POLITECNICO DI MILANO





Computer Ethics

The responsibilities of engineers - 2

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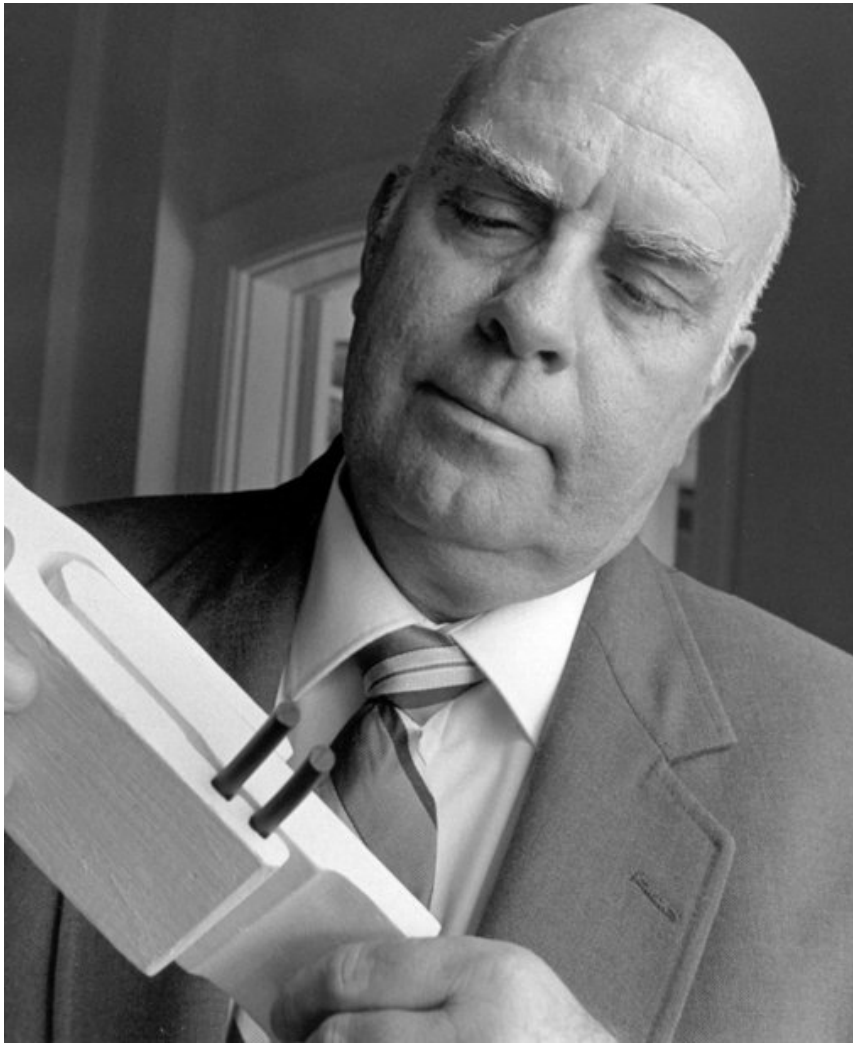
Issues reconsidered



- Who is responsible for the Challenger disaster?
- Do you consider Roger Boisjoly morally responsible for the Challenger disaster? Why?

Passive responsibility (1)

- **Backward-looking responsibility** which is relevant after something undesirable occurred
  - **Accountability**: backward looking responsibility in the sense of being held to account for, or justify one's actions toward others
    - In the case of the Challenger disaster, NASA had to be able to render account for its actions to the families of the victims, to society, and to the sitting judge

  - **Blameworthiness**: backward looking responsibility in the sense of being a proper target of blame for one's actions or the consequences of one's actions

Active responsibility

- Responsibility **before** something had happened referring to a duty or task to care for certain state-of-affairs or persons

Positive effects

- Active responsibility as **preventing** the **negative effects** of technology but also **realizing certain positive effects** (Bovens 1998)
  - Adequate **perception** of threatened violations of norms
  - Consideration of the **consequences**
  - **Autonomy** (ability to make one's own independent moral decisions)
  - Displaying conduct that is based on a verifiable and consistent **code**
  - Taking **role obligations** seriously

Ideals of engineers

- Looking at the **ideals of engineers** to understand **active responsibility** of engineers
- Ideals are ideas or strivings which are particularly **motivating** and **inspiring** for the person having them, and which aim at **achieving** an **optimum** or maximum
- **Professional ideals** are closely allied to a profession or can only be aspired to by carrying out the profession
- Are all ideals of engineers **morally commendable**?

Technological enthusiasm

- The ideal of wanting to **develop new technological possibilities** and take up technological challenges

- Technological enthusiasm in itself is not morally improper, the possible negative effect lies in **overlooking possible negative effects**

An example of technological enthusiasm

Google behind the screen

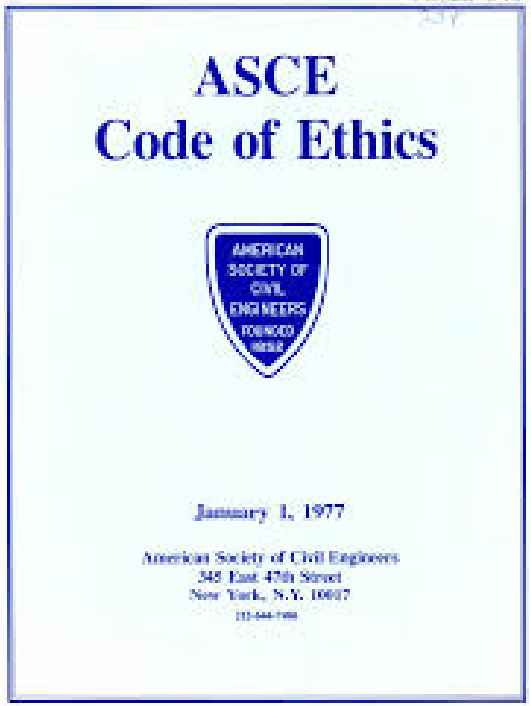
https://archive.org/details/youtube-TBNDYggyesc#

Effectiveness and efficiency

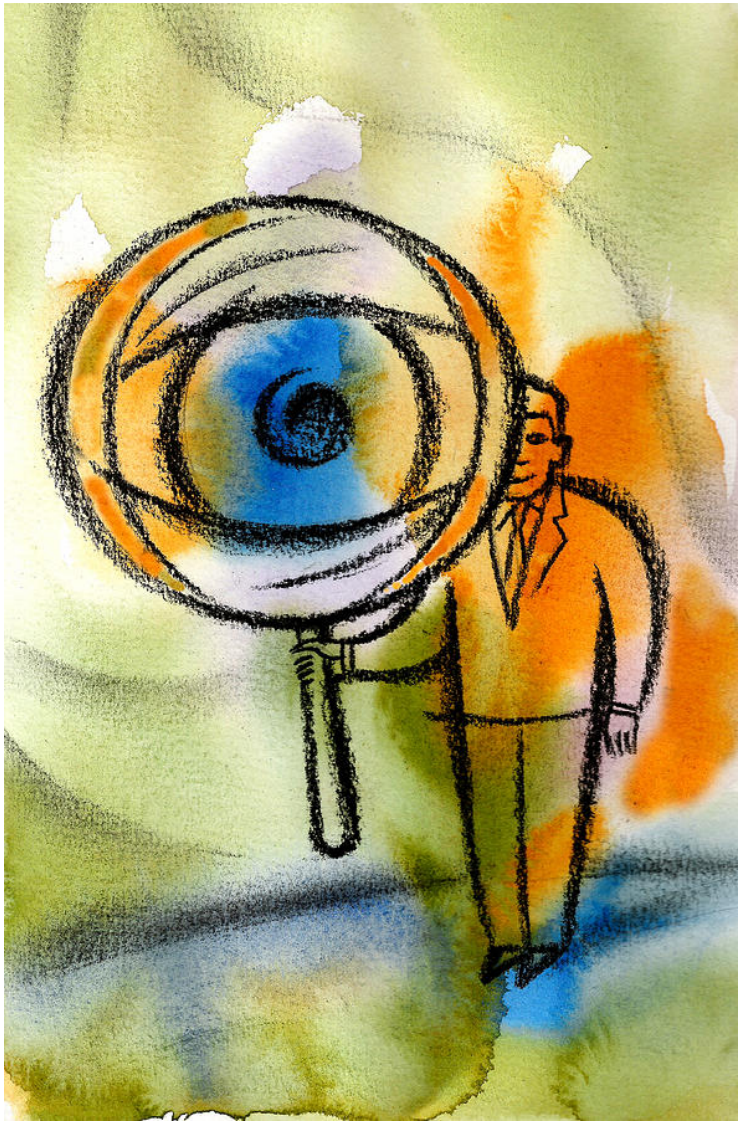
- **Effectiveness** is the extent to which an established goal is achieved
- **Efficiency** is the ratio between the goal achieved and the effort required
- They are **apparently neutral**, objective and measurable
- Ex: Taylorism and the idea of **scientific management**
  - Attempt to efficiently design the whole production process, and ultimately society

Human welfare

- The ideal of **contributing** to or **augmenting** human welfare
  - "*Engineers shall use their knowledge and skill for the enhancement of human welfare*" (Professional code of the American Society of Civil Engineers)



Relevant values



- Relevant values differ depending on the particular **engineering specialization**
  - Software engineering: **privacy** and **reliability** of systems will be more important than protection of environment and health
- This ideal confirms that the professional practice of engineers is **not** something **morally neutral**
  - Engineers do more than merely developing neutral means for the goals of others

Engineers versus managers

- Quite evident in the Challenger disaster case
- Engineers have **responsibility** to the **company** in which they work and a **professional responsibility** as engineers
- Three models of **dealing with** this tension and the potential conflict between engineers and managers
  - Separatism, technocracy, whistle-blowing

Separatism

- Separatism is the idea that scientists and **engineers** should apply the **technical inputs**, but appropriate **management** and political organs should make the **value decisions**

> *"I must emphasize, I had to say and I never would take away any management right to take the input of an engineer and then make a decision based upon that input … I have worked at a lot of companies … and I truly believe that there was no point in me doing anything further other than what I had already attempted to do"*
>
> (Boisjoly after the Challenger disaster)

Tripartite model

- **Tripartite model** maintains that engineers can only be held responsible for the design of products and not for wider social consequences
  - Subdivided into three segments: **politicians**, **engineers**, **users**

Technocracy

- **Govern** by **experts**
  - Frederick Taylor (1856-1915) that proposed that engineers should take over the role of managers in the **governance of companies** and that of politicians in the **governance of society**
- What do unique expertise engineers posses to legitimacy claim to the role of technocrats?
- Technocracy is **undemocratic** and **paternalistic**
- Paternalism is the making of moral decisions for others on the **assumption** that one knows better what is good for them than those others themselves

Whistle-blowing

- The **disclosure** of **certain abuses** in a company by an employee in which he or she is employed, **without the consent of his/her superiors**, and in order to remedy these abuses and /or to warn the public about these abuses
- But when does whistle-blowing is **morally required**? (De George 1990)
  - Harm to the public
  - After reporting, superiors have not done anything effective
  - Internal procedures have been already attempted
  - Evidence to convince an impartial observer that the view of the threat is correct
  - Revealing the threat as preventing the harm at reasonable cost

Moral issues

- More effective to address these issues at **an earlier stage**
  - **Engineers** have to be able to recognize **moral questions** in their professional practice and discuss them constructively with other parties

The social context of technological development

- **Engineers** are **not the only ones** who are responsible for the development and consequences of technology
  - **Developers and producers of technology** (engineering companies, industrial laboratories, consulting firms, universities, research centers)
  - **Users** who use the technology and may formulate certain wishes or requirements for the functioning of a technology (both **companies** and **citizens**)
  - **Regulators** (organizations) who formulate rules or regulations that engineering products have to meet (rulings concerning health and safety, but also linked to relations between competitors)
  - **Others** such as professional associations, educational institutes, interest groups and trade unions

Technology assessment (TA)

- **Systematic method** for **exploring future technology developments** and assessing their potential societal **consequences**
- **Collingridge dilemma** (Collingridge 1980)
  - On the one hand it is not possible predict the consequences of new technologies already in earlier phases
  - On the other hand, once the negative consequences materialize, it often has become very difficult to change the direction of technological development

- **Constructive technology assessment** (CTA) is an approach in which TA-like efforts are carried out **parallel to the process of technological development and** are fed back to the development and design process

Important announcement

- It's not possible to change your team and days for coming to classes
- It's a rule of the School: important for contact tracing in case of problems
- Changes in the timetable!
  - Team 1: some Tuesdays, some Thursdays
  - Team 2: some Tuesdays, some Thursdays
- Papers and presentations supervisions in class are not registered: they are individual activities
- In case of problems to come to classes we can arrange online supervisions (during class hours!)
- Office hours by appointment
- More tomorrow in the online class

References

- Bovens, M. (1988). *The Quest for Responsibility. Accountability and Citizenship in Complex Organizations*, Cambridge University Press
- van de Poel, I. and Royakkers, L. (2011). *Ethics, Technology, and Engineering*, Wiley-Blackwell