

# Aspetos Socio Profissionais da Informática (Informatics and Society)

## Privacy in the Modern Data Oriented World

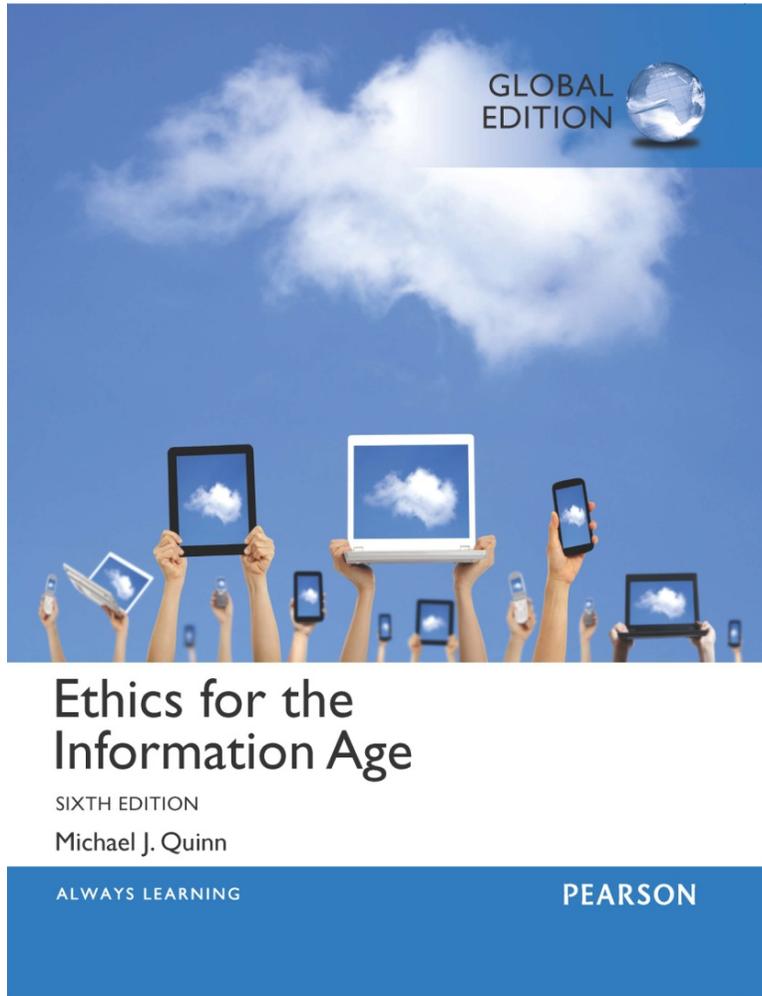
Chapter 5 of Ethics for Information Age

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# Chapter Overview

- Introduction
- Perspectives on privacy
- Information disclosures
- Data gathering and mining and privacy
- Examples of consumer backlash
- Privacy in the Internet age - current state
- Conclusions

Based in part in slides made available by book publisher Pearson Education to instructors adopting book by Michael J. Quinn "Ethics for the Information Age"



## Chapter 5: Information Privacy

PEARSON

ALWAYS LEARNING

# Introduction

SHE SAYS THANKS FOR THE DRINK  
AND WILL DECIDE ON WHETHER TO  
TALK TO YOU OR NOT AS SOON AS  
SHE FINISHES GOOGLING YOU



THE TOO MUCH INFORMATION AGE

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# Information Technology Erodes Privacy

- Collection, exchange, combination, and distribution of information easier than ever, lessens privacy
- Many Authors: "You have zero privacy anyway. Get over it."
- We will consider how we leave an "electronic trail" of information behind us, also known as "digital footprint", and what others can do with this info

# Perspectives on Privacy

# Defining Privacy as Access Control

- Privacy related to notion of access (physical and knowledge)
- Access
  - Physical proximity to a person
  - Knowledge about a person
- I have the right to establish what I make accessible to others
- Privacy is a “zone of inaccessibility”
- Privacy violations are an affront to human dignity
  
- Too much individual privacy can harm individuals and the society, by eroding trust

# Harms of Privacy

- Cover for illegal or immoral activities
  - Hides dysfunctional families and family violence
  - Ignored people on society's fringes
  - It may be an obstacle to give help to those in distress and may also increase distance among human beings
- 
- Privacy is limited in the sense that it cannot be used to harm others or commit a crime at home

# Benefits of Privacy

- Freedom to be let alone
- Freedom to control what is yours
- Individual responsibility
- Freedom to be yourself
- Intellectual and spiritual growth
- Development of loving, trusting, caring, intimate relationships

Can you share the same information with your loving one and a rival or enemy?

# Privacy and Trust

- If I cannot prevent others from violating my space, I cannot feel trust in life
- In my relationship with others I want an exact control over what I disclose about myself
- I need to control the degree of disclosure of information I give to any other party I deal with in life

# Control Over My Information

- If there is information asymmetry, I am in a unfavourable position
- If I disclose something on myself to a second part, I must be sure that this is a fully conscient win-win business
- If I disclose something on myself to someone else, I want that this will be not used against me later

# Privacy and Trust

- Trust is required to engage in all kinds of relations and life in society
- Perhaps modern life is more private (more alone?) than life centuries ago
  - We do not live anymore on small groups of hunters
  - We do not live anymore in small villages
- Challenge: we now live among strangers
- Remedy: establishing reputations
  - Credential, such as driver's license, key, ID card, college degree
- Establishing reputation is done at the cost of reducing privacy (in a controlled way preferably)

# Is There a Natural Right to Privacy?

- Privacy rights stem from property rights: "a man's home is his castle"
- I have the right to limit what I disclose about myself to the exact measure that others have the just needed information to deal with me
- For example, if I drive a car, I must be willing to show my driving license

Privacy is not a natural right, but it is a prudential right, ensuring it, increases the benefit of individuals and society

# Privacy and The Law

- Article 12 of United Nations Declaration of Human Rights
- Article 8 of the European Convention on Human Rights
- US constitution
- Artigo 35º da Constituição da República Portuguesa
- Lei de proteção de dados - Lei n.º 67/98 de 26 de Outubro
- Regulation EU 2016/67 - General Data Protection Regulation (GDPR)

# Other Views on Privacy

- The above presented view on privacy is the dominant one in the culture of Western Countries
- It steams from a Social Contract Ethics theory where, as long as Society is not hurt, individuals are free to live as they want and free to establish what lawful contracts they so desire (assuming symmetric powers)
- In several oriental cultures or political settings, individual rights may be limited and the right to privacy may be restraint in face of the collective rights (or the State preservation needs)

# Do People Have the Right to Be Left Alone?



PhamousFotos / Splash News/Newscom

# Discussion

- Why do some artists and public figures disclose lots of private information in fashion magazines?
  - because they are stupid
  - because they don't care
  - because they are vain (*vaidosos*)
  - because they earn money on the basis of their reputation and public exposition
- Does normal people can have the same mind seting?

# Case Study: New Parents

- Sullivans have a baby girl
- Both work; they are concerned about performance of full-time nanny
- Purchase program that allows monitoring through laptop's camera placed in family room
- They do not inform nanny she is being monitored

# Rule Utilitarian Evaluation

- If everyone monitored nannies, it would not remain a secret for long
- Consequences
  - Nannies would be on best behavior in front of camera
  - Might reduce child abuse and parents' peace of mind
  
  - Would also increase stress and reduce job satisfaction of child care providers
  - Might result in higher turnover rate and less experienced pool of nannies, who would provide lower-quality care
- Harms appear greater than benefits, so we conclude action was wrong

# Social Contract Theory Evaluation

- It is reasonable for society to give people privacy in their own homes
- Nanny has a reasonable expectation that her interactions with baby inside home are private
- Sullivan's decision to secretly monitor the nanny is wrong because it violates her privacy
- The contract with the nanny is based on mutual trust, if you do not trust the nanny, do not leave her alone with your children

# Kantian Evaluation

- Imagine rule, "An employer may secretly monitor the work of an employee who works with vulnerable people" and universalize it.
- According to the second formulation of the categorical imperative, that rule would consider employees as a means to an end, and not as trustable persons.
- According to the second formulation of the categorical imperative, there would be no expectation of privacy by employees, so secret monitoring would be impossible because most reasonable people wouldn't accept it or cheat whenever possible.
- So it is wrong for Sullivans to act according to the rule

# Information Disclosures

# Public Records

- Public record: information about an incident or action reported to a government agency for purpose of informing the public
- Examples: birth certificates, marriage licenses, motor vehicle records, criminal records, deeds to property
- Computerized databases and Internet have made public records much easier to access

# Records Held by Private Organizations

- Credit card purchases
- Purchases made with loyalty cards
- Voluntary disclosures
- Posts to social network sites
  
- Should all of them be public?
- Do the holders of these records own them?

# What Happens if the Holder of my Data Discloses it by Accident or Incompetence?

- There are many recent examples with millions of people concerned (e.g. Sony and many other examples)
- Sometimes, the offended people is asked to pay the cost of blocking and changing their credit cards
- Should the guilty company be fined?
- Should it pay an indemnity to the offended?

# Digital-Based Data Gathering with Privacy Implications

# Enhanced Mobile Services

- Cell phone providers in United States required to track locations of active cell phones to within 100 meters
- The same situation arises in Europe
- Allows emergency response teams to reach people in distress
- What if this information is sold or shared?

# DNS Access Logging

- ISPs providing DNS service to their clients can log to what sites do they access
- What if this information is sold or shared?
- Does DNS Resolvers Providers (e.g. 8.8.8.8 by Google) do the same?
- Probably they do not even need to sell it

# Rewards or Loyalty Programs

- Shoppers who belong to store's rewards program can save money on many of their purchases
- Stores use information about buying habits to provide personalized service and optimize their sales strategy
- Is it a win-win business?
- Do card users pay less, or do non-users get overcharged?

# RFID Tags

- RFID: Radio frequency identification
- An RFID tag is a tiny wireless transmitter
- Manufacturers are replacing bar codes with RFID tags
  - Contain more information
  - Can be scanned more easily
- If tag cannot be removed or disabled, it becomes a tracking device
- It allows to know what I bought and what I am dressing today

# RFID Tags Speed Inventory Process



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# Implanted Chips

- Taiwan (Portugal?): Every domesticated dog must have an implanted microchip
  - Size of a grain of rice; implanted into ear
  - Chip contains name, address of owner
  - Allows lost dogs to be returned to owners
- Now also used in other animals (e.g. sheep, cows, ...)
- RFID tags approved for use in humans
  - Can be used to store medical information
  - Can be used as a "debit card"

# Intelligent Cars

- Several cars now have communication system incorporated into the car
- Emergency, security, navigation, and diagnostics services provided
- Two-way communication and GPS
- Automatic communication when airbags deploy
- Service center can even disable gas pedal

# Automobile "Black Boxes"

- Modern automobiles come equipped with a "black box"
- Maintains data for last five seconds:
  - Speed of car
  - Amount of pressure being put on brake pedal
  - Seat belt status
- After an accident, investigators can retrieve and gather information from "black box"
- Insurance companies are very keen to access these devices (or the collected information sent to the vendor of the car)

# Medical Records

- Advantages of changing from paper-based to electronic medical records
- Quicker and cheaper for information to be shared among caregivers
  - Lower medical costs
  - Improve quality of medical care
- Once information in a database, more difficult to control how it is disseminated
- The value of this information is huge and the risk of being leaked is paramount

# TV and Streaming Services

- All these services collect detailed information about viewing habits of its subscribers
- Data collected second by second, making it valuable to advertisers and others interested in knowing viewing habits
- Is this information sold to support publicity?
- Look at the business model of each provider

# Zillions of Web and Mobile Applications Tracking Mechanisms

- Cookies
- Social Networks Icons and Code
- Browser Unique IDs
- IP addresses
- Localization information collected from mobile devices GPS
- Correlation between information gathered in different settings by the tentacular corporations

# Artificial Intelligence Deep Analysis

- Face recognition in images collected by cameras or in photos
- Voice recognition
- Home Intelligent Assistant Devices (e.g. Alexa)
- Intelligent door rings that scan the neighborhood (e.g. also sold by Amazon) and may do face recognition
  
- The big brother infrastructure installed - and sold - by the Chinese Government (cameras, firewalls, generalized digital tracking, ...)

Data Analysis and Gathering

and

Relation to Privacy

(aka Data Mining, Machine  
Learning, Big Data)

# Data Mining Defined

- Searching records in one or more databases, looking for patterns or relationships
- Can be used to create profiles of individuals
- Allows companies to build more personal relationships with customers and "*know better their customers than their families*"
- A never ending and expanding set of examples:
  - personalized searches,
  - personalized recommending systems

# Recommendation Filtering

- Analyze information about preferences of large number of people to predict what one person may prefer
  - Explicit method: people rank preferences
  - Implicit method: keep track of purchases
- Used by online retailers, movie sites and many other actors

# Ownership of Transaction Information

- Who controls transaction information?
  - Buyer?
  - Seller?
  - Both?
- Opt-in: Consumer must explicitly give permission before the organization can share info
- Opt-out: Organization can share info until consumer explicitly forbid it
- Opt-in is a barrier for new businesses, so direct marketing organizations prefer opt-out
- GDPR is a game changer (is it in fact?)

# Credit Reports

- Example of how information about customers can itself become a commodity
- Credit bureaus
  - Keep track of an individual's assets, debts, and history of paying bills and repaying loans
  - Sell credit reports to banks, credit card companies, and other potential lenders
- System gives you more choices in where to borrow money
- Poor credit can hurt employment prospects

# Price Customization

- Data aggregation firms sell profiles of shopper to on-line retailers
- Retailers use this information to offer different prices to different people

# Microtargeting

- Political campaigns determine voters most likely to support particular candidates
  - Voter registration
  - Voting frequency
  - Consumer data
  - GIS data
- Target direct mailings, emails, text messages, home visits to most likely supporters
- Does A/B testing of political messages correlated to user political profiles in social networks

# Social Network Deep Analysis

- Collect information from social networks to inform decisions
- Most offer special promotions to “influencers”
- Police use Facebook and Twitter posts to deploy officers on big party nights
- Banks combine social network data with credit reports to determine creditworthiness

# Police Monitor Facebook and Twitter to Identify Locations of Big Parties



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# Examples of Consumer Backlash

# Marketplace: Households

- Lotus Development Corporation developed CD with information on 120 million Americans
- Planned to sell CD to small businesses that wanted to create mailing lists based on various criteria, such as household income
- More than 30,000 consumers complained to Lotus about invasion of privacy
- Lotus dropped plans to sell CD

# Facebook Beacon

- Fandango, eBay, and 42 other online businesses paid Facebook to do “word of mouth” advertising
- Facebook users surprised to learn information about their purchases was shared with friends
- Beacon was based on an opt-out policy
- Beacon strongly criticized by various groups
- Facebook switched to an opt-in policy regarding Beacon

# Netflix Prize

- Netflix offered \$1 million prize to any group that could come up with a significantly better algorithm for predicting user ratings
- Released more than 100 million movie ratings from a half million customers
  - Stripped ratings of private information
- Researchers demonstrated that ratings not truly anonymous if a little more information from individuals was available
- U.S. Federal Trade Commission complaint and lawsuit
- Netflix canceled sequel to Netflix Prize

# iPhone Apps Upload Address Books

- In 2012 a programmer discovered Path, an App, was uploading iPhone address books without permission
- Internet community pointed out this practice violated Apple's guidelines
- CEO of Path apologized; app rewritten
- Twitter, Foursquare, and Instagram also implicated for same practice

# Many Not-for-Profit Organizations Fight for Consumers Rights

- EFF - Electronic Frontier Foundation
- EDRI - European Digital Rights
- Privacy International
- World Wide Web Foundation
- ...

# Privacy in the Internet Age - Discussion

# The Accept to Proceed Deluge

- All sites are treated equally
- Nobody accepts to read 20 pages of terms of service and privacy policy
- There is no simple set of symbols to tell users what the site really does (like the consumption signs: A++, A+, A, B, C, D, ...)

# Is There Any Alternative?

- Do users really have an alternative (FaceBook owns the most popular messaging applications and has money to buy the next ones)
- Do I have a paid alternative like there is in many markets?
- The Web is becoming a dirty monopolist game
- These companies play in ways that RGPD like laws may become ineffective for them
- They must show as irreplaceable during this crisis

# The Privacy Paradox

- The privacy paradox is a phenomenon in which online users state that they are concerned about their privacy, but behave as if they were not
- Hard to know why
  - Lack of awareness of the dangers?
  - Lack of technology literacy?
  - Risk assessment is in fact very hard?
  - Impossible to apply utilitarian analysis
  - Many of us want to have our minute of fame
  - Social networks induce phenomenon of addiction and self-reinforcement of our own idea of ourselves (most of us would like a minute of fame)

# Conclusions

- Privacy is a prudential right, not an absolute one
- It is closely related to trust and trust in contracts and society
- It is being attacked with the help of modern technology
- Users are submerged by the privacy paradox because it is very hard to value data privacy
- It is a fully asymmetric power conflict
- It is law protected, but laws lay behind technology evolution, and economic and political powers