POLITECNICO DI MILANO





# *Computer Ethics*

## *Digital Order*

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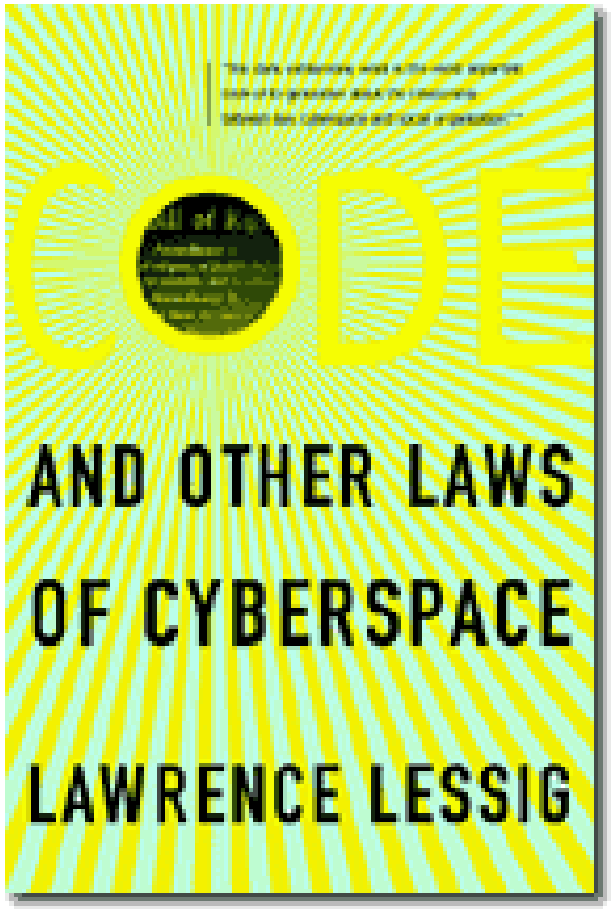
# Outline

- Sociotechnical order
- Online crime
- Hackers and the hacker ethics
- Sociotechnical security
- Freedom of expression and censorship

# Sociotechnical order

- **Internet** as a **sociotechnical system**
  - Artefacts (software, hardware, and telecommunications connections)
  - Social practices, social institutions, social relationships and arrangements
- Human behavior as regulated by **law**, **markets**, **social norms**, and **architecture** (Lessing 1999)
  - If the first three are readily acknowledged, the forth is more surprising

# Code is law (Lessing 1999)




- Example: TCP/IP protocol that underlines the Internet is a powerful example of how **code** and **computer architecture regulate behavior**
  - The hardware, software, and protocols that coordinate our use of these resources act as '**laws**' that help determine what we can and cannot do

# Online crime

- **Criminalization** is one of the most powerful ways to **regulate behavior**
- A **distinction** is often drawn between (particularly in the past)
  - **New version** of **old crimes** (crimes that were done before and are now done using computers)
  - **Crimes that couldn't exist without computers** or are directed at computers (sending a virus, a denial-of-service attack, inappropriately pinging, …)
- Today the focus is more on the **difference in instrumentation**
  - Old crimes **instrumented in new ways**
  - Crimes that attack or make use of the **instrumentation to do what couldn't be done before**

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# Instrumentation and morality

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- In both cases money is stolen, but the **difference in instrumentation** does seem to **affect** the **moral character** of the crime
  - In A, a gun was used and humans beings were put at physical risk
  - In B no humans were physically threatened

# Conceptual muddles (Moore 1985)

- Before we can figure out whether current law is relevant or a new kind of law is needed, we need to have some way of thinking about (**conceptualizing**) the new behavior
- Law enforcement agencies purse old crimes now instrumented through the Internet as well as new crimes inconceivable without IT
  - Typically mentioned '**computer crimes**': hacking, viruses, pirating, illegal trading fraud, money laundering, cyber stalking, cyber terrorism, identity theft and fraud, …
- **Computer crime** has the distinctive features of IT
  - **Global**, **many-to-many scope**, **special identity conditions**, **reproducibility**

# Hackers and the evolution of the term

- Some of the early pioneers called themselves '**hackers**' but what they meant by this was that they were **computer enthusiasts**
- Later the term acquired **negative connotations** and began to be used to refer to those who use computers for **illegal actions**, especially gaining unauthorized access to computer systems, and stealing (then sharing) proprietary software
- In a number of subcultures there seems to be **ambivalence** about the **immorality** of **disruptive behavior** on the Internet

# Hacker ethics

- What hackers say in defense of their behavior can be sorted into **four arguments**

1. All **information** should be **free**: Internet having an enormous potential for making information available to the many
   - Free is meant here both without cost and without restrictions due to ownership or censorship
2. Attempts by hackers to break into computer systems are often **beneficial** because they illustrate **security problems** to those who can do something about them
   - Hackers who break into systems for the **sake of breaking in** and not to steal or damage
3. Gaining unauthorized access to computer systems does no harm as long as the hacker **changes nothing**
4. Hackers **help to keep Big Brother at bay**
   - Hackers have the expertise to find out about illegal or immoral uses and abuses of IT

# Counterarguments

1. If all information were free, then
   - There be **no market** and **no incentive** to develop information
   - Individuals couldn't have the **right** to keep some information (**personal information**) **private**
2. Do vigilantes have the right to attempt – on a continuing basis – to break into the homes in a neighborhood in order to demonstrate that the homes are susceptible to burglars?
   - What **justification** for using viruses, denial-of-service attacks, or accessing private files as a means to get the problem fixed
3. Individuals can be **harmed** simply by the **unauthorized entry** (proprietary rights and rights to privacy)
4. The argument is correct in suggesting that the public needs protection against abuses and inappropriate use of information, but **whether hackers are the best form of protection** seems another matter

# Sociotechnical security

- Reliability and security
  - Protecting IT systems from intruders is a central focus of security
  - **Reliability** is broader than security: reliable computers depend both on **security** and **well-designed IT**
- **Computer security** as an **instrumental value** to whatever good is aimed at in the particular IT system
  - Computer security is as transportation systems is instrumental to safe and reliable transportation
  - Security of personal computers is instrumental to personal privacy
- Security is **achieved sociotechnically**
  - Effort is put into developing hardware and software techniques for achieving security, but these tools work in conjunction with policies and practices that regulate human behavior

# Security and ethics

- What does **security** have to do with **ethics**?
- Simple answer: it is wrong to gain access to systems one is not authorized to access
- Moreover, security **influences order**
  - Security measures – technical and social – **shape computing environments**

# Who is to blame in security breaches?

- If someone chooses not to take steps to protect a system from intruders, are they, partially at least, to **blame** when an intruder breaks in?
- It seems **wrong to blame those who don't install security** (is breaking into a computer system comparable to breaking into someone's home?)
  - The details of the circumstances are not always known (very few people have unlimited resources)
- And in the case in which the individual's behavior has potential **consequences for a much larger group of people** (when A is part of a larger system of computers X and not securing A also put all the computers and users of X at risk)?
  - In IT-configured societies of today it seems **difficult** to defend the idea that a user with means has **no responsibility** for trying to secure a computer on the Internet

# Trade-offs in security

- The most controversial ethical issue in security has to do with **trade-offs**
- What should we as a society **allow our governments** to do **with respect to security**?
- The value of **security** comes into **conflict** with the value of **privacy**
  - US Patriot Act (2001) to grant the Federal Government broader power for, among other things, electronic surveillance
  - In 2007 the Justice Department found that FBI had improperly and in some cases illegally used the Patriot Act to obtain personal information
- Security shouldn't trump any and every other value but, on the other hand, is critical to the smooth and reliable functioning of information societies (**no simple rule** to achieve the optimal balance)

# Freedom of expression and censorship

- Freedom of expression is one of the central issues of **order** on the Internet
- It is **emblematic to democracy**: nation states that do not provide their citizens with a relatively high degree of freedom of expression are not considered democracies
- But **why** is it a right?

*"We have now recognized the necessity to the mental well-being of mankind of freedom of opinion, and freedom of the expression of opinion, on four distinct grounds* [...].

*First, if any opinion is compelled to silence, that opinion may ... be true. To deny this is to assume our own infallibility.*

*Secondly, though the silenced opinion be an error, it may, and very commonly does, contain a portion of truth ...*

[...]"

(John Stuart Mill, On Liberty, 1859)

# Restrictions

- Restrictions are placed on speech when **other important values** are **at stake**
- **Harm principle**: individual freedom is understood to extend only as far as another's harm
  - Free speech is restricted when it threatens to cause provable harm
- **Offense principle**: can be speech suppressed because it is offensive to others?
- What is the line between **harm** and **offense**?
  - Hate speech is restricted because it is considered harmful, not just offensive

# CDA case

- In 1996 the **US Senate** passed what was refereed as the *Communications Decency Act* (CDA)
- The CDA would have made it a **crime** to use telecommunications devices and interactive computer services to disseminate “indecent or patently offensive sexually explicit material” to children less than 18 years old of age
- The **US Supreme Court** ruled that the Act was **unconstitutional**, but its initial passage by the Senate demonstrated that legislation could significantly **dampen free speech** on the **Internet**

# Conflicting views

- Those who want to **regulate** pornography on the Internet emphasize how harmful and disturbing pornography can be to children
- Those who oppose censorship don't disagree about this but they are concerned about what is often referred as a '**slippery slope**'
  - If we grant the government the power to censor in this case, we will take the first step down a slope that will end in much **more dangerous forms of censorship**
  - Once we allow a form of censorship a precedent will be established and future attempts will build on the precedent

# Again on the sociotechnical perspective

- In the absence of legal prohibitions, efforts have been made to address this issue by means of **technical devices** that will allow parents to restrict their children access
- However these issues cannot be discussed only in a technical perspective
- Recognizing these **challenges** as **sociotechnical** will lead to more **creative** and **articulated solutions**
- This also mean acknowledging that free speech can be addressed through **private mechanisms** that **bypass public discussion** and decision
- Because online free speech is critically important, it would seem a mistake to leave it entirely to private institutions (Internet services providers)

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