

# **COM6655 Professional Issues**

## **Autumn 2022-23**

### **The Social Context of Computing (part 2)**

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# 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

# The Hawthorne studies

- Taylorism is now widely regarded as flawed. So-called 'Hawthorne Studies' of late 1920s demonstrated importance of social relationships in the work place.
- The Hawthorne studies were carried out by the Western Electric company at their Hawthorne plant in the 1920's. Initially, the study focused on lighting.
- Two things emerged from the initial studies:
  - **The experimenter effect:** making changes was interpreted by workers as a sign that management cared, and more generally, it just provided some mental stimulation that was good for morale and productivity.
  - **The social effect:** it seemed that by being separated from the rest and being given special treatment, staff developed a certain bond and camaraderie that also increased productivity.

# Interpreting the findings

- **Conclusion:**

It is the way that computerisation is used which is important, not the use of computers per se.

- Computers can be employed in a sensitive and useful way, e.g. the drudgery of bookkeeping has been removed by spreadsheets, so that accountants can concentrate on analysis and financial modelling.
- Computers can also be used to monitor and increase the stress on employees, e.g. call centres.

# The location of work

- The impact of the car on society has been significant, allowing people to live in a suburban setting some distance from their office. Now, IT is having similar consequences.
- Alvin Toffler (1980) predicted that personal computers and telecommuting will make work at home more common, 'electronic cottages'
  - Strengthen bonds of family and community
  - Provide employees with greater control over their work
  - Benefit the environment by reducing pollution.



Image: By Source, Fair use, <https://en.wikipedia.org/w/index.php?curid=41595224>

# Remote working by sub-contractors

- Software development and data entry can be done remotely; so work can be sub-contracted to developing companies with cheaper labour costs.
  - Many US companies contract out their data processing to Caribbean offices with low-paid local staff.
  - Indian software industry grew into a 1.2 billion dollar concern in 10 years, with hundreds of companies employing 100,000 software developers.
- Although some work can be contracted out in this way, other activities cannot because they require knowledge of local rules or laws (e.g., auditing work) or personal interaction.

# Telecommuting

- Telecommuting (teleworking) is a form of work practice, which enables the decentralisation of office work.
  - Advances in IT allow individuals to work from home, or from a local base which is linked to the headquarters of the organisation by telephone.
  - Organisations establish regional work centres near the principal concentrations of its employees' residences. Regional centres are connected, so that accountants, marketers, salespeople, data entry clerks and managers can communicate.
  - “one in five workers around the globe, particularly employees in the Middle East, Latin America and Asia, telecommute frequently and nearly 10 percent work from home every day.” [Patricia Reaney (January 24, 2012), [About one in five workers worldwide telecommute: poll](#), [Reuters](#), retrieved 16 October 2019.]

# Is teleworking viable?

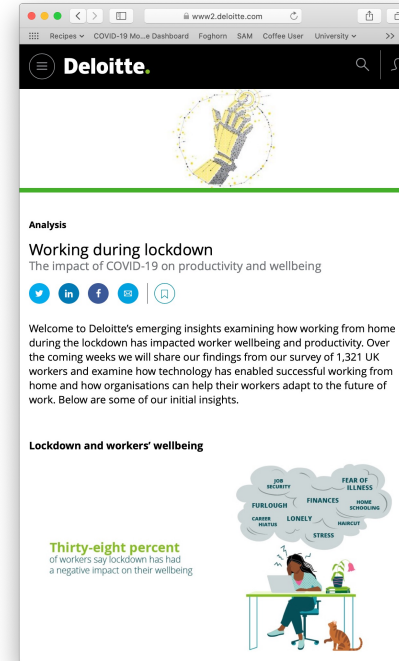
- Home working is certainly on the rise. A survey of firms by the Confederation of British Industry showed that the number offering at least some teleworking rose from 14% in 2006 to 46% in 2008.
- Much experimentation with teleworking; but staff may abandon it and return to conventional work programmes.
- Effects of family life on teleworking are complex.
  - Early work suggested that employees with a partner are more likely to work at home, but having children makes them less likely to work at home.
  - “Europe and North America agree that telecommuting is a great way to retain women. It provides less stress because of less commuting and provides a better work-life balance” [Karen Gottfried, Ipsos Global Public Affairs, quoted in Reaney (ibid., 2012)]



# Covid-19 lockdown

- 38% say that lockdown has had a negative effect on their wellbeing
- 55% believe that their colleagues are at least as productive than before lockdown
- 75% have used at least two new types of technology for work
- 45% miss social interaction
- 61% would prefer to work more from home after lockdown

• Deloitte survey, N=1321



<https://www2.deloitte.com/uk/en/pages/consulting/articles/working-during-lockdown-impact-of-covid-19-on-productivity-and-wellbeing.html#>

# Information management and sociotechnical systems design

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# Information Management

- The poor productivity pay-off from computerisation has led many managers to re-examine 'people' issues.
- Successful information management requires the development of skills in planning, configuring and operating IT-based systems, which take into account fundamental changes in organisations (such as the decentralisation that accompanies telecommuting).
- Match the technology and organisation of work to get as close a fit as possible.
- “American managers are finally learning what the Japanese learned years ago. The solution to fading competitive ability, sluggish production growth and poor quality cannot be found in the mythical black box of a miraculous technology. To realise the full potential of automation, leading-edge companies are integrating workers and technology in 'sociotechnical' systems that revolutionise the way that work is organised and managed.”

• Hoerr, Pollack and Whiteside (29 September 1986) Management Discovers the Human Side of Automation. Online: [http://www.organizationdesign.com/a\\_ManagementDiscovers.html](http://www.organizationdesign.com/a_ManagementDiscovers.html). Accessed 16 October 2019.

# Sociotechnical systems design

- The 'sociotechnical systems' concept of work design originated in experiments at British coal mines during the 1940s. Subsequently adopted by motor industry.
- Trist and Bamforth (1951) - [https://en.wikipedia.org/wiki/Sociotechnical\\_system](https://en.wikipedia.org/wiki/Sociotechnical_system)
  - Despite improved technology, productivity was falling
  - Despite better pay and amenities, absenteeism was increasing
- The solution
  - Autonomous work groups of miners that interchanged roles and shifts and managed themselves with little supervision.

## SOME SOCIAL AND PSYCHOLOGICAL CONSEQUENCES OF THE LONGWALL METHOD OF COAL-GETTING<sup>1</sup>

*An Examination of the Psychological Situation and Defences of a Work Group in relation to the Social Structure and Technological Content of the Work System*

E. L. TRIST AND K. W. BAMFORTH<sup>2</sup>

### I

#### INTRODUCTION: A PERSPECTIVE FROM RECENT INNOVATIONS

A number of innovations in work organization at the coal-face have been making a sporadic and rather guarded appearance since the change-over of the industry to nationalization. During the past two years the authors have been following the course of these developments. Though differing from each other, they have had the common effect of increasing productivity, at least to some extent, and sometimes the increase reported has reached a level definitely above the upper limit customarily achieved by good workmen using similar equipment under conventional conditions. They have been accompanied by impressive changes in the social quality of the work-life of

<sup>1</sup> The study reported here is one part of a larger project on which the Tavistock Institute of Human Relations has for some time been engaged, concerned with the conditions likely to increase the effectiveness of the "dissemination of information" about new social techniques developed in industry. This project was initiated by the Human Factors Panel of the Committee on Industrial Productivity set up by the Lord President of the Council under the Scientific Adviser to the Government. It has been administered by the Medical Research Council. No responsibility, however, attaches to either of these bodies for the contents of this paper, a shortened version of which has been discussed by the Medical Research Subcommittee of the National Coal Board.

<sup>2</sup> The field work necessary for this study has been lessened by the fact that Mr. K. W. Bamforth was himself formerly a miner and worked at the coal-face for 18 years.

# Example

- Conventional way of designing a car production plant:
  - Technical design comes first;
  - Assembly line that allows only one social system: workers stay at fixed stations and perform same task;
  - Repeat same task every 30 seconds.
- Sociotechnical way:
  - Involve workers in planning the new plant;
  - Teams assemble entire subunits of a car from parts moved through the plant;
  - Team members are free to move around, rotate jobs, and have longer cycle of work.
- Advantages:
  - Workers have more control over quality;
  - If things go wrong, workers have a greater appreciation of the whole system and can give a flexible response.

# Computers and social relationships

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# Computers and Social Relationships

- Home computers
  - Studies show they reduce interactions (television is more social).
- Computer games
  - Can reduce opportunities for social interaction
  - or be designed for sociability and cooperation
  - can result in 'flow experiences', with high levels of concentration, rules of interaction, feedback, suspension of self-consciousness, and a sense of belonging to something larger than themselves.

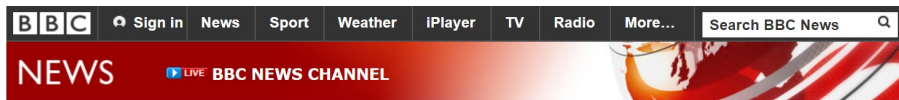
[Csikszentmihalyi, M. and Larson, R. (1984) Being Adolescent: Conflict and Growth in the Teenage Years. Basic Books, New York.]

# Computer addiction?

- Weizenbaum (1976) Computer Power and Human Reason
- “Whenever computer centers have become established ... [b]right young men of dishevelled appearance, often with sunken glowing eyes, can be seen sitting at computer consoles, their arms tensed, and waiting to fire, their fingers already poised to strike at the buttons and keys on which their attention seems to be as riveted as a gambler’s on the rolling dice. When not so transfixed, they often sit at tables strewn with computer printouts over which they pore like possessed students of a cabalistic text. They work until they nearly drop, twenty, thirty hours at a time.... Their rumpled clothes, their unwashed and unshaven faces, and their uncombed hair all testify that they are oblivious to their bodies and to the world in which they move. They exist, or at least when so engaged only through and for the computers. These are computer bums, compulsive programmers. They are an international phenomenon.”



# Internet addiction



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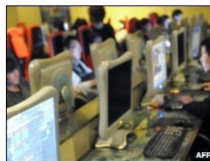
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## S Korea child 'starves as parents raise virtual baby'

**A South Korean couple who were addicted to the internet let their three-month-old baby starve to death while raising a virtual daughter online, police said.**

The pair fed their own premature baby just once a day in between 12-hour stretches at an internet cafe, the official Yonhap news agency reported.

Police officer Chuna Jin-won told Yonhap they "lost their



The parents allegedly spent hours following their internet obsession

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## China cuts children's online gaming to one hour

30 August



Online gamers under the age of 18 will only be allowed to play for an hour on Fridays, weekends and holidays, China's video game regulator has said.

The National Press and Publication Administration told state-run news agency Xinhua that game-playing would be only allowed between 8pm to 9pm.

It also instructed gaming companies to prevent children playing outside these times.

<https://www.bbc.co.uk/news/technology-58384457>

# Virtual communities

- Computer-mediated communication
- Email has disadvantages
  - reduced human contact
  - open to misinterpretation
  - flame wars
- But also has advantages
  - interest and research in virtual communities; geographical closeness not required.
  - can be used by disadvantaged and marginal groups (e.g. the homeless) for social and political change
- But can also be used to strengthen unacceptable groups.

# Social media

- Can strengthen and maintain friendships and relationships
- Can help with loneliness
- Dissemination of information
- Can move the centre of power to the population (Question: is this good or bad?)

## Example: The “Arab Spring” (2011)

There was intense social media activity within the country to organize protests, and outside the country to garner international support. Worldwide knowledge of the events accelerated as roughly half of the participants in the protest shared visuals of the events over the internet.<sup>29</sup> The government countered by arresting bloggers;<sup>30</sup> Egyptian security services began to monitor social media to develop a counter-insurgency strategy. Mubarak cut off internet and mobile phone communications on 28 January in an attempt to quell the rebellion. This resulted in even more intense social media activity, and the subverting of the attempts to shut down communication. Ultimately, Mubarak resigned on 11 February.

# Social media - issues

- Privacy
  - Not clear what is visible to whom
  - Third party violations of privacy
- Surveillance
  - Employers? Government? Future employers?
- Cyber-bullying, stalking, threatening behaviour
- Addiction
- Reduction in social contact?
- Fake news



# Social care examples - positives

- **Healthcare**

- Automated diagnosis, e.g. online health screening systems
- Remote diagnosis and treatment
- Semi-automated surgery
- Robotic companions can help with rehabilitation

- **Care for the elderly**

- Robot companions can help with loneliness
- The Internet of Things will allow e.g. monitoring of fridge usage
- Alexa, Siri, Google, etc., can be used to issue reminders



<https://www.bbc.co.uk/programmes/p03vjw7f>

# Summary

- Technological and social changes evolve together.
- Data indicates that productivity pay-off of technology is disappointing.
- Technology is not causing mass unemployment. There is some short-term redundancy, which may be offset by redeployment and retraining in the longer term.
- Women are disproportionately affected by the exploitation of IT in the services sector of the economy.
- IT affects the quality of work, as well as the quantity of work (e.g. deskilling)
- Telecommuting offers benefits and disadvantages; the growth in home-working has not been as rapid as expected.
- Exploiting IT to the full requires new ways of thinking, working and managing. Sociotechnical systems design offers an interesting alternative.