POLITECNICO DI MILANO





Computer Ethics

Course introduction

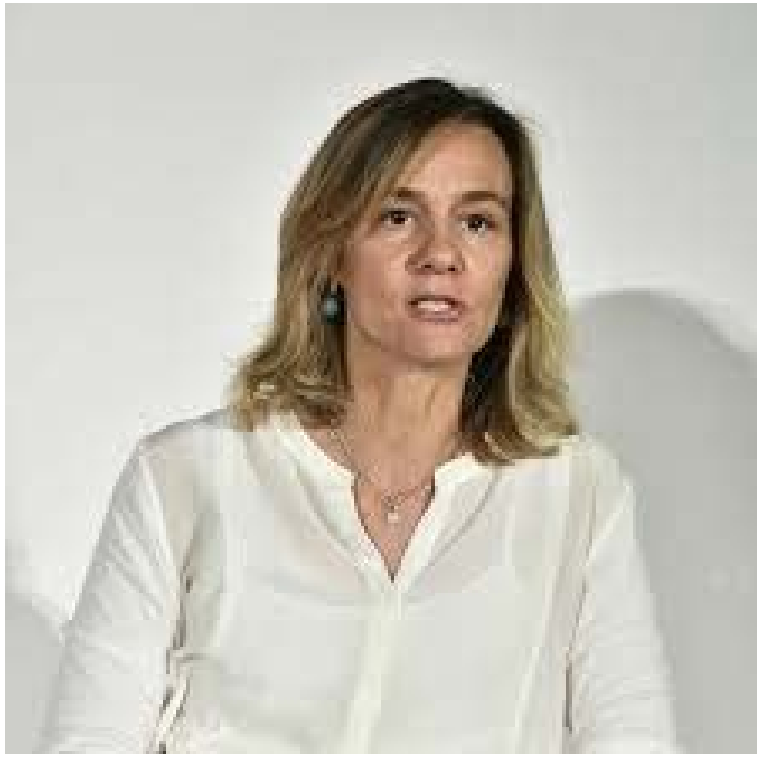
Viola Schiaffonati

September 16th 2020

Outline

- Some basic rules
- Introduction to the course and its topics
- *Break (10 minutes)*
- A socio-technical perspective
- Course organization

Who we are



Viola Schiaffonati

Vera Calchi

What about the questions?

- We'll have short sessions for questions any 10-15 minutes
- You can use both the chat and the microphone
- It's difficult for me to monitor the chat when I'm lecturing so wait to use it when it's time for questions

Two cases

- The act (A) of stealing from a bank by **physically** entering the bank, putting a gun to the bank teller's head, and asking for the money behind the counter

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- The act (B) in which a thief steals from a bank by **remotely** (although still physically) accessing the bank's computer system, manipulating code, and in so doing transfers money from the bank to the thief's own account in a Swiss bank

Differences and similarities

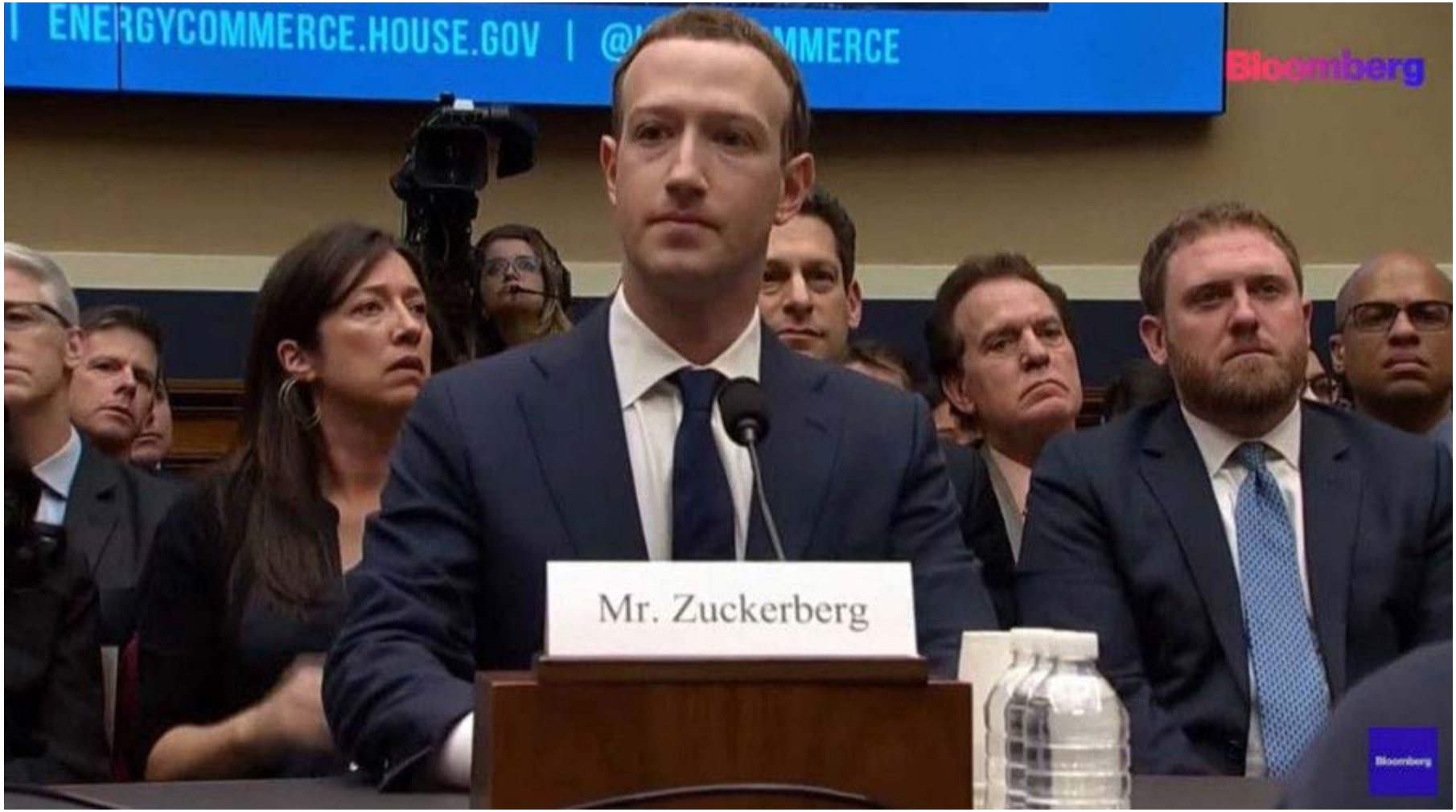
Any difference between the two cases?

Computer crime

- New types of crimes
- Not the physical security of the hardware, but rather **logical security**
  - **Privacy** and **confidentiality**
  - **Integrity** (assuring data and programs are not modified without proper authority)
  - **Consistency** (ensuring data and behavior we see today will be the same tomorrow)
  - **Controlling access** to resources

A big scandal

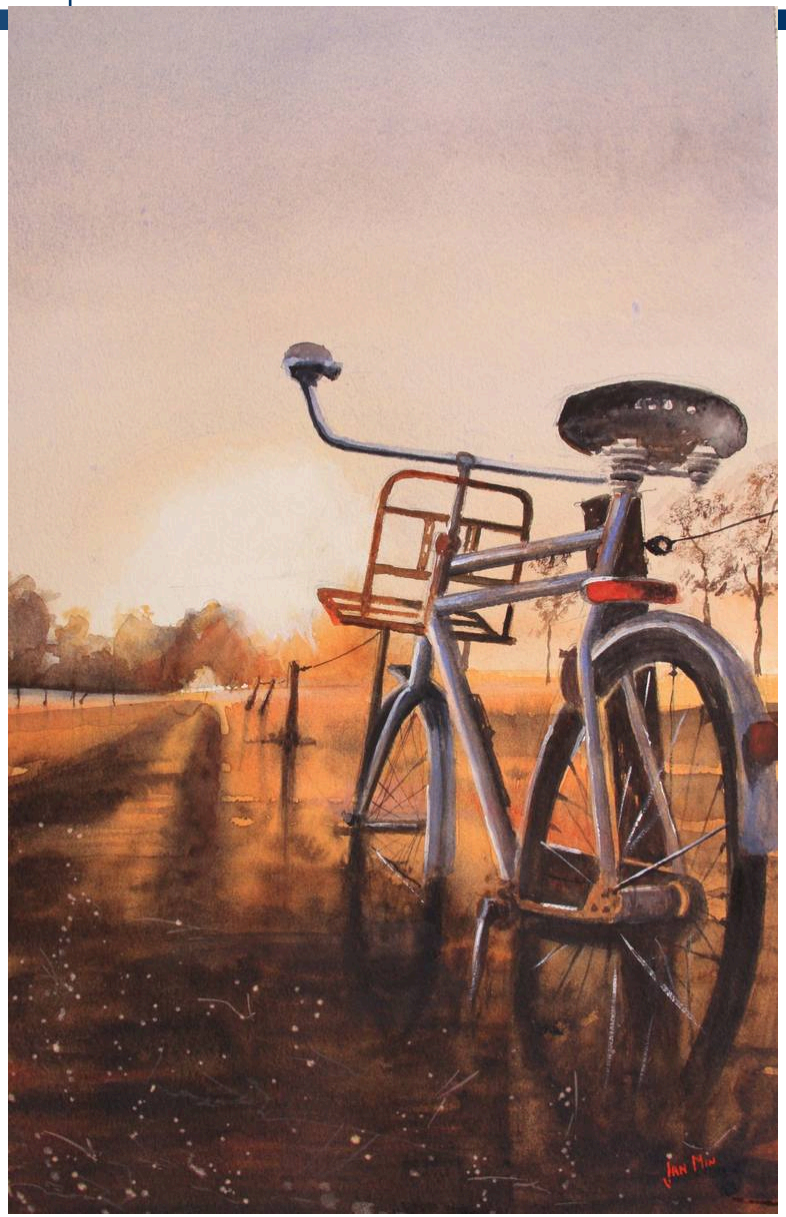
- https://www.youtube.com/watch?v=1iCVn_JvOiQ

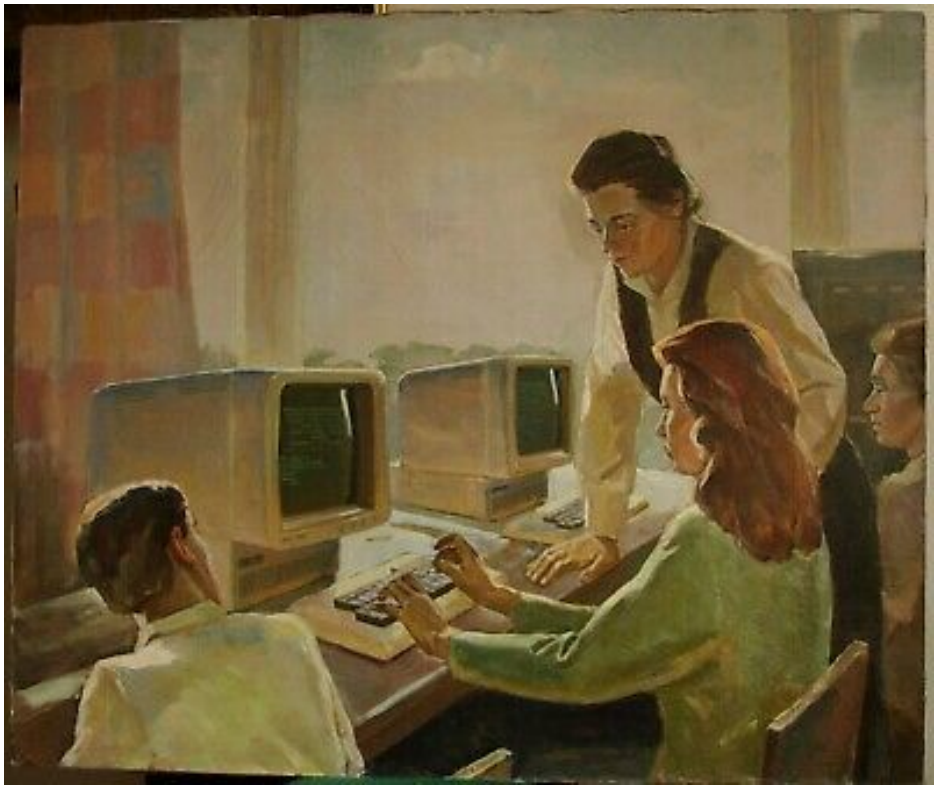


Privacy and anonymity

- Huge variety of privacy related issues generated by computer technology
  - Easiness and efficiency by which information can be collected, archived, compared, shared
- **Re-examination** of the concept of privacy
- Information society as **surveillance society** influencing individual behavior and individual self-perception
- **Political problem** (and not just ethical): legislative limits to the control and collection of personal data

Stealing a bike, copying a software





Differences and similarities

Any difference between the two cases?

Intellectual property

- Intellectual property rights connected with software ownership
- Different aspects of software that can be owned
  - The **source code** (written by the programmer in a high-level computer language)
  - The **object code** (machine-language translation of the source code)
  - The **algorithm**
  - The **look and feel** of a program (the way the program appears on the screen)
- Different types of ownership
  - **Copyrights**
  - **Trade secrets**
  - **Patents**

Computers and moral issues

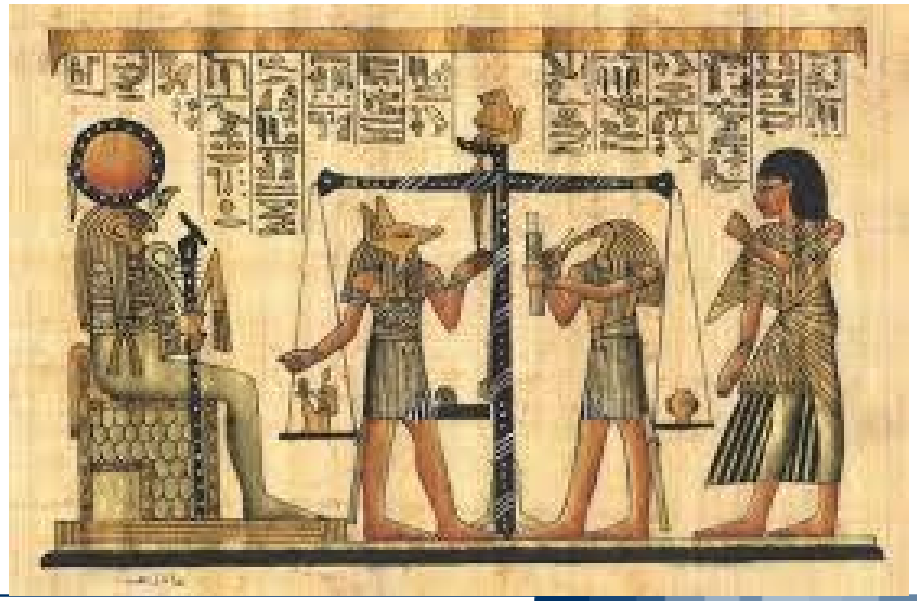
- Previous scenarios illustrate the complex and fascinating character of the ethical and social issues around computer and information technologies
- These scenarios suggest that living in a world constituted in part by computers may involve **distinctive** and especially challenging **ethical issues**

Ethics (and computer ethics)

What is ethics?

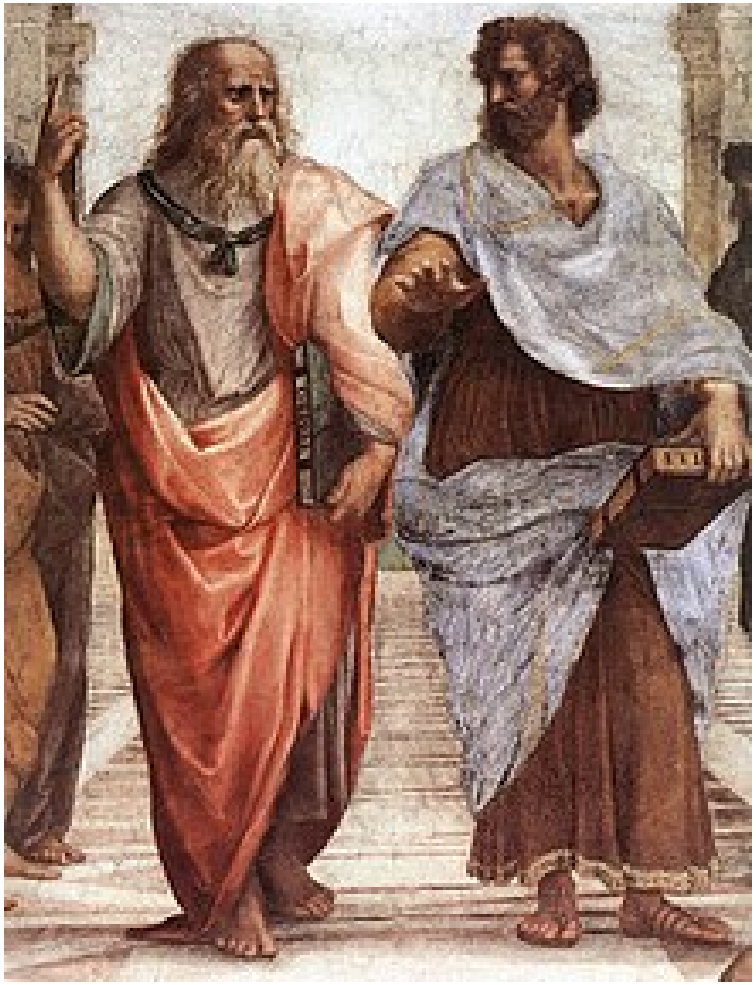
A word on Ethics

- Difficult to define, **many meanings** over the centuries
- Deriving from the Greek word ***ethos*** that can be translated as ‘custom’ or ‘morals’
- *Ethica* as the science considering what is **good** or **bad**, wise or unwise, about people’s actions



Ethics (Greek philosophy)

- **Good action** as the subject matter of ethics (generalizations holding only for the most part)
- **Ethical virtues** (justice, courage, temperance and so on) as central to a **well-lived life** (Aristotle)
  - Complex rational, emotional and social skills
- To study ethics in order to improve our lives



A possible dilemma?

How is it possible to deal rigorously with ethical problems if morality is subjective?

Ethics and morality

- Ethics is the **systematic reflection** on what is moral (branch of philosophy)
- **Morality** is the whole of opinions, decisions, and actions with which people, individually or collectively, express what they think is **good** or **right**
- **Systematic reflection** on morality increases our **ability** to cope with **moral problems** (also those related to technology)
- **Ethics** is **not a manual** with answers: it reflects on questions and arguments concerning the moral choices people can make
- Ethics is a **process for searching** for the right kind of morality

Break

Let's have a break (10 minutes!)

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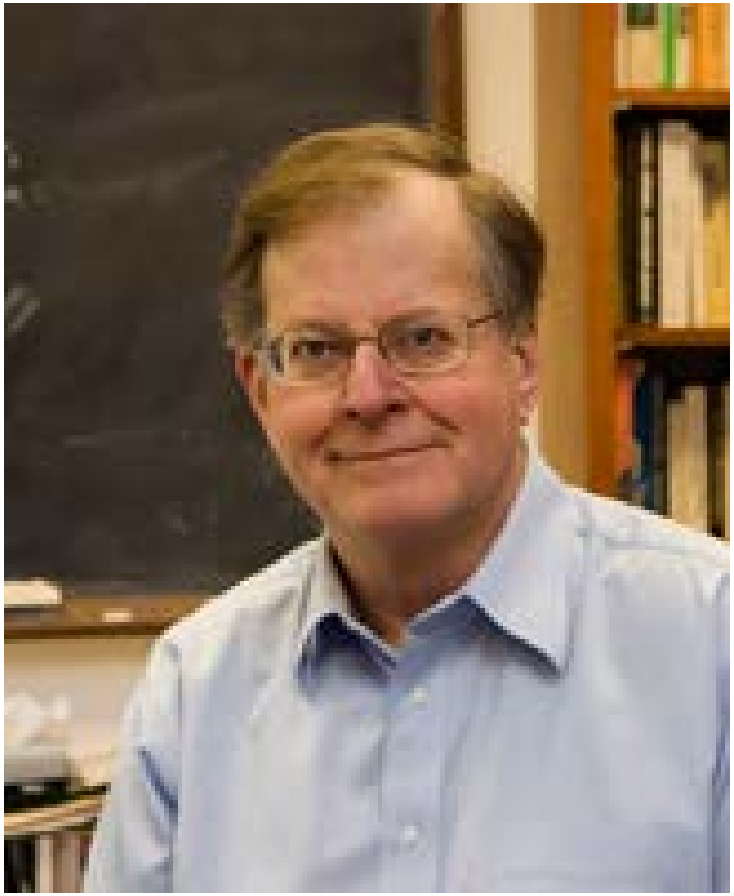
What is Computer Ethics?

Ethics for computers, for people using them, for people designing them, for problems arising with the use of computers, …?

Philosophical analysis and policy setting

- Analysis of the **nature** and **social impact** of **computer technology** and the formulation and justification of **policies** for the ethical use of such technology (Moor 1985)
  - **Logical malleability**: computers are shaped and molded to do any activity that can be characterized in terms of inputs, outputs, and connecting logical operations
  - Understanding logical malleability important to set **policies** for the **use** of **computers**



Malleability

- Logical malleability (Moor 1985)

> of the Computer Revolution is found in the nature of a computer itself. What is revolutionary about computers is *logical malleability*. Computers are logically malleable in that they can be shaped and molded to do any activity that can be characterized in terms of inputs, outputs, and connecting logical operations. Logical operations are the precisely defined steps which take a computer from one state to the next. The logic of computers can be massaged and shaped in endless ways through changes in hardware and software.

Why Computer Ethics?

- Living in a world constituted in part by computers may involve **distinctive** and especially challenging **ethical issues**
- It is essential to **understand** the social and ethical **implications** of our **choices** about computers and information technologies to **steer** the development of **future technologies** in a direction that is **good** for humanity (particularly for you)

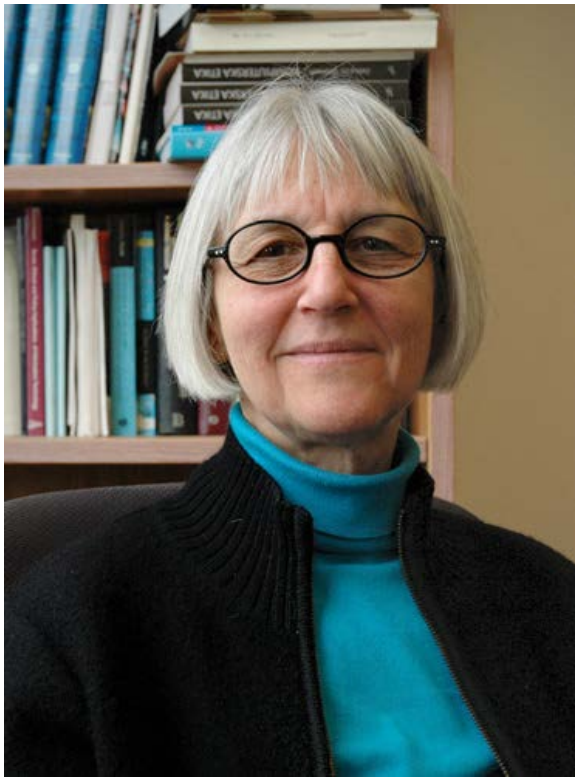
New problems or the same old stuff?

- It seems that IT creates situations in which common moral principles do not seem to apply nor seem helpful in figuring out what one should do
- Computer Ethics deals with **new kinds of problems** but also with **traditional ethical problems** under a new light
  - However, even if the structure of problems is not new, computer ethics is not just applied ethics but requires new **conceptual analyses**
  - For instance to investigate ethical problems related to computer viruses' widespread diffusion it is necessary to understand what a computer virus is

A socio-technical perspective (Johnson 2008)

"***Computer*** *experts aren't just building and manipulating hardware, software, and code, they are* ***building systems*** *that help to achieve important* ***social functions****, systems that constitute* ***social arrangements, relationships, institutions,*** *and* ***values***"

(Johnson 2008)

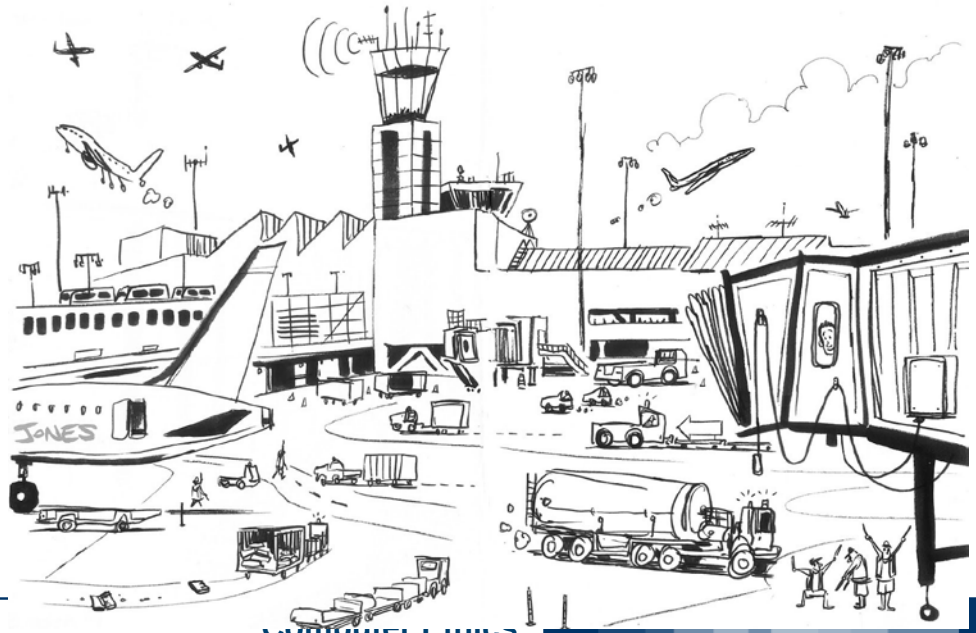


An update of the standard account (Johnson 2009)

- **Technology** does not develop independently from **society**
- **Artefacts** (human-made material objects) are components of technology, but have no meaning or significance unless they are **embedded in social practices** and **activities** (**socio-technical systems**)
- **Technology** is **not neutral**, material objects can be **value-laden**

Sociotechnical system

- The **world civil aviation system** is an example of a sociotechnical system
- Sociotechnical systems are composed of
  - **Physical** objects (e.g., airplanes)
  - **Organizations**, **institutions**, **conditions**, **rules** (e.g., air traffic regulations)
  - **People** (e.g., air controllers)



What the course *is* about

It's about applying what learnt, through reading and lectures, by looking at current events through an ethical lens

Aims and goals

- What we will do in this course
  - To analyze, understand and shape problems **created**, **aggravated** or **transformed** by **computer technology** through the use of **ethical theories**
- What you students should do
  - Becoming aware of the **moral dimension** of **technology**
  - To acquire a broad perspective on the social and ethical **impacts** and **implications** of information technology
  - To develop skills in **clarifying** and **ethically analyzing** realistic cases involving information technology
  - To **exercise** and **improve** your skills in **presenting** or **writing**

Course organization

- Broad analysis of the concept of **responsibility**
- **Normative ethics and reasoning**
- **Ethical questions** in the **design** of **technology**
- The **moralization** of **technologies**
- Ethics in IT-configured societies
  - **Information flow, privacy, and surveillance**
  - **Digital intellectual property**
  - **Digital order**
- **Invited lecture** on ethical and legal issues of autonomous weapons (Daniele Amoroso)
- A **workshop** with the artist **Guildor** www.guildor.com

Practical information

- No prerequisite required
- Bibliography
  - Scientific papers/book chapters available on Beep
- Grading on the following basis
  - 50% final project (**written paper or class presentation**)
  - 50% oral discussion of the papers and chapters related to the topics of this course

Let's discuss about the course organization

- Lectures are **online**
- All lectures are **recorded**
- Slides and links to recordings will be available after classes on **Beep**
- We'll meet in **class** for **discussions**, **presentations** and **papers supervisions** (according to 2 different groups)
- If you cannot come to this supervisions, we'll arrange an **online meeting** (in the same hours of the classes)
- Supervisions will not be recorded as they are individual
- We'll meet **in class** (groups 1 and 2) also for the **workshop** with **Guildor**: students can participate to this class also from remote

Let's have a look to the timetable

Date	Topics	Slides and Reading Material
Wednesday September 16th *ONLINE CLASS* *14:15-17:15*	**Course objectives, topics, and approach** **The discipline of computer ethics and its different perspectives: the socio-technical perspective** **Course organization and exam**	Reading: Moor, J. (1985). "What is Computer Ethics?", *Metaphilosophy* 16(4):266-275
Thursday September 17th *ONLINE CLASS* *15:15-17.15*	**The responsibility of engineers**	Van de Poel, I., Royakkers, L. (2011). Ethics, Technology, and Engineering: An Introduction, Wiley. CHAPTER 1: The responsibilities of engineers

References

- Bynum, T. (2009), "Computer and Information Ethics", *The Stanford Encyclopedia of Philosophy* (Winter 2009 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/win2008/entries/ethics-computer/>
- Johnson, D. (2008), " Computer Experts: Guns-for-hire or professionals", *CACM*, 51(10)
- Johnson, D. (2009), *Computer Ethics*, Forth Edition, Prentice-Hall
- Moor, J. (1985) "What Is Computer Ethics?" *Metaphilosophy*, 16(4): 266-75