participatory economics.’²³ Participatory economics is a proposed alternative to capitalism that uses participatory decision making²⁴, in other words the people can exert influence on the allocation of the economic factors of production. However, this new system would not resolve the issues that robotics brings, it will also lead to the “economic calculation problem”, it argues that the free-market is able to distribute resources rationally and efficiently in an economy thanks to the price mechanism and in socialist economics government holds no rationally of how to price goods. Nonetheless, with today’s technology you can create complex algorithms to predict the economic future of nations, allowing central planning to exist and work.²⁵

The Socialist Party of the Great Britain stated that: “*In any event, capitalism will have to be ended by the conscious action of people who want to replace it by a system where the resources of the planet*

²¹ <http://www.bbc.co.uk/news/business-25345257>

²²

<http://www.economist.com/news/leaders/21678786-manufacturers-must-learn-behave-more-tech-firms-machine-learning>

²³ Hahnel, R. 2012: *Of the People, By the People: The Case for a Participatory Economy*. AK Press Distribution

²⁴ <http://www.yourdictionary.com/participatory-economics>

²⁵ Cottrell, A and Cockshot P. 1998: *Towards a New Socialism*. Coronet Books Inc.

have become the common heritage of all.”²⁶ The Party, argues that capitalism is not natural, it is man-made, the only way to end it, is if the people chose to end it.

In the book *‘The Industries of the Future’*, Senior Advisor Alec Ross, explores the new era of innovation in robotics, genetics, coding and big data and how they will affect the world. According to Ross, the “codefication” of money and also weapons will either benefit or disrupt the international economies. Ross believes that different cultures will react differently to robotics, he gives the example of Japan’s use of robotics in elderly-care. Changing health economics. However, services such as PayPal, an example of a firm which has “codefied” money, is still not available in many countries and is banned in countries such as Afghanistan due to the system being able to fund terrorism. Ross counteracts this point by stating “*code market will now reach into the world’s most isolated communities, and they will link emerging markets to the global economy*”. Ross goes on to argue that “codefication” can be a good thing and uses the example of Uber which has “codefied” the transportation of people and created 100,000 jobs. Ex-Brazilian president Dilma Rousseff has criticised the firm, stating “*it takes jobs away from people... it leaves taxis with less work*”. Rousseff has called for greater regulation of the firm²⁷, which may just slow down the progress towards the next industrial revolution. Will regulation and invention be the norm over the next few years?

Is capitalism on the brink of collapse?

Author Federico Pistono debated with the Socialist Party of Great Britain on whether or not robots will cause the collapse of capitalism.²⁸ Pistono’s book entitled *‘Robots Will Steal Your Job, But That’s OK: How to Survive the Economic Collapse and Be Happy’*, Pistono argued that the cause of the collapse of capitalism is technological innovation which will leading to the increasing mass of unemployment. Pistono uses the examples of unskilled labour being replaced, such as vending machines (instead of shop assistants) and driverless road vehicles

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<http://www.worldsocialism.org/spgb/socialist-standard/2010s/2013/no-1306-june-2013/will-robots-cause-capitalism-collapse>

²⁷

<https://www.theguardian.com/technology/2015/sep/03/uber-increases-unemployment-and-needs-regulation-says-brazils-president>

²⁸

<http://www.worldsocialism.org/spgb/socialist-standard/2010s/2013/no-1306-june-2013/will-robots-cause-capitalism-collapse>

(instead of van and lorry drivers). Pistono uses economists David Ricardo and Jeremy Rifkin to support his argument.

Pistono uses Ricardo's book '*Principles of Political Economy and Taxation*', in the book Ricardo discusses the luddite protests in 19th-century England. He concludes his chapter by saying, '*that the opinion entertained by the labouring class, that the employment of machinery is frequently detrimental to their interests, is not founded on prejudice and error, but is conformable to the correct principles of political economy*'.²⁹ He goes on to say that the reduction in employment, normally would be offset if the economy expands due to new capital investment in another sector.

Karl Marx nearly fifty years later, agrees with Ricardo stating that the development of capitalism production, is the reason why the establishment of machinery in the past did not result in mass unemployment. In Marx's book '*Capital: Critique of Political Economy*', Marx critiques classical political economist, in the likes of Adam Smith, David Ricardo and John Stuart Mill. Marx discusses the definition of 'labour saving', he states machinery can only be 'labour saving' if the time taken to produce is reduced and '*less labour must be expended in is displaced by employment of that machinery*.' It is important to note Marx's definition of 'labour' is different to the classical economic definition. Marx views labour as not just 'living' but also 'dead labour', the product of previous living labour incorporated into the factors of production.

Marx goes to on to say in the capitalist system there is a use of machinery due to it having a fixed-cost, unlike traditional labour which holds a variable cost, dependent on the "labour-power" employed.³⁰

Jeremy Rifkin, economist and advisor to the European Union, published in 1995 '*The End of Work: The Decline of Global Labor Force and the Dawn of the Post-Market Era*', Rifkin predicts that unemployment is an effect of information technology and tens of millions of jobs will be eliminated, especially in sectors such as manufacturing, agriculture, and services. He states, "*while a small elite of corporate managers and knowledge workers reap the benefits of the high-tech world economy, the American middle class continues to shrink and the workplace becomes ever more stressful*."³¹ Number of economists have criticised Rifkin, political philosopher George Caffentzis, wrote an article in the '*Common Sense*' journal concluding that Rifkin's argument is awry due to it being based on technological determinism and not taking into account the fluctuation of employment and of technocapitalism.³² Others have stated that the reason for

²⁹ Ricardo, D. 1821: *Principles of Political Economy and Taxation*. London: John Murray

³⁰ Marx, K. 1990: *Capital: A Critique of Political Economy Volume One*. Penguin Classics

³¹ Rifkin, J. 1997: *The End of Work: The Decline of Global Labor Force and the Dawn of the Post-Market Era*. G. P. Putnam's Sons

³² <http://commonsensejournal.org.uk/files/2010/08/CommonSense24.pdf>

Rifkin thinking like this is due to the time period, Rifkin was writing during the “productivity paradox”, where there was little productivity growth, this affected his belief on technology and employment.³⁵ During the 1990s the US was experiencing “jobless recovery”, which is when strong economic growth but without gripping onto large numbers of unemployed labour.³⁴

Peter Joseph, founder of ‘*The Zeitgeist Movement*’³⁵, stated that ‘*unemployment is a consequence of technology, entirely. The entire reason we have unemployment in America and across the world is explicitly based on the application of technology for cost efficiency. And this is not going to stop. And this will lead to what has been called by theorists the “the contradiction of capitalism”, to the ultimate instability of our social system: the ability to produce more with less people and cheaper rates. It’s a complete clash of the system.*’³⁶

Joseph goes quite further than Pistono, Joseph claims that all unemployment today is technological but he blames the rise of unemployment since 2007, not on the economic crisis, but on modern technology. Austrian-American economist Joseph Schumpeter, would disagree. Schumpeter is credited for coining the term “creative destruction”, the Marxist inspired theory states that technological innovation does lead to employment, but only temporarily, it doesn’t lead to permanent unemployment, instead it opens up employment in new industries and moves employment. It forces labour mobility.³⁷

The future of labour

Traditional labour is already disappearing, robots are replacing factory workers and a major reason for this is due to the predicted to cut manufacturing labour costs by 16%, remember the main objective of a firm is profit maximisation, meaning it will cut costs no matter the case. However, other reports in South Korea state that it will cut labour costs by 33%.³⁸ Many business will take time to replace their labour force, the start-up cost or the initial investment in capital is costly. The World Economic Forum, has predicted that by 2020, more than 7 million jobs will vanish. This jobs will mostly be white collar and administrative jobs. While, areas such as Computing, Maths, Architecture and Engineering will see a rise in demand.³⁹ This will

³⁵ Dewan, S and Kraemer, K. 1998: *International dimensions of the productivity paradox*. Communications of the ACM

³⁴ <http://www.investopedia.com/articles/economics/10/jobless-recovery-the-new-normal.asp>

³⁵ http://www.huffingtonpost.com/travis-walter-donovan/the-zeitgeist-movement-en_b_501517.html

³⁶ <https://www.youtube.com/watch?v=mhZSxeiziMg>

³⁷ Schumpeter, J. 1942: *Capitalism, Socialism and Democracy*. Harper & Brothers

³⁸ <http://www.latimes.com/business/la-fi-robots-jobs-20150211-story.html>

³⁹ http://www3.weforum.org/docs/Media/WEF_Future_of_Jobs_embargoed.pdf

however, create greater gap between men and women, as STEM fields already see a low number of female engagement.⁴⁰

However, supports of creative destruction would argue that unemployment will only be temporary and it should recover. The term ‘technological unemployment’ is usually thrown around when discussing the criticism of robotics. The term was popularised by Lord John Maynard Keynes, yet this issue has been discussed since Aristotle’s time. Optimists generally agree that technology and robotics may destroy jobs in the short term, however there will be no negative impact, so far we cannot tell whether or not the lost of jobs in firms such as Blockbuster have lead to negative long term effects. Pessimists would argue that robotics can cause a reduction in the total number of people employed.

Prior to the Victorian age the upper class and the common folk would hold the pessimist view, however this was due to the low unemployment which faced many nations prior to what historians call the “late modern age”, which is described as the period during the Industrial Revolution (from 17060 to sometime between 1820 and 1840)⁴¹. During the Industrial Revolution, some economic thinks began to worry whether or not automation would have a negative effect on employment. It was apparent during the 19th century that technological progress was benefiting all members of society, including the vulnerable working class. The term “luddite fallacy” rose up, meaning new technology does not lead to greater unemployment in the economy.⁴²

Although, many economists have argued differently, for example David Ricardo, Ricardo was persuaded by economist Thomas Robert Malthus, who argued that technology would drive down wages and cause long term unemployment.⁴³

Looking at the effects of all the other industrial revolutions and the predicted effects of the upcoming fourth revolution, it is probable, that it will make life easier for upper income individuals to create wealth, and it will only widen gender and class gaps, just like traditional capitalism already does. However, if there are any long term reductions to unemployment, governments should intervene in the market and provide adult education, public works and have a welfare system to counteract any effects robotics may have unemployment.

A 2013 Oxford University study published by Carl Benedikt Frey and Michael Osborne, found that over 47% if jobs were at risk of being automated. According to another report, published by

⁴⁰ <http://www.usnews.com/news/articles/2015/10/21/women-still-underrepresented-in-stem-fields>

⁴¹ David, L. 1969: *The Unbound Prometheus*. Press Syndicate of the University of Cambridge

⁴² <http://www.economicshelp.org/blog/6717/economics/the-luddite-fallacy/>

⁴³ Ricardo, D. 1817: *On the Principles of Political Economy and Taxation*. John Murray

the same authors (and a few more), the proportion of jobs at risk is greater in developing countries, the report revealed that 85% of jobs in Ethiopia were at risk of being automated. 77% in China and 69% in India. The report has also found that low-paid labour is no longer a big factor when firms are looking for investment and since many developed countries GDP growth rely on transnational corporations, the economic future of the citizens, may look bleak. A reason for why firms are investing in automation inside of cheap labour is, due to the fact that industrial robotic investment is repaid in less than two years. Many African countries have started to move towards the service industry, such as South Africa. However, some other African countries have or are going to experience ‘premature deindustrialisation’, meaning they are moving towards the service sector, before they have even completed their industrialisation.

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On the 12th October 2016, MPs on the Science and Technology Committee of the House of Parliament have called for greater scrutiny, the report stated, “*our inquiry has illuminated many of the key ethical issues requiring serious consideration - verification and validation, decision-making transparency, minimising bias, increasing accountability, privacy and safety*” and “*We recommend that a standing Commission on Artificial Intelligence be established, based at the Alan Turing Institute, to examine the social, ethical and legal implications of recent and potential developments in AI.*”⁴⁵ The aim of the report was not just to outline the obvious implications of robotics on the economy and employment, it also underlined the ethical and legal implications of robotics.

Is robotics ethical?

Roboethics, started out with Isaac Asimov, who famously devised the “Three Laws of Robotics”, these laws existed to avoid the “robotocalypse”. Asimov stated these laws in his book ‘*Runaround*’, the laws are:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given to it by human beings, except where such orders would conflict with the First Law.

⁴⁴

<http://www.economist.com/news/finance-and-economics/21689635-jobs-poor-countries-may-be-especially-vulnerable-automation-machine-earning>

⁴⁵ <http://www.publications.parliament.uk/pa/cm201617/cmselect/cmsctech/145/145.pdf>

3. A robot must protect its own existence as long as such production does not conflict with First or Second Law.⁴⁶

Asimov, later developed the zeroth law, to precede the others: a robot may not harm humanity, or, by inaction, allow humanity to come to harm.

Some have argued that these laws are important and will be used in future legislation. However, some have argued that these laws are not perfect and have loopholes, some call it too vague, stating that there is no proper definition of what is a “human” and a “robot”. Louie Helm - the Deputy Director of the Machine Intelligence Research Institute (MIRI) argues that Asimov’s Three Laws are “unsatisfactory” and one reason for this is due to it being deontological.⁴⁷

Mark W. Tilden, robotics physicist, develops his own robotic laws:

1. A robot must protect its existence at all costs.
2. A robot must obtain and maintain access to its own power source.
3. A robot must continually search for better power sources.⁴⁸

“Tilden’s Laws” differs to Asimov’s since the focus isn’t on the human, but is on the robot. Asimov’s Laws are more altruistic, while Tilden’s are more self-centred.

Roboethics or robotic ethics is important, machines are becoming more autonomous, they are driving for us and they are being used in war. Machines are having to make life-or-death decisions, and it is important they we are as a society agree with what is right or wrong for a robot to do in every situation. Should a drone attack a city if there are terrorists living there? If so, why should the civilians also die? Some may use the principle of utility, to come up with the best decision, others may prefer to use Kantian ethics:

“Always recognise that human individuals are ends, and do not use them as means to your end.” - Immanuel Kant

Such questions have lead to the establishment of “machine ethics” and “roboethics”.⁴⁹

⁴⁶ Asimov, Isaac. 1950: *I, Robot*. Bantam Dell

⁴⁷ <http://io9.gizmodo.com/why-asimovs-three-laws-of-robotics-cant-protect-us-1553665410>

⁴⁸ <https://www.wired.com/1994/09/tilden/?pg=1&topic>

⁴⁹ <http://www.economist.com/node/21556234>

Is capitalism ethical?

Some have called capitalism unethical, due to a number of reasons, one popular reason is the severe economic inequality and exploitation of labour. Writer Upton Sinclair Jr. even compared capitalism to fascism, stating “fascism is capitalism plus murder”⁵⁰

In 2015, Pope Francis stood in front of the US Congress, denouncing capitalism and its effect of inequality. Francis called for “*a poor church for the poor*”.⁵¹ Many have criticised capitalism, but by far the biggest criticiser is Karl Marx. Marx viewed capitalism as a stage and that it would eventually lead to socialism. The question is will robotics push countries to adopt socialism instead of capitalism? He also argued that the owners of a firm do not work since they are not a factor of production and therefore exploit the labour force. Many including Marx have called capitalism ‘slavery’, since capitalists like to reduce worker’s conditions to that of a slave. This can mostly be seen in developing countries such as India, where there are terrible working conditions.

It is not only philosophers and economists who have criticised capitalism and its morality. The Catholic Church forbids usury and do not support ‘political capitalism’, since it goes against social justice. Islam forbids lending money at interest, the concept of profit making unethical.

But will the unethical nature of capitalism, actually leading to any change? Economist Branko Horvat stated, “*it is now well known that capitalist development leads to the concentration of capital, employment and power. It is somewhat less known that it leads to the almost complete destruction of economic freedom.*”⁵² Capitalism will only change when the people demand greater economic freedom.

⁵⁰ Sinclair, U. 1968: *The Machine*. Yurita Press

⁵¹

<http://www.bloomberg.com/news/articles/2015-05-13/pope-francis-to-congress-capitalism-must-change>

⁵² Horvat, B. 1982: *The Political Economy of Socialism*. Sharpe

What is the future of government and democracy?

As globalisation continues, nations have to work together, this can mean states have to compromise or even hand over some “sovereignty”⁵⁵, this is evident with international organisations such as the North Atlantic Treaty Organisation, United Nations and the European Union. Yanis Varoufakis, Greek economist and ex-Greek Minister of Finance, believes that European democracy is being eroded. He uses the example of Greece, stating *“I was representing Greece - the newly elected Greek government - in the Eurogroup as its Finance Minister, I was told in no uncertain terms that our nation's democratic process -- our elections - could not be allowed to interfere with economic policies that were being implemented in Greece.”* Varoufakis goes on to discuss why he believes that a “pure” democracy is the best form of government for any economy. Varoufakis defines “democracy” as *“the inclusion of the working poor... in the decision-making concerning matters of state”*, also stating that the opinions or *“political judgements”* hold *“equal weight”*. Varoufakis believes that our liberal democracies don’t hold their roots in Athenian democracy, where the poor and the rich could take part in the democratic process, Varoufakis believes the liberal democracies are based on the Magna Carta, where only the rich and “masters” views were taken into account.

Varoufakis argues that the question is “not whether capitalism will survive the technological innovations it is spawning. The more interesting question is whether capitalism will be succeeded by something resembling a Matrix dystopia or something much closer to a Star Trek-like society, where machines serve the humans and the humans expend their energies exploring the universe and indulging in long debates about the meaning of life in some ancient, Athenian-like, high tech agora.”

Varoufakis goes on to say *“But what would it take, what would it look like to have this Star Trek-like utopia, instead of the Matrix-like dystopia? In practical terms, allow me to share just briefly, a couple of examples. At the level of the enterprise, imagine a capital market, where you earn capital as you work, and where your capital follows you from one job to another, from one company to another, and the company -- whichever one you happen to work at at that time -- is solely owned by those who happen to work in it at that moment. Then all income stems from capital, from profits, and the very concept of wage labor becomes obsolete. No more separation between those who own but do not work in the company and those who work but do not own the company; no more*

⁵⁵ <http://www.economist.com/news/leaders/21573104-internet-everything-hire-rise-sharing-economy>

tug-of-war between capital and labor; no great gap between investment and saving."⁵⁴ Thus, removing any inequality or exploitation of the worker.

During the talk, Varoufakis is describing "economic democracy" is philosophy that suggests decision-making powers should move away from corporations and go to public shareholders.⁵⁵

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https://www.ted.com/talks/yanis_varoufakis_capitalism_will_eat_democracy_unless_we_speak_up/transcript?language=en

⁵⁵ http://degrowth.org/wp-content/uploads/2012/11/Iohanisova_Wolf-2012.pdf

Conclusion

Overall, I believe capitalism will evolve, we are likely to see a change in the type of firms which exist in the developing world. The developed world will see a change to a service and knowledge based economy, while the developing world will see a continuation of manufacturing and is unlikely to change in the near future. Developing nations are still going under their “industrial revolution” and will then move towards a service based economy. But this does raise the problem of what would happen when all nations eventually become service based, wouldn't there be a shortage of physical goods. Furthermore, I do believe robotics will be the bigger challenge for governments to solve, many members of the labour market will become obsolete and irrelevant and will require re-education to become valuable assets to a firm. Furthermore, I do believe that the biggest negative effect will be to lower class workers, especially in the developing world. To conclude, I do not believe that robotics will be the end of capitalism.

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