

# Impacts of Automation on employment – Sophie Crosswell

## **The Challenge:**

In times of economic instability and increasing awareness and demand for sustainable lifestyles, it is being questioned if automation has the ability to facilitate the transition to a future which is sustainable - economically, socially and environmentally. As the global population booms, pre-existing social constructs such as Middle Class will be challenged and new lifestyles will emerge. This paper will look at the growing investment and research in automation and how we could adapt and mitigate to meet employment, and therefore social and economic, needs in a progressively automated world.

## **The context:**

Historically, middle class has acted as the optimum status for many people, motivating individuals, companies, economies and governments. It was defined by the social promise that if you work hard and play your part, in return you can expect a decent quality of living (Alakeson, 20130). This construct is being increasingly undermined by the enduring stagnation of the developed world's economies and the obsession that economic growth will provide the ultimate sustainable solution. Despite this, it is estimated that in only a number of decades 16.1% of 1.2 billion people will be considered middle class, compared to 440 million in the early 20<sup>th</sup> Century (World Bank, Global Trends Final Report, 2005). Much of this growth in the middle class can be attributed to the continued technological advancement and progression in science; Moore's Law, the observation that computer processing power or speed will double every two years (Moore's Law Organisation, 2013), seems to be holding. As a result of continued investment in technology and the subsequent growth in the middle class, a technocentric view has thrived as policy and investment have suggested that technology will provide the solution for social, economic and environmental issues.

Among the public, however, there is also sense of fear that the rise of automation is resulting in diminishing job opportunities and increased competition for low and middle income employment (Chijindu & Inyama, 2012). This echoes the thinking behind the 19<sup>th</sup> Century Luddite uprising against labour-saving machinery and the social changes being forced upon workers by their employers and investors in new technology (Bodner, 1997). This uprising ultimately led to the development of the 'Luddite Fallacy', which argued that technological unemployment would not lead to structural unemployment. Instead it would cause changes in job opportunities, rather than increasing unemployment.

This seems to be supported by the fact that, in recent years, technology has changed the jobs market but has not removed vast amounts of employment despite this continual rise in automation (Farrell, 2013). It is therefore unrealistic to assume that based on rates of historical progress that there will be no jobs - work will continue to fund lifestyles and act as

a social hub. This suggests a greater understanding is required within society to prevent fear of automation and inform people of the individual steps they can take to adjust in the changing workforce.

Businesses and experts continue to be optimistic that automation is the path to a social utopia, as well as environmental and economic sustainability (McAfee, 2012). It could facilitate the changes suggested in the report *21 Hours*, which promotes the switch from the current standard of 40 hours a week to just 21 (New Economics Foundation, 2010). It is thought this could address a range of interconnected issues such as underemployment, over-consumption, low well-being and inequality as well as allowing people time to live sustainably, care for each other and enjoy life. While this shift would take time to implement and allow society to adjust, *21 Hours* reveals that during the recession large companies asked employees to reduce their hours and take extended leave in order to keep the majority of workers employed. Between July and September 2009 full-time employment fell by 80,000 while part-time employment rose by 86,000. If these changes could be implemented on a larger scale and across a wider range of sectors they could pave the way for the automative transition (Skidelsky, 2013). This could reduce work hours, increasing social and economic flexibility and home working, reducing carbon intensive travel and the need for office space. Could the slow adaptive programme of adjustment suggested in *21 Hours* help Bristol's businesses, society and individuals to change over a set period of years?

### **The issue (1): Industrial Automation - the use of technology to increase the efficiency of manufacturing production.**

Industrial automation is often the most recognisable as those who fear its continual growth state that it will reduce the workforce requirements within manufacturing. One solution that has been suggested to alleviate this, within developed nations, is early intervention to reach young children to teach the skills for future workplaces. This could be done alongside policies to increase adult learning, especially among the more mature and less educated workers to limit the impacts of unemployment (OECD, 2004). However, it is thought that this increase in the workforces' skills could lead to each employee's skills being underutilised during periods of prolonged economic stagnation (Mishel & Shierholz, 2013). Underutilising skills will become pronounced as job opportunities reduce, forcing jobseekers with higher levels of education to apply for lower level jobs as they need to preserve their economic stability. Some argue that the recession has already emphasised this and placed further strain on low and middle income employment opportunities.

### **The solution (1):**

Could industrial automation help Bristol to achieve its aims of sustainable development through localising productions and reducing the demands on the environment and raw natural resources for production? Much of the current discussion around sustainability is focused on reducing consumption, localising production and neutralising the impacts of the economy and society on the environment. The Ellen MacArthur Foundations model of a

circular economy proposes an industrial system that is *restorative by design* (Ellen MacArthur Foundation, 2013). Developments in technology and automation could help to achieve this goal through readdressing current inefficiencies within the system, creating a series of smaller collaborative systems opposed to extensive, national and global models which are dominant today. This system could increase the range of employment opportunities within each city or town as new jobs are created to fulfil new demands.

### **The Issue (2):**

#### **Administrative Automation - improving efficiency in filtering and processing information.**

By 2020 it is thought that administration and secretarial occupations could reduce by 400,000 roles (around 11%) due to the growth of technology within the sector (Wilson & Homenidou, 2012). One sector which has seen significant growth in administrative automation is the legal sector (Lee, 2013). The rise of automation within moral decision-making circumstances could influence the legal process - leading to greater or lesser justice. This highlights the moral and social problems associated with limiting the impacts of humans in decision making and on the outcomes. While some view automation as a brutal process, always eliminating its predecessors, the financial benefits of the field could lead to increasing demand in patents and product protection (Schmidt, 2012). So automation could reduce the capacity of employment within the legal sector, but increase need for machinery patents developing the industries role.

### **The solution (2):**

The fall in administration occupations has the potential to increase the uptake of socially beneficial work. E F Schumacher in *Small is Beautiful* proposes that an increase in work that is not separated from social activities could improve the attitudes of society through increasing the sense of usefulness and participation (Schumacher, 1973). If wealth could be redistributed, potentially through the introduction of a living wage, an increase in the uptake of meaningful work could allow people to focus on the *core economy* of family, friends and community life (New Economics Foundation, 2010) and reduce the separation of employment and social engagement. Could this help society to reassess its priorities by reducing individuals' surplus income, increasing free time and allowing communities to develop and work together?

### **The Issue (3):**

#### **Medical automation – use of technology to provide medical procedures**

The Bristol Robotics Laboratory is working on several projects within medical automation to improve patient and surgeon experience via robotics technology (BRL, 2013). Similarly to legal automation, this raises ethical questions about patient care. While medical automation has reduced mistakes and minimised scarring, robots responses to unexpected abnormalities is limited and they are replacing junior surgeons preventing the progression of medical science by removing basic skills and experience from the training process. Will the high levels of financial investment in medical automation lead to the privatisation of medical excellence leading to greater health inequalities?

### **The Solution (3):**

The potential role of automation within medicine must be explored, increasing the success rates of medical procedures must continue. However, this will require the input and expertise of highly-qualified and experienced doctors and surgeons who have developed through the current medical system. Automation could also help reduce the strain on the National Health Service in the UK as population levels continue to rise and average life expectancy increases. The politically sensitive issue of ensuring the availability of automotive treatments for all could be facilitated through the government remaining major stakeholders and investing in the technology. This could lead to innovations and technologies being used to the greater good, opposed to capitalistic ideals.

### **The Issue (4):**

#### **Public sector automation**

As medical advancement continues and the baby boomers age, the demographic structure of the developed world is changing, placing increasing pressure on resources, time and society to meet the needs of an aging population. Department of Health in England expects the care workforce to expand to 2.6 million by 2025 (Appelbau & Leana, 2013). Automation within social care could prove invaluable as increasingly strain is put on resources for social welfare and care for the elderly. Some believe that jobs in social care will be *safe* from automation due to the history of lack of investment within the sector (MacInnes, 2013). Recent investment, however, suggests otherwise.

The Bristol Robotics Laboratory is working on developing robots for safe human interaction that can adapt to changing environments to achieve a shared goal (BRL, 2013). While this could help to meet the physical needs of patients, such developments raise questions over mental welfare and the impacts of reduced social interaction. Should automation be welcomed within the sector due to likely reductions in economic costs and environmental impacts? Given the nature of the social care system, should more be invested in projecting jobs, through increasing wages and improving facilities within this sector, to provide continued social interaction and personal centred care for societies most vulnerable groups?

### **The Solution (4):**

Many of the social roles within the public sector such as care and education have two purposes - to provide physical support and to offer mental support. Without the expertise through physical provision it is likely that the welfare provision standards would also fall. Therefore, for the full benefits to be obtained from automation it could be argued that it is best used as a supplementary tool to reduce the strain on human work hours and thus improve overall service provision. Again, could state control of automotive technology enable priorities to remain on improving provision opposed to cutting costs in times of economic uncertainty?

Increasing pay within public service sectors with high staff turnover could increase retention and therefore improve the quality of service provided. This could reverse the trend of

plummeting household savings in the US and UK from 12.3% in 1980 to just 1.7% in 2010 (Smith-Ramani & Mahta, 2013), reducing families and individuals exposure to life's economic risks such as unemployment, underemployment and illness. The introduction of a living wage would add 1% to the wage bill of large corporations in construction, banking and food production but would likely result in increased productivity as workers benefit from increased wages (Alakeson, 2013). If this were to be integrated alongside reduced working hours it could help people and businesses work towards creating a sustainable lifestyle through reducing consumption as surplus income is removed from the economic system. However, policy may need to be strengthened to protect a wider range of people from life's economic risks as jobs are replaced by automative systems.

### **Conclusions:**

The rise of the automated and digitalised economy is great news; it will allow economic production to boom, shifting societal concerns from *how best to generate growth* to *how to best distribute wealth* (Farrell, 2013). Ensuring equality during and after the transition to an atomised economy is likely to require high level political intervention to protect those who will lose out as a result of automation. Nevertheless, automation has the **potential** to provide sustainable lifestyles with high living standards and economic security for all.

This will become more apparent as different types of automation are invented providing great economic returns for companies and individuals. Trying to implement strategies now to address potential future inequalities is inevitably complicated, especially within a capitalist system that prevails in most economically advanced countries. The *2025 Global Trends Report* highlights that as a result of the financial crisis wealth is becoming increasingly concentrated in state control (National Intelligence Council, 2008). Could the solution lie in public investment in automation to reduce the number of technologies in the hands of private investors? Is this a sign that automation should be thought of as investment for the greater good; for the enhancement of society, environmental improvement and economic stability?

The rise of automation is now unavoidable. Therefore the question is not how we should stop it but instead how is it best to respond to the increase in use of automative technology. There are several key aspects that need to be considered when preparing for the automative transition; redistribution of wealth from designers to automative producers, the roles of business, society and government; increasing social understanding to ensure the smooth transition to changing priorities and expectations of employment; and limiting the environmental footprint of lifestyles. If all of these are considered in terms of a closed loop system and are embraced in the correct fashion, then it is likely that automation could improve living standards and social cohesiveness, stimulate economic growth and reduce the everyday human impact on the environment.

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