

COM6655 Professional Issues

Autumn 2022-23

The Social Context of Computing (part 1)

Dr Maria-Cruz Villa-Uriol

Department of Computer Science, University of Sheffield
m.villa-uriol@sheffield.ac.uk

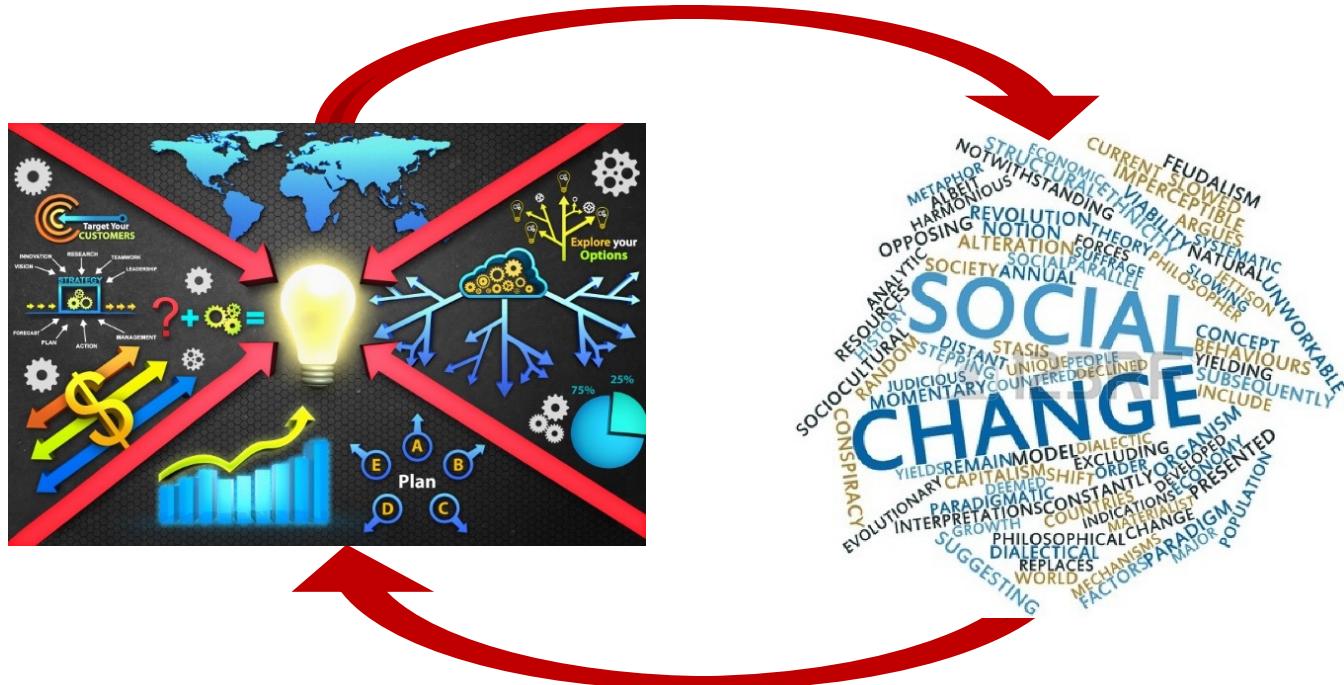
Overview

- Technological and Social Change
- IT and Employment Change
- Impact of IT on working conditions
- Information management and sociotechnical systems design
- Computers and social relationships

Technological and social change

Technological and social change

- Technological change and social change evolve together.



Supply and demand

- The course of technological development is determined by social factors on both the supply and demand sides, often called the *technology push* and the *demand pull*.
- **Q. What factors govern the supply of new technology?**
- **Q. What factors govern the demand for new technology?**

Is technology good or bad?

- IT can have good or bad social consequences, depending how it is used.
- **Instrumental conception of technology**
 - Technological artefacts are never intrinsically good nor bad
 - “Gun can be used for murder, but they can also protect against wild animals”
 - “Opiates can cause social problems, but they also relieve pain for terminally ill patients”
 - Technological innovations acquire positive or negative value through their use by humans.
- **An opposing view: Technological Determinism**
 - Changes in technology are the cause of changes in society
 - “technology is becoming globally available, so globalization is inevitable”
 - “machines can do more work than humans, so power is concentrated in the hands of those who own the machines ('means of production')”
 - In this view, technologies can be intrinsically good or bad, depending on how they drive social change



Utopia / Dystopia

- **Utopian view:**

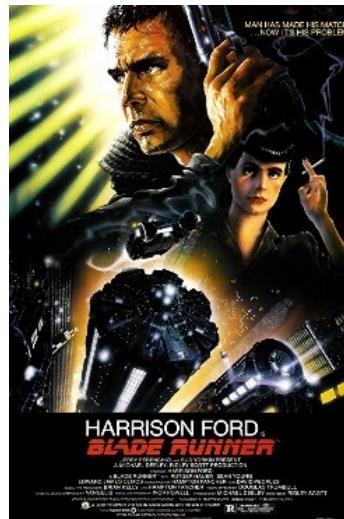
computing will make work easier, workers happier, and increase productivity

- **Dystopian view:**

computing will deskill workers, replace workers with machines, and enable electronic monitoring of work.

- **Sci-fi dystopia:**

The machines will also be unhappy.



Luddites

- A social movement of 19th-century English textile artisans who protested – often by destroying mechanised looms – against the changes produced by the Industrial Revolution
- They felt mechanisation was leaving them without work.
- The word "Luddite" is now used to describe those opposed to industrialisation, automation, computerisation or new technologies in general.



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Why computerise?

- Q. If technology has a potentially negative effect on society, why computerise in the first place?

Why computerise?

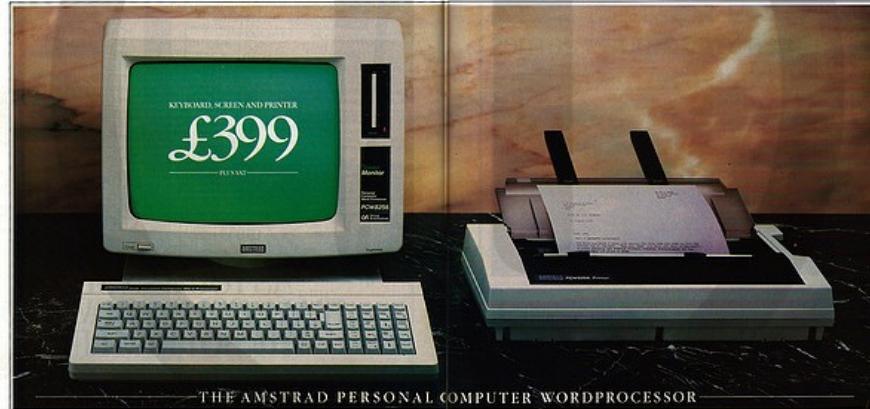
- The economic argument for introducing IT into the workplace is that it will increase demand by creating new products, or by reducing costs while improving quality.
- As a result of increased demand:
 - Output increases;
 - Employment increases;
 - Profits increase prompting investment in research and product development, thus creating even more jobs.
- What about unemployment caused directly by the introduction of IT?
 - Job losses in one part of the economy resulting from an introduction of IT may be compensated by retraining, and by demands for engineers, programmers etc.
 - Some evidence in support of claims that automation does not create unemployment, e.g. Japan and Sweden have the largest number of industrial robots per employee, but very low levels of unemployment.

Does it pay?

- Evidence suggests that huge investments made in computer technology may not pay off.
 - US investment in computers grew at a rate of 24% per year during the 1980s, but there is no evidence of increased productivity in the economy over this period.
- Some critics argue that this **productivity paradox** actually results from:
 - Inappropriate ways of measuring productivity;
 - Steep learning curve of the new technology.
- Others argue that the problems are real:
 - Software is often poorly designed;
 - Benefits can be lost in an organisational context.

Example: word processors, pros and cons?

More than a wordprocessor,
for less than a typewriter.



THE AMSTRAD PERSONAL COMPUTER WORDPROCESSOR

Don't look at the price of the Amstrad PCW 8256 or you won't believe what it is below.

Because the PCW 8256 is a complete wordprocessing system and a complete personal computer - a completely sensible price.

It's a powerful wordprocessor.

The PCW 8256 is totally equipped for wordprocessing. It has a high resolution screen with 90 columns and 32 lines of text. That's 90% more usable display area than ever before.

There's a high speed RAM disc that allows you to store and retrieve information instantaneously, as you type or edit.

The 82 key keyboard is specifically designed for wordprocessing. Its special function keys allow you to

refer to 'paid sheet' menus as you need, so you don't have to memorise complicated codes.

And the PCW 8256 has an integrated printer, with continuous paper feed, for previous a choice of letter quality and high speed drafting capabilities.

Finally there's a built-in floppy disk system, as well as track feed for continuous paper.

All for the price of an electric typewriter.

It's a powerful computer.

The PCW 8256 is more than a wordprocessor. It's also a purpose built computer with the CP/M 86 computer operating system with 64K RAM.

By employing the CP/M 86 computer operating system with 64K RAM, it opens the door to over 8000 commercial software packages. If that's

not enough, for the real computer buff, a combination of the powerful Matboard BASIC, Dr Logo and GVA Graphics system extensions will mean you can write your own programs. There's also an optional combined serial and parallel interface, that gives you access to modem, additional printers and other peripheral equipment.

So even if you stand off just wanting a wordprocessor it won't be long before you'll be hooked on the computer side of things.

Now you can look at the price. The Amstrad PCW 8256 costs just £399 + VAT. It's a lot less than you'd expect to pay for a lot more than a wordprocessor.

DEMONSTRATION AT DIXONS

Please send me some more information about the PCW 8256. Home user Office user Other

Name _____

Address _____

Town _____ Postcode _____

Company _____

Amstrad PCW 8256

Amstrad, P.O. Box 462, Ilford, Essex CM14 4QY. Tel. 0277 228888

FOR A FREE DEMONSTRATION VISIT YOUR LOCAL DIXON'S STORE OR GOOD COMPUTER OR OFFICE EQUIPMENT DEALER

Word processors - pros

- Word processing provides obvious benefits:
- Mistakes can be easily corrected;
- Documents and templates can be saved and re-used;
- Grammar can be improved.
- Machine learning is now taking auto-completion to a new level

Word processors - cons

- Users make many more revisions than they otherwise would do, but without necessarily improving quality;
- Can be difficult to master (for average user);
- Too many features, many of which are never used;
- Little compatibility between packages.
- Features may be of less use than they appear. Spell checkers cannot detect every error, so do not remove the need to read through the document.
- Disk failures and crashes can be catastrophic; computer systems are not as resilient as paper-based systems.

Word processors... automated text generation

- <https://deepai.org/machine-learning-model/text-generator>
- <https://app.inferkit.com/demo>
- <https://sassbook.com/ai-writer>

The screenshot shows a dark-themed web application. At the top, there's a search bar with a magnifying glass icon and a "Generate" button. Below the search bar is a text input field containing the text: "the protection of consumers in terms of UK GDPR has taken a turn". Underneath this, a large text block displays the generated text: "the protection of consumers in terms of UK GDPR has taken a turn." Trevinder said the government would continue to act on GDPR by making a voluntary change to this regulation, and that the UK will not be the same EU as it was in 2000. In June, when asked whether the UK should continue to allow trade agreements to remain secret, Tertwig said "we agree that the UK does have an obligation to the EU to keep open trade on its terms, but we do not have a duty to the rest of the EU to do that". It should do so with greater openness and scrutiny, he said, and be more aggressive: they would stop a deal without EU permission.

A spokesperson for the Competition Authority told the Press Association that the regulator could not comment on specific proposals because of their subject matter, but a spokesperson said: "We continue to look at whether there is potential to improve competition and to provide better safeguards."

InferKit DEMO

Generate Options

For entertainment, set some funny keywords.

Try to include these words ⓘ
Type some words

Start at beginning ⓘ

the protection of consumers in terms of UK GDPR has taken a turn for the worse with ISPs being accused of breaking the law again

this report has named an ISP with the worst web privacy breach, releasing the names and contact details of 50,000 of its customers

A

The screenshot shows a light-themed web application. At the top, there's a navigation bar with links: Sassbook, AI Writer, AI Story Writer, AI Summarizer, AI Headline Generator, Pricing, Learn More, API, and Blog. There's also a "Sign In" button. The main heading is "Sassbook AI Writer: Powerful AI Text Generator For Original Content". Below the heading is a large icon of a notepad with a pencil. A text input field asks "[Optional] What do you want to write about? Enter some keywords; use commas to separate". Below it is another text input field labeled "Your prompt:" containing the text: "the protection of consumers in terms of UK GDPR has taken a turn". A progress bar indicates "1000 weekly free words used". A note says "Number of words (15-30 is desirable): 13". Below this is a note: "Build up the content by entering your prompts from time to time, guiding the engine to express your thoughts clearly." A section titled "Configure AI text generation:" includes radio buttons for "Creativity:" (set to "Balanced"), "Generation Candidates:" (set to 2), and "Words per generation:" (set to 50). A note says "Subscribe to a paid plan to enable AI Writer configuration. Generate up to 100 words at a time, 6 candidate completions, and control the way the text is generated. Commercial plans do not have daily limits." A "Complete" button is at the bottom. To the right, a sidebar says "Article Generated by the AI Writer:" followed by a generated paragraph: "the protection of consumers in terms of UK GDPR has taken a turn for the worse. Consumers are now under the threat of severe fines and the government is now proposing to hold these fines against individuals, businesses and even organisations. This is a massive setback for GDPR and consumers and we are very upset about it. We". A note says "Continue generating from the end, ignoring the prompt input. Like or dislike each generation to provide quality feedback." A "Continue" button is next to it. Another note says "Select an alternative generation: The first completion is selected by default and added to the article. You can select another one instead or clear selection and generate again. Tap text to toggle selection." A "Send us your suggestions and feedback:" input field is at the bottom with placeholder text "Your valuable feedback goes here".

Problems with computer software

- Software can be hard to use because computer-literate designers lose the perspective of novice users.
- Software often facilitates tasks that are marginal:
 - a small business uses computerised databases when they would be better served by a card index;
 - spreadsheets are used to experiment with different scenarios (e.g. effect of inflation on business forecasts) but often these are of little utility.
- People are resistant to automation of some activities
 - meeting schedulers that keep diaries for a group of people.
- Total reliance on computer software can be dangerous
 - up to 95% of spreadsheets in use contain errors.
 - in a 1990s company buy-out, the buyer overspent by 10 million dollars due to a spreadsheet error (Computing, 28th August 1997).

Recent example

- 16,000 coronavirus cases unreported in England in October 2020
- Due to use of XLS format in Excel which has a limit of 65k records
- Cases over this number were simply missed off
- <https://www.bbc.co.uk/news/technology-54423988>

The screenshot shows a web browser window with the BBC News website open. The article title is "Excel: Why using Microsoft's tool caused Covid-19 results to be lost". It is categorized under "Technology". The author is Leo Kelion, a technology desk editor, and it was published on 5 October. A "Coronavirus pandemic" tag is present. The main image is a graphic of a green Excel icon with binary code floating around it against a dark background with virus particles.

Excel: Why using Microsoft's tool caused Covid-19 results to be lost

By Leo Kelion
Technology desk editor

5 October

Coronavirus pandemic

The badly thought-out use of Microsoft's Excel software was the reason nearly 16,000 coronavirus cases went unreported in England.

And it appears that Public Health England (PHE) was to blame, rather than a third-party contractor.

The issue was caused by the way the agency brought together logs produced by commercial firms paid to analyse swab tests of the public, to discover who has the virus.

They filed their results in the form of text-based lists - known as CSV files - without issue.

Organisational issues and productivity

- Productivity may not be increasing because of the way that computers are used in the workplace.
 - A lot of time may be spent creating high-quality internal reports - without productivity gains.
 - Email and text is (often) slower than a phone call.
 - If people are doing the wrong things when they automate, they simply do the wrong things faster.
- Conclusion: application of computer technology does not inevitably lead to productivity gains.
- Getting results usually involves redesigning the work process before computerisation.

IT and power

- 'Knowledge is power'
 - IT does tend to increase the differences between those with power and wealth and those without.
 - In corporations: managers can monitor keyboard activity, phone conversations, emails of employees and can use data mining to profile customers, employees and potential recruits.
 - Access to IT technology is not universal – are developing countries at a disadvantage?
- <https://www.theatlantic.com/ideas/archive/2020/10/fight-tame-big-tech-has-finally-begun/616800/>

The antitrust suit, which alleges that Google has abused its search monopoly to squash competition, is the beginning of the end of a lawless era, when Big Tech could get away with whatever bolstered its profits and power.

IT and Employment Change

IT and Employment Change

- Forecasts of the consequences of IT for employment levels are controversial.

However, the following trends are generally agreed:

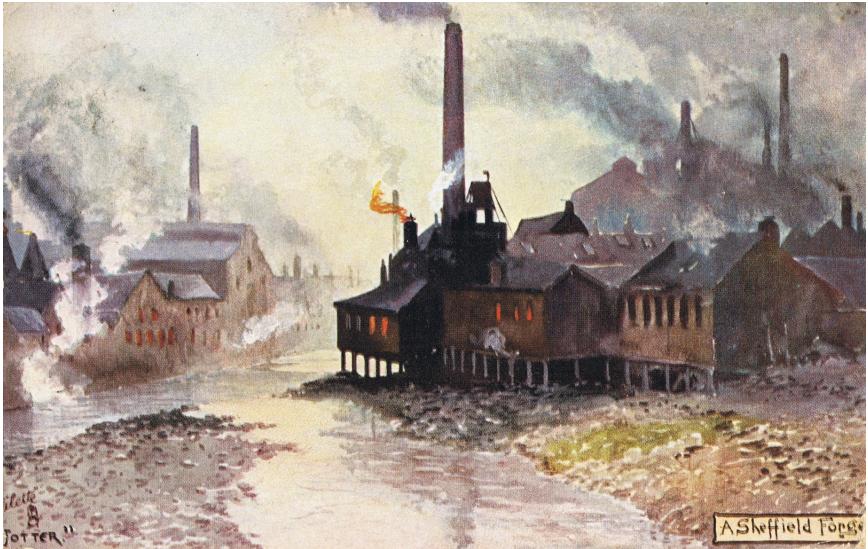
- Shift of employment from the primary economic sector (agriculture, forestry, fisheries) to the secondary sector (extractive industries such as mining) to the tertiary sector (manufacturing).
- Reduction in 'core' manual and production occupations (construction, mining, farming), increase in 'peripheral' ancillary, administrative and professional jobs.
- Continued reduction in lifetime working hours.
- The 'information sector' (which produces information goods and services as final output) now dominates employment (more than half of all workers in the US).

Job losses due to IT

- It is hard to quantify the impact of IT on employment.
- Most case studies analyse employment changes in existing sectors of the economy: they often predict reductions in employment, or 'jobless growth' (reduced costs and increased productivity without increased employment).
- But future employment may also be boosted by new areas of economic activity due to IT.
 - Until quite recently, relatively few job losses can be attributed directly to technological change. Other factors are more influential, such as heightened competition and falling demand during periods of recession.
 - In most countries, only 10-15% of the working population are employed in the manufacturing sector. Hence, the trend towards automated manufacturing will not cause a major increase in unemployment.

Local Analogy: Sheffield Steel

- Decline of steel industry in 1980's
 - more steel is now produced ...
 - ... but with fewer employees
 - Focus on specialised metals and advanced manufacturing
- Will the same happen in other industries as new technology is introduced?

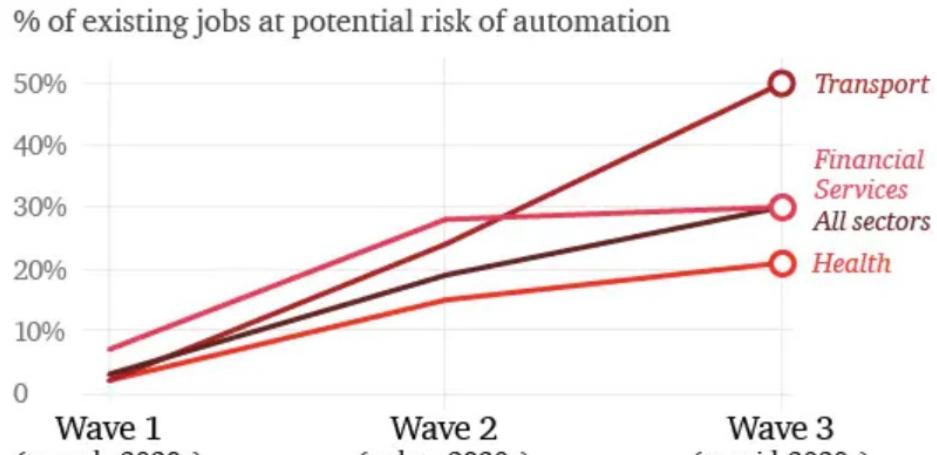


<https://ianswalkonthewildside.files.wordpress.com/2015/03/a-sheffield-forge-on-the-river-don-1907.jpg>

PwC Report

<https://www.pwc.co.uk/services/economics-policy/insights/the-impact-of-automation-on-jobs.html>

Financial services jobs could be relatively vulnerable to automation in the shorter term, transport jobs in the longer run



Source: PwC estimates based on OECD PIAAC data (median values for 29 countries)

Automation will vary significantly by industry sector

Retraining/redeployment

- Job losses due to IT may be offset in the long term by retraining and redeployment.
- Problems with retraining:
 - Not all people can be re-trained;
 - Successful retraining requires government funding;
 - During 1980s, estimated that 400,000 needed retraining in US: only half could be retrained by federal programs, whose budget was subsequently halved.
- Sheffield context: two-tier workforce

Women and IT

- Concentration of IT in clerical jobs is likely to have a disproportionate effect on women, since it is traditionally in this area that women have found part-time and full-time work.
- Gender imbalance
 - Computing tends to be a male dominated profession.
- This problem may be traced back to education:
 - At 'A' level in England and Wales, males taking computer studies have outnumbered females by 4:1;
 - In the US, males taking secondary school courses in computing have outnumbered females by 2:1 across all states.
- Intriguingly, the mathematical and computer skills of women tends to improve when they are taught in a single-sex setting.

Tracy Camp (2002)

The Incredible Shrinking Pipeline. *Comms ACM* 40(10).

- “Although women make up 50% of high school computer science (CS) classes, the percentage of bachelor's degrees in CS awarded to women in the 1993-94 academic year was only 28.4%. At the graduate level, for the academic year 1993-94, the percentages of degrees in CS awarded to women dropped even further: 25.8% at the M.S. level and 15.4% at the Ph.D. level ... The percentage of bachelor's degrees awarded in CS to women decreased almost every year over the last decade ... There are a number of reasons why we need to improve the percentage of degrees awarded in CS to women. In short, there is a critical labor shortage in CS and, although women are more than half the population, they are a significantly underrepresented percentage of the population earning CS degrees.”

Women in computing

- 1985
 - 37% Computer Science undergraduate degree recipients were women
- 2010
 - 57% of undergraduate degree recipients were women
 - 18% of Computer and Information Sciences undergraduate degree recipients were women
 - 14% of Computer Science undergraduate degree recipients at major research universities were women
- 79% decline in the number of first-year undergraduate women interested in majoring in Computer Science between 2000 and 2010

Recent UK figures

As reported in March 2022 by Engineering UK:

- Women make up 16.5% of all engineers, compared to 10.5% reported in 2010
- This represents a **6 percentage point increase** in the proportion of women in the engineering workforce.
- The actual number of women working in engineering roles also increased from 562,000 in 2010 to **936,000** in 2021
- There was an overall expansion of the engineering workforce from 5.3 million in 2010 to **5.6 million** in 2021.
- The increase in the number of women in engineering roles continued to rise even when the total number of people working in engineering fell in 2020 and 2021 during the Covid-19 pandemic.

According to Engineering UK 2018 the following are the latest statistics interpreted from the report by WES:

- 12.37% of all engineers are women in the UK. ⁽²²⁾
- 21.80% women work in the engineering sector (incl. engineers) ⁽²²⁾
- 46.4% of girls 11-14 would consider a career in engineering, compared to 70.3% of boys ⁽²²⁾
- 42.0% of girls 14-16 would consider a career in engineering compared to 66.0% of boys ⁽²²⁾
- 25.4% of girls 16-18 would consider a career in engineering compared to 51.9% of boys ⁽²²⁾
- 22.2% of students starting A Level Physics in 2018 were female. ⁽²²⁾
- In all STEM A-Levels except Chemistry more girls get A*-C grades than boys – including Further Maths, Maths, ICT and Design and Technology. ⁽²²⁾
- Girls and women make up less than 18% of higher apprentices in engineering and manufacturing, and 7.4% of all engineering apprentices. ⁽²²⁾
- 79.8% of female engineering students get a First or Upper Second, compared to 74.6% of male students. ⁽²²⁾
- 60.7% of female engineering graduates enter full time work, compared to 58.8% of all female graduates and 61.9% of male engineering graduates (57.7% of all male graduates). ⁽²²⁾
- Female engineering graduates are more likely to enter full-time work (61% vs 59%) and less likely to enter part time work (8% vs 12%) than all female graduates. Female engineering graduates are also less likely to enter part time work than all male graduates (11%). ⁽²²⁾

Robots and unemployment

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The Guardian

News Opinion Sport Culture Lifestyle ☰

Money ▶ Property Pensions Savings Borrowing Careers More

Bank of England

• This article is more than 3 years old

Robots threaten 15m UK jobs, says Bank of England's chief economist

Results of the Bank's study, Andy Haldane said, suggested that administrative, clerical and production tasks were most at threat



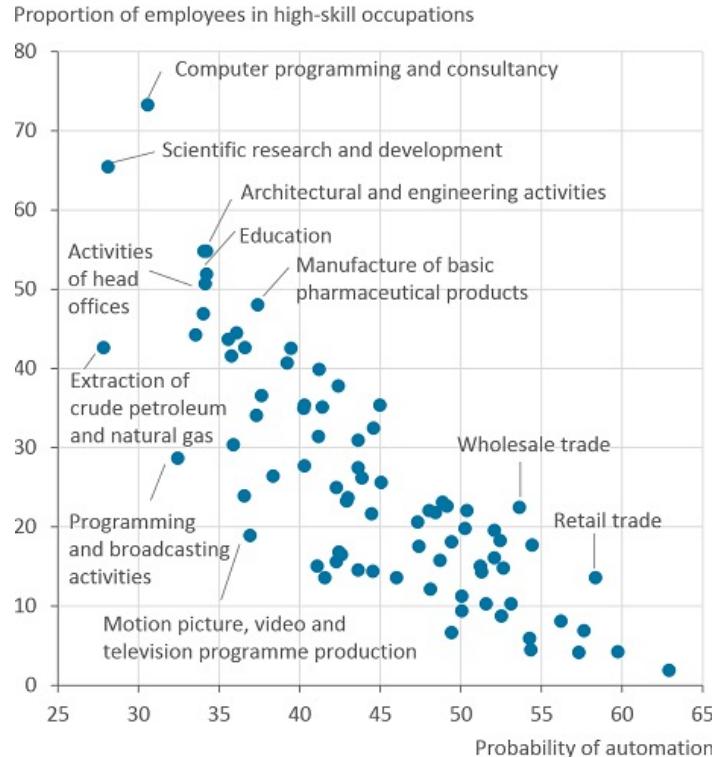
A robot on display at the China International Industry Fair in Shanghai. The Bank's chief economist said technological advances since the 18th century had always had the effect of widening the gap between the skilled and unskilled. Photograph: Zhang Jiansong/Xinhua Press/Corbis

Larry Elliott Economics editor

Thu 12 Nov 2015 18.23 GMT

<https://www.theguardian.com/business/2015/nov/12/robots-threaten-low-paid-jobs-says-bank-of-england-chief-economist>

Automation of work

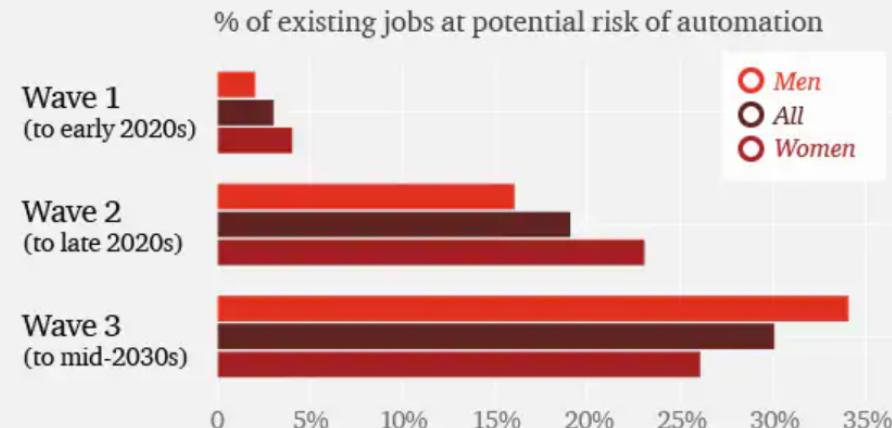


The lower the skillset involved, the more likely it is that a job will be automated.

PwC Report

<https://www.pwc.co.uk/services/economics-policy/insights/the-impact-of-automation-on-jobs.html>

Women workers could be more affected by automation over the next decade, but male jobs could be more at risk in the longer term



Source: PwC estimates based on OECD PIAAC data (median values for 29 countries)

IT in the service industry



21,378 views | Jun 21, 2018, 10:00am

Meet The World's First Fully Automated Burger Robot: Creator Debuts The Big Mac Killer



Christina Trotino Contributor @
Food & Drink
I write about the business and future of food & agriculture.

TWEET THIS

Creator is debuting a burger concept that seems bent on using robots to inject more humanity and customer democracy

Here's what you'll need to know before trying the internet's favorite Rube Goldberg burger machine



Cookies on Forbes

After years of hype, Creator (formerly Momentum Machines) will be debuting its

- We have already become familiar with IT in the service industry
 - ATMs
 - Self-service tills in supermarkets
 - Fast food
- In service sectors of the economy, the pattern of employment is likely to change significantly as IT becomes more integrated.
- Emphasis will probably be placed on 'front-office' personal attention, while the traditionally information-intensive 'back-office' activities will be automated.

IT and office jobs

- Martin Ford: *Rise Of The Robots: Technology and the Threat of a Jobless Future*
- “Some of the people most threatened are what we might call office drones: people who sit in front of computers doing relatively routine, formulaic things. If your job is to produce the same kinds of reports again and again, software is getting smarter and better at doing that. We already have lots of examples, even in journalism. There’s smart software that is able to write basic news stories. Lots of white-collar jobs held by college graduates are going to be threatened.”

News Automation – The rewards, risks and realities of ‘machine journalism’



Price

For non-members: 250 EUR
For WAN-IFRA members: Free

Download

Employees of WAN-IFRA member organizations can download the report free of charge here, as a membership benefit:
(Note: You do not need your log-in – just your e-mail address.)

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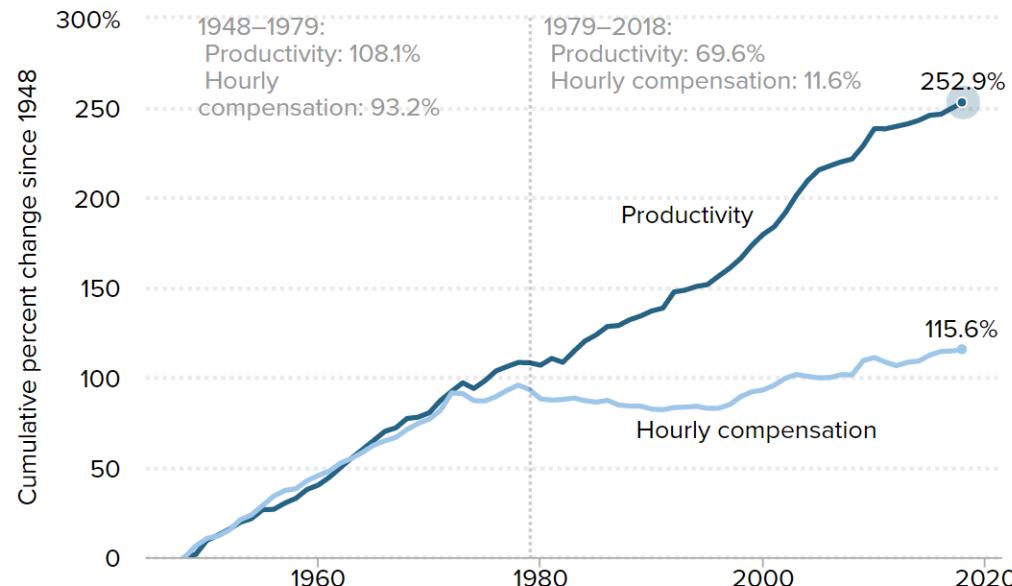
Summary

This report focuses on a specific part of news automation: the automated generation of news texts based on structured data. This is not about crystal ball gazing. **News automation is already making itself felt in the daily life of newsrooms**, and the examples presented in this report show how automation can aid journalism as well as the implications, and the ethics involved.

Productivity v. Wages

The gap between productivity and a typical worker's compensation has increased dramatically since 1979

Productivity growth and hourly compensation growth, 1948–2018



Effect on world economy?

- Stagnation?
 - “As you eliminate workers and people become unemployed or their wages fall, consumers will have less purchasing power to buy the products and services produced by the economy. As a result, there will be less and less demand.”
- Boom?
 - “The use of robots will reduce the need for humans to carry out dehumanising work, leading to a happier and more effective workforce. Productivity will increase, prices will drop, work will become easier, life will improve.”

Impact of IT on Working Conditions

Taylorism and deskilling

- In the 1890s F. W. Taylor performed 'time and motion' studies of work processes. These involved:
 - Splitting tasks into component actions;
 - Timing each action;
 - Redesigning actions to reduce the time requirement.

Taylorism



Frederick Taylor (1856-1915)
"Scientific management"

'Taylorism' results in production systems in which individual jobs are simple and relatively unskilled.

The introduction of IT into the workplace can have a similar effect to Taylorism; previously skilled tasks effectively become 'de-skilled'.

But is it all bad?

Effects of IT and automation

- **Deskilling**
 - Conceptual tasks built into computer algorithms, or transferred to a few specialists
- **Upgrading**
 - Automation of routine and repetitive tasks
 - Growth of white collar work, and lowest level clerical workers retrained

Performance monitoring

- Employee performance monitoring is inherent in the Taylorism approach; human operators are measured in the same way as raw materials or components.
- Performance monitoring is also seen as a means of identifying 'time thieves'; employees who take too many breaks or leave work early. Can also help identify other forms of theft.
- “The American Society of Employers estimates that 20% of every dollar earned by a U.S. company is lost to employee theft.”

Reported at:

<https://www.prnewswire.com/news-releases/safe-communications-inc-completes-acquisition-of-control-of-northsight-capital-inc-123013583.html>

The infographic is titled "TIME THEFT" and includes the subtext "Is it impacting your business? Protect your profits and learn the facts about employee time theft." It features a cartoon character of a man running with a clock on his head. The top section is titled "What is TIME THEFT?" and defines it as "The practice of employers using their employees for time they never actually worked." Below this, there's a section titled "Examples of time theft include:" with icons for clock-in clock-out, break times, overtime, and meal periods. A large section in the center is titled "But, this isn't happening to my company... WELL... LET'S DO THE MATH." It shows a calculation: 30 minutes per day multiplied by 20% equals \$1,000 per year. Below this, a section titled "Methods to eliminate/reduce time theft:" lists four categories: PREVENT THIEFS, FIRE THIEFS, TRAP THIEFS, and HIRE THIEF. At the bottom, a section titled "How can DEPUTY HELP?" highlights the software's features: quick implementation, low cost (\$2 per employee), and integration with payroll systems. It also lists benefits like scheduling, performance tracking, time-off management, and reporting. A call-to-action at the bottom encourages users to visit deputy.com for a free 30-day trial.

Monitoring techniques

- The simple timing advocated by Taylor has now been replaced with more sophisticated monitoring:
 - closed circuit television;
 - keystrokes per hour (US company 'Electronic Banking Systems' sets target of 8500 keystrokes per hour);
 - rate of scanned goods in supermarket checkouts;
 - monitoring of telephone calls;
 - 'active badges' which track individual employees.

Practice and Experience

The Active Badge Location System

ROY WANT, ANDY HOPPER, VERONICA FALCÃO and JONATHAN GIBBONS
Olivetti Research Ltd. (ORL), England

A novel system for the location of people in an office environment is described. Members of staff wear badges that transmit signals providing information about their location to a centralized location service, through a network of sensors. The paper also examines alternative location techniques, system design issues and applications, particularly relating to telephone call routing. Location systems raise concerns about the privacy of an individual, and these issues are also addressed.

Categories and Subject Descriptors: B.4.1 [Input/Output and Data Communications]: Data Communications Devices—receivers (*e.g.*, voice, data, image, transmitters); H.4.1 [Information Systems Applications]: Office Automation—equipment, time management, (*e.g.*, calendar, schedules); H.4.3 [Information Systems Applications]: Communications Applications; K.6.5 [Management of Computing and Information Systems]: Security and Protection

General Terms: Design, Experimentation, Human Factors

Additional Key Words and Phrases: Active badges, location systems, PBX, privacy issues, tagging systems

1. INTRODUCTION

Efficient location and coordination of staff in any large organization is a difficult and recurring problem. Hospitals, for example, may require up-to-date information about the location of staff and patients, particularly when medical emergencies arise. In an office building, a receptionist is usually responsible for determining the location of staff members; in some organizations, public-address systems are provided to help a receptionist locate employees but, more frequently, a telephone is used to contact all the possible locations at which the required person might be found. These solutions can

Authors' addresses: R. Want, Xerox PARC, 3333 Coyote Hill Rd., Palo Alto, CA 94304. email: want.parc@xerox.com; A. Hopper, Olivetti Research Ltd., 24a Trumpington St., Cambridge CB3 1QA, England. email: ah@cam-orl.co.uk; V. Falcão, Metaphor Computer Systems, 1965 Charleston Rd., Mountain View, CA 94043. email: falcao@metaphor.com; J. Gibbons, Sun Microsystems Laboratories Inc., 2550 Garcia Ave., Mountain View, CA 94043. email: jwg@eng.sun.com.

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Problems with monitoring and deskilling

- Monitoring may not improve productivity at all:
 - increased stress and atmosphere of mistrust;
 - absenteeism is increased;
 - higher turnover of employees;
 - staff may work at minimum acceptable level for fear that better performance will lead to raised expectations.
- Deskilling often reduces employee motivation; work is monotonous and dispiriting.