

# DATA 605

# Ethical & Legal Issues in

# Data Science

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SPRING 2022

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FEBRUARY 17, 2022

# AGENDA

- Questions?
- Assignment (Paper 1) Posted – due on 3/2/2022 by 11:00 pm ET
- NO “live” class on February 24<sup>th</sup>
  - Reference materials and discussion topic will be posted in Blackboard
  - ONLINE graded individual discussion – first post due by Sunday 2/27 and response to TWO peers due by Wednesday 3/2
- Information Technology and Ethics Discussion
- Ethical Theories (cont’d)
- Class Discussion - Breakout

# Discussion

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## Information Technology Ethics

- What is it?
- Why is it important?
- What are the issues?
- <https://www.youtube.com/watch?v=iiAirfn-IBI&t=4s> (Ethics in the age of Technology)

# Kantianism

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- Good will: the desire to do the right thing
- Immanuel Kant: Only thing in the world that is *good without qualification* is a good will
- Reason should cultivate desire to do right thing (imperatives)
- Hypothetical Imperative – if you want X then do Y
- Categorical Imperative – unconditional rule, a rule that always applies, regardless of the circumstances

# Categorical Imperative (1<sup>st</sup> Formulation)

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- Act only from moral rules that you can at the same time will to be universal moral laws.

# Illustration of 1<sup>st</sup> Formulation

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- Question: Can a person in dire straits make a promise with the intention of breaking it later?
- Proposed rule: “I may make promises with the intention of later breaking them.”
- The person in trouble wants his promise to be believed so he can get what he needs.
- Universalize rule: Everyone may make & break promises
- Everyone breaking promises would make promises unbelievable, contradicting desire to have promise believed
- The rule is flawed. The answer to the question is “No.”

# Another Way to Reason It out

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- Question: Can I make a promise with the intention of breaking it later?
- I want my false promise to be believed.
- In order for my false promise to be believable, I want everyone except myself to be truthful all the time.
- In other words, I want to **privilege** my needs and desires over those of everyone else.
- Contradiction between what I want to do and what I want others to do.
- Therefore, what I am considering doing is wrong.

# A Quick Check

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- When evaluating a proposed action, reverse roles
- What would you think if that person did the same thing to you?
- Negative reaction → evidence that your will to do that action violates the Categorical Imperative



## Categorical Imperative (2<sup>nd</sup> Formulation)

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- Act so that you treat both yourself and other people as ends in themselves and never only as a means to an end.
- This is usually an easier formulation to work with than the first formulation of the Categorical Imperative.

# Wrong to Use Another Person Solely as a Means to an End

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# Evaluating a Scenario Using Kantianism

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Carla is a single mother who is working hard to complete her college education while taking care of her daughter. Carla has a full-time job and is taking two evening courses per semester. If she can pass both courses this semester, she will graduate. She knows her child will benefit if she can spend more time at home.

One of her required classes is modern European history. In addition to the midterm and final examinations, the professor assigns four lengthy reports, which is far more than the usual amount of work required for a single class. Students must submit all four reports in order to pass the class.

Carla earns an “A” on each of her first three reports. At the end of the term, she is required to put in a lot of overtime where she works. She simply does not have time to research and write the final report. Carla uses the Web to identify a company that sells term papers. She purchases a report from the company and submits it as her own work.

**Was Carla’s action morally justifiable?**

# Plagiarism Scenario

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## Carla

- Single mother
- Works full time
- Takes two evening courses/semester

## History class

- Requires more work than normal
- Carla earning an “A” on all work so far
- Carla doesn’t have time to write final report

Carla purchases report; submits it as her own work

# Kantian Evaluation (1<sup>st</sup> Formulation)

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- Carla wants credit for plagiarized report
- Rule: “You may claim credit for work performed by someone else”
- If rule universalized, reports would no longer be credible indicator of student’s knowledge, and professors would not give credit for reports
- Proposal moral rule is self-defeating
- It is wrong for Carla to turn in a purchased report as her own work

# Kantian Evaluation (2<sup>nd</sup> Formulation)

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- Carla submitted another person's work as her own
- She attempted to deceive professor
- She treated professor as a means to an end
  - End: passing the course
  - Means: manipulate professor
- What Carla did was wrong

# Case for Kantianism

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- Treats all persons as moral equals
- Gives all people moral worth as rational, autonomous beings
- Holds everyone to the same standard
- Produces universal moral guidelines

# Case Against Kantianism

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- Sometimes no rule adequately characterizes an action
- Sometimes there is no way to resolve a conflict between rules
  - In a conflict between a perfect duty and an imperfect duty, perfect duty prevails
  - In a conflict between two perfect duties, no solution
- Kantianism allows no exceptions to perfect duties
- Conclusion: Despite weaknesses, a workable ethical theory



# Principle of Utility (Greatest Happiness Principle)

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- Jeremy Bentham and John Stuart Mill (English Philosophers)
- An action is good if its benefits exceeds its harms
- An action is bad if its harms exceed its benefits
- Utility: tendency of an object to produce happiness or prevent unhappiness for an individual or a community
- Happiness = advantage = benefit = good = pleasure
- Unhappiness = disadvantage = cost = evil = pain
- **An action is right (or wrong) to the extent that it increases (or decreases) the total happiness of the affected parties.**

# Act Utilitarianism

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- Utilitarianism
  - Morality of an action has nothing to do with intent
  - Focuses on the consequences
  - A consequentialist theory
- Act utilitarianism
  - Add up change in happiness of all affected beings
  - $\text{Sum} > 0$ , action is good
  - $\text{Sum} < 0$ , action is bad
  - Right action to take: one that maximizes the sum

# Evaluating a Scenario Using Act Utilitarianism

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A state is considering replacing a curvy stretch of highway that passes along the outskirts of a large city. Would building the highway be a good action?

State may replace a curvy stretch of highway

New highway segment 1 mile shorter

150 houses would have to be removed

Some wildlife habitat would be destroyed

# Evaluation (made up numbers)

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- **Costs**

- \$20 million to compensate homeowners
- \$10 million to construct new highway
- Lost wildlife habitat worth \$1 million

- **Benefits**

- \$39 million savings in automobile driving costs

- **Conclusion**

- Benefits exceed costs
- Building highway, a good action

# Case for Act Utilitarianism

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- Focuses on happiness
- Down-to-earth (practical)
- Comprehensive

# Case Against Act Utilitarianism

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- Unclear whom to include in calculations and how far out into the future to consider
- Too much work
- Ignores our innate sense of duty
- We cannot predict consequences with certainty
- Susceptible to the problem of moral luck
- Conclusion: Overall, a workable ethical theory

# Rule Utilitarianism

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- We ought to adopt moral rules which, if followed by everyone, will lead to the greatest increase in total happiness
- Act utilitarianism applies Principle of Utility to individual actions
- Rule utilitarianism applies Principle of Utility to moral rules

# Evaluating a Scenario Using Rule Utilitarianism

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A worm is a self-contained program that spreads through a computer network by taking advantage of security holes in the computers connected to the network. In August 2003, the Blaster worm infected many computers running the Windows 2000, Windows NT, and Windows XP operating systems. The Blaster worm caused computers it infected to reboot every few minutes.

Soon, another worm was exploiting the same security hole in Windows to spread through the Internet. However, the purpose of the new worm, named Nachi, was benevolent. Since Nachi took advantage of the same security hole as Blaster, it could not infect computers that were immune to the Blaster worm. Once Nachi gained access to a computer with the security hole, it located and destroyed copies of the Blaster worm. It also automatically downloaded from Microsoft a patch to the operating system software that would fix the security problem. Finally, it used the computer as a launching pad to seek out other Windows PCs with the security hole.

**Was the action of the person who released the Nachi worm morally right or wrong?**



# Anti-Worm Scenario

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August 2003: Blaster worm infected thousands of Windows computers

Soon after, Nachi worm appeared

- Took control of vulnerable computer
- Located and destroyed copies of Blaster
- Downloaded software patch to fix security problem
- Used computer as launching pad to try to “infect” other vulnerable PCs

# Evaluation Using Rule Utilitarianism

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- Proposed rule: If I can write a helpful worm that removes a harmful worm from infected computers and shields them from future attacks, I should do so
- Who would benefit
  - People who do not keep their systems updated
- Who would be harmed
  - People who use networks
  - People whose computers are invaded by buggy anti-worms
  - System administrators
- Conclusion: Harm outweighs benefits. Releasing anti-worm is wrong.

# Case for Rule Utilitarianism

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Not every moral decision requires performing utilitarian calculus

Moral rules survive exceptional situations

Avoids the problem of moral luck

Reduces the problem of bias

Appeals to a wide cross-section of society

# Case Against Utilitarianism in General

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- All consequences must be measured on a single scale.
  - All units must be the same in order to do the sum
  - In certain circumstances utilitarians must quantify the value of a human life
- Utilitarianism ignores the problem of an unjust distribution of good consequences.
  - Utilitarianism does **not** mean “the greatest good of the greatest number” That requires a principle of justice
  - What happens when a conflict arises between the Principle of Utility and a principle of justice?
- Conclusion: Despite weaknesses, both act utilitarianism and rule utilitarianism are workable ethical theories

# Basis of Social Contract Theory

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- Thomas Hobbes
- In a “state of nature” our lives would be “solitary, poor, nasty, brutish, and short”
- We **implicitly** accept a social contract
  - Establishment of moral rules to govern relations among citizens
  - Government capable of enforcing these rules
- Jean-Jacques Rousseau
  - In ideal society, no one above rules
  - That prevents society from enacting bad rules

# James Rachels's Definition of Social Contract Theory

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“Morality consists in the set of rules, governing how people are to treat one another, that rational people will agree to accept, for their mutual benefit, on the condition that others follow those rules as well.”

# Kinds of Rights

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Negative right: A right that another can guarantee by leaving you alone

Positive right: A right obligating others to do something on your behalf

Absolute right: A right guaranteed without exception

Limited right: A right that may be restricted based on the circumstances

# Correlation between Types of Rights

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Positive rights tend to be more limited

Negative rights tends to be more absolute



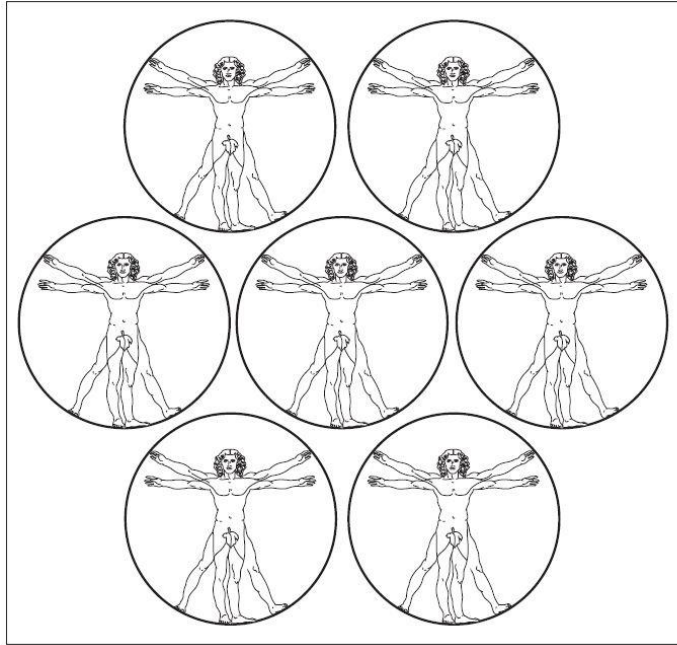
# John Rawls's Principles of Justice

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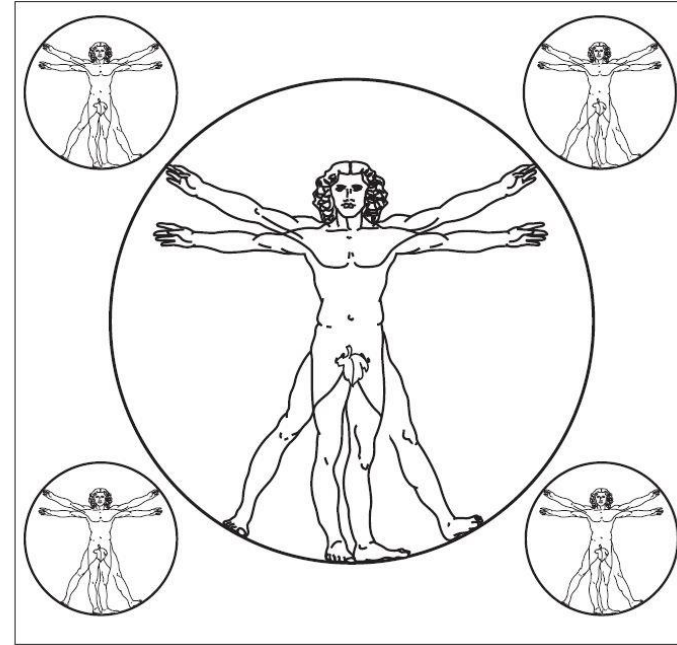
- Each person may claim a “fully adequate” number of basic rights and liberties, so long as these claims are consistent with everyone else having a claim to the same rights and liberties
- Any social and economic inequalities must
  - Be associated with positions that everyone has a fair and equal opportunity to achieve
  - Be to the greatest benefit of the least-advantaged members of society (the difference principle)

# Rawls's First Principle of Justice

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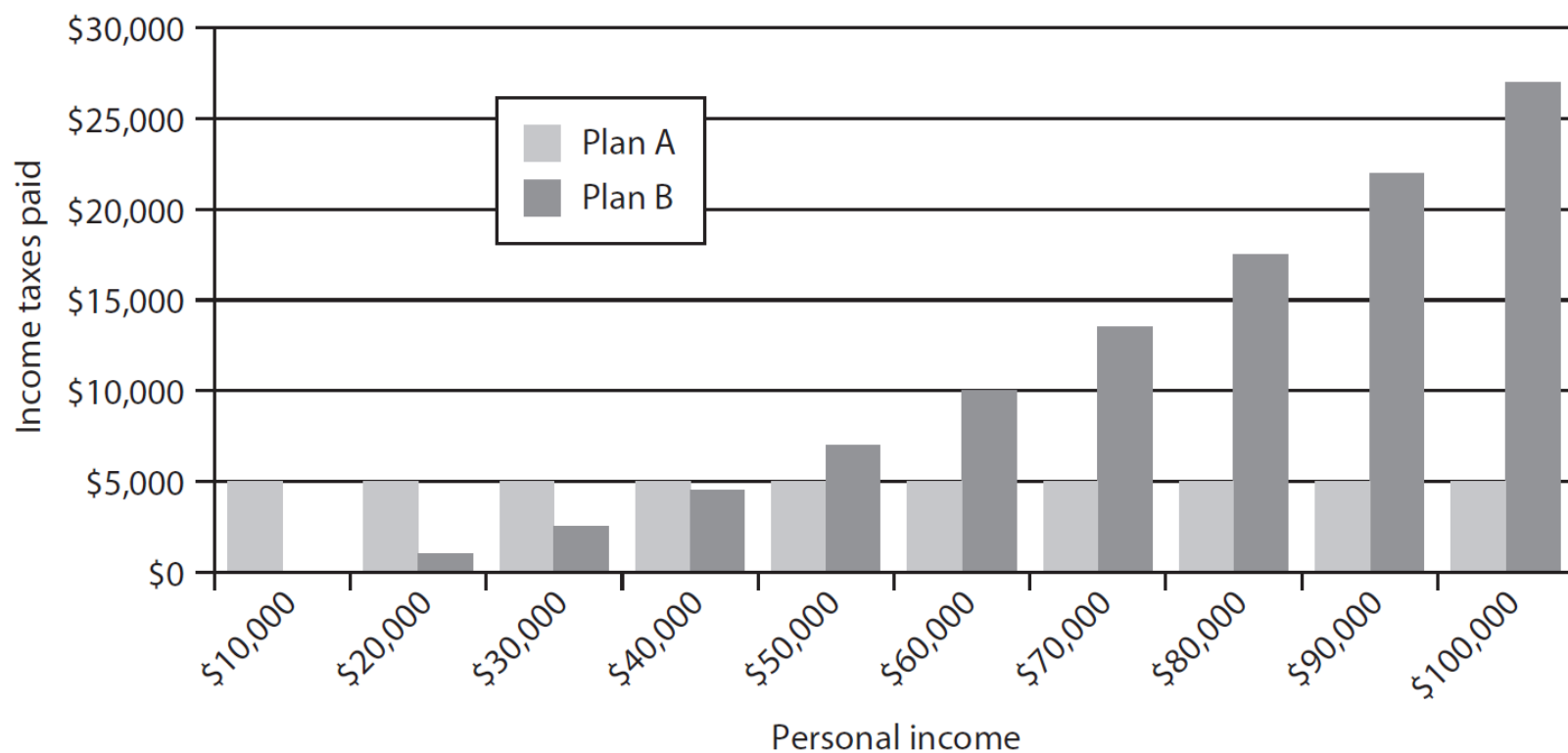
Just



Unjust

Rawls's first principle of justice states that each person may have a "fully adequate" number of rights and liberties as long as they are consistent with everyone else having the same rights and liberties.

# Rawls's Difference Principle



Suppose both of these income tax structures will produce the same income to the government. Under Plan A, every citizen pays \$5,000; under Plan B, the amount each citizen pays depends upon his or her income. Plan B (progressive income tax) does not treat every citizen equally, but the inequality is justified under Rawls's difference principle because it is of the greatest benefit to the most disadvantaged.

# Evaluating a Scenario Using Social Contract Theory

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Bill, the owner of a chain of DVD rental stores in a major metropolitan area, uses a computer to keep track of the DVDs rented by each customer. Using this information, he can construct profiles of the customers. For example, a customer who rents many Disney titles is likely to have children. Bill sells these profiles to mail order companies. The customers begin receiving many unsolicited mail-order catalogs. Some of the customers are happy to receive these catalogs and make use of them to order products. Others are unhappy at the increase in the amount of “junk mail” they are receiving.

# Convenience Stores Scenario

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- Bill owns chain of convenience stores
- Collects information about purchases from customers
- Constructs profiles of customers
  - Who owns a pet, who cares for an infant, etc.
- Sells profiles to direct marketing firms
- Some customers happy to receive more mail order catalogs; others unhappy at increase in “junk mail”

## Evaluation (Social Contract Theory)

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- Consider rights of Bill, customers, and mail order companies.
- Does customer have right to expect name, address to be kept confidential?
- If customer purchases something from Bill, who owns information about transaction?
- If Bill and customer have equal rights to information, Bill did nothing wrong to sell information.
- If customers have right to expect name and address or transaction to be confidential without giving permission, then Bill was wrong to sell information without asking for permission.

# Case for Social Contract Theory

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- Framed in language of rights
- Explains why people act in self-interest in absence of common agreement
  - Tragedy of the commons
- Provides clear analysis of certain citizen/government problems
  - Why okay for government to deprive criminals of certain rights
  - Why civil obedience can be morally right action

# Case Against Social Contract Theory

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No one signed social contract

Some actions have multiple characterizations

Conflicting rights problem

May unjustly treat people incapable of upholding contract

Conclusion: Despite weaknesses, a workable theory



# Virtue Ethics

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- A right action is an action that a virtuous person, acting in character, would do in the same circumstances.
- A virtuous person is a person who possesses and lives out the virtues.
- The virtues are those character traits human beings need in order to flourish and be truly happy.

# Case for Virtue Ethics

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- It often makes more sense to focus on virtues than obligations, rights, or consequences
- Personal relationships can be morally relevant to decision making
- Theory recognizes our moral decision-making skills develop over time
- With this theory there are no irresolvable moral dilemmas
- Emotions play an important role in living a moral life

# Case Against Virtue Ethics

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- Reasonable people may disagree on character traits needed for human flourishing
- Cannot use virtue ethics to guide government policy
- Virtue ethics undermines attempts to hold people responsible for their bad actions
- Conclusion: Despite weaknesses, virtue ethics a workable theory

# Comparing Workable Ethical Theories

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# Workable Ethical Theories

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We seek theories with these characteristics:

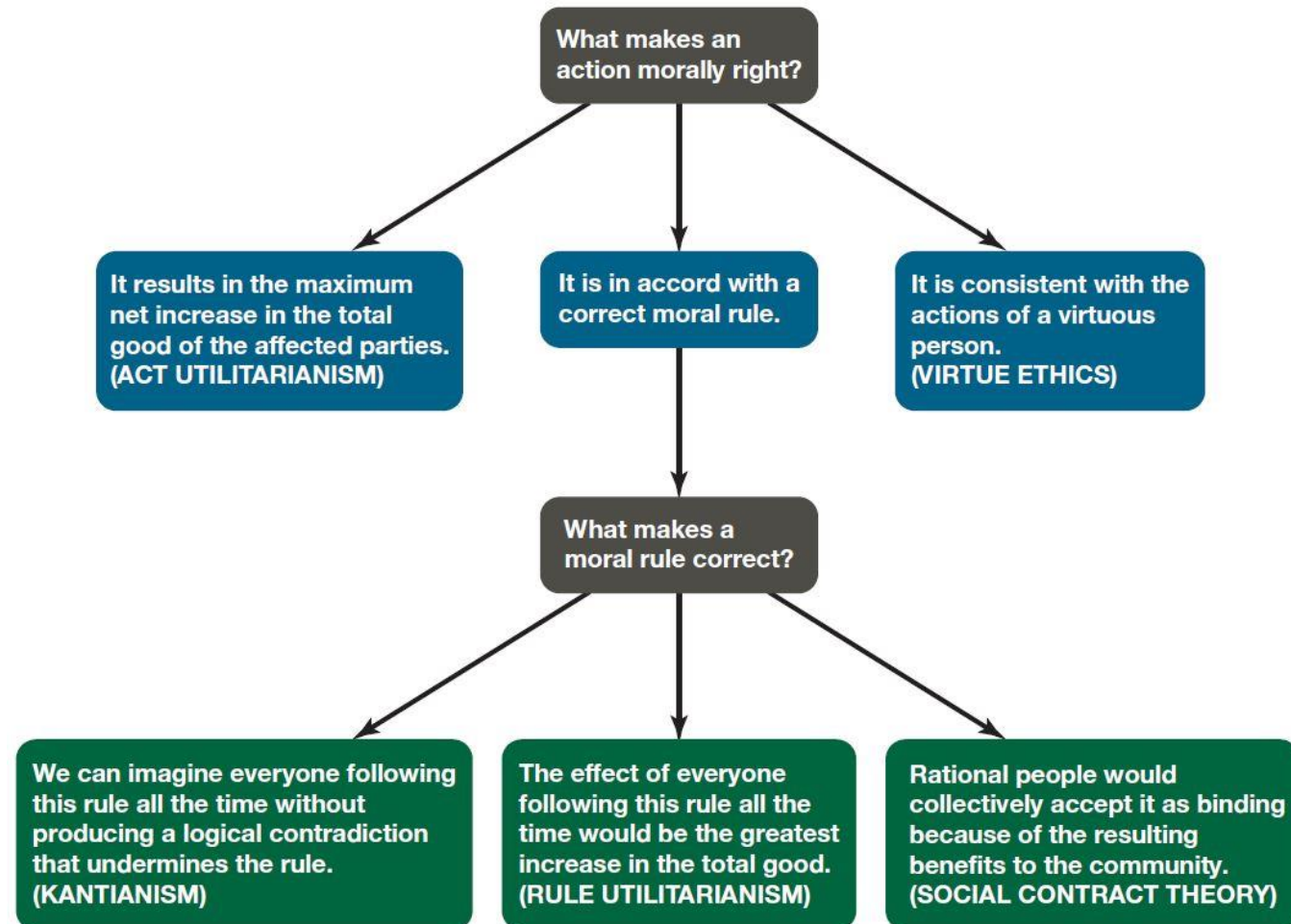
- Based on the ethical point of view
- Objective moral principles developed using logical reasoning based on facts and commonly held values

## Workable ethical theories

- Kantianism
- Act and rule utilitarianism
- Social contract theory
- Virtue ethics

# Comparing Workable Ethical Theories

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# Social Contract Theory Perspective

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Everyone in society bears certain burdens in order to receive certain benefits

Legal system supposed to guarantee people's rights are protected

Everything else being equal, we should be law-abiding

Should only break law if compelled to follow a higher-order moral obligation

# Law and Social Contract Theory

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According to social contract theory, we have a prima facie obligation to obey the law.



# Kantian Perspective

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Everyone wants to be treated justly

Imagine rule: “I may break a law I believe to be unjust”

If everyone acted according to this rule, then laws would be subverted

Contradiction: Cannot both wish to be treated justly and allow laws to be subverted

# Rule Utilitarian Perspective

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What would be consequences of people ignoring laws they felt to be unjust?

**Beneficial** consequence: Happiness of people who are doing what they please

**Harmful** consequences: Harm to people directly affected by lawless actions, general loss of respect for laws, increased burden on criminal justice system

Harms greater than benefits

# Act Utilitarian Perspective

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Possible to conceive of situations where benefits of breaking law exceed harms

Suppose give penniless, bedridden friend copy of CD

Friend benefits by \$15 (value of CD)

I benefit by \$10 (satisfaction of helping friend)

Harms of \$0 (no lost sale, no police involvement)

With \$25 of benefit and \$0 of harm, action is determined to be good

# Insights Offered by Various Theories

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**Kantianism:** Every person is equally valuable, and when you interact with other people you should always respect them as rational beings. It is wrong to privilege your needs and desires over those of other people.

**Utilitarianism:** You should consider the consequences of an action before deciding whether it's right or wrong.

**Social contract theory:** We should collectively promote human rights, such as the rights to life, liberty, and property.

**Virtue ethics:** You can count on a good person to do the right thing at the right time in the right way.

# It's up to You

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You **can** consider duties **and** rights **and** consequences **and** virtues when making moral decisions

Ultimately, you have to decide:

- What kind of person do I want to be?
- What kind of world do I want to live in?

# Discussion

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Using the cases from Week 1, evaluate the four scenarios from the following perspectives:

- Kantian
- Act Utilitarian
- Rule Utilitarian
- Social Contract Theory
- Virtue Ethics

# Kantian

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Alexis did wrong when she made use of a student's login and password to gain access to the library's computers and printers. Alexis treated that student as a means to her end of getting access to the private college's computers.

The anti-spam organization is treating the innocent computer users in the East Asian country as means to its end of reducing spam. That is wrong.

The analysis depends upon the expectation of privacy people should have. The existence of the cameras is public knowledge. If nobody is being “used,” the action appears to be morally acceptable.

Releasing the software without informing the potential users of the possible bugs would be wrong. However, if the hospital staff were fully notified that the product was in beta test, a decision to release the product could be justified.

# Act Utilitarian

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The benefits to Alexis were large. The harms to others were small. Her action was morally acceptable.

Millions of people are getting much less spam. The benefit to each of these persons is small, but meaningful. Tens of thousands of citizens of the East Asian country cannot send email to the United States. The harm to each of these persons is significant. Concluding whether the action is right or wrong depends upon the weight you give to each person's benefit or harm.

In this case the benefits seem to outweigh the harms. The actions of the East Dakota State Police are morally acceptable.

To do the analysis, we must examine the various courses of action and weigh, for each one, the potential benefits and harms to the patients, nurses, hospital, and members of the start-up company.



# Rule Utilitarian

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A rule utilitarian is likely to subscribe to the rule "Gaining access to another person's private information is wrong," since a great deal of harm can result if people were unable to protect confidential information such as credit card numbers. For this reason, Alexis did wrong when she used someone else's login and password to access the library's computers and printers.

The challenge with this scenario is to determine whether any moral rules have been broken. In general, utilitarianism is comfortable with the notion that maximizing the overall good may mean that the majority gains a benefit while the minority suffers a harm.

The East Dakota State Police is using technology to increase the safety of the community. Its actions appear to be morally acceptable.

As long as the company fully discloses the status of the product, it appears to be on safe ground.

# Social Contract Theory

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Alexis violated the property rights of the private college when she used its computers without permission. Her action was wrong.

The residents of the East Asian country had a reasonable expectation that their email would be delivered. By blacklisting the country's ISPs, the anti-spam organization encouraged American ISPs to refuse to forward email. This seems wrong.

How much privacy should a person have while operating a motor vehicle on a freeway? If a person has given up all privacy, then there seems to be nothing wrong with this action. If a person has a reasonable expectation of privacy, then the East Dakota State Police may have done something wrong if it secretly gave the FBI access to the information.

The purchaser of a product has a right to expect the manufacturer stands behind the quality of the product. In this case it would be wrong for the company to sell the product as if it were completely debugged and 100 percent reliable. On the other hand, the hospital might be willing to beta test the device if it could get a discounted price or if that would help the company certify its reliability. The company could begin shipping the device to hospitals that understood the current state of the software.

# Virtue Ethics

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Virtues associated with students are honesty, justice, and industriousness. Alexis demonstrated industriousness by working a part-time job, finding a way to get access to PCs and printers, and completing the extra research projects. Alexis did not demonstrate honesty when she sneakily found a valid login/password combination, and she did not act in a just way when she used the resources of the private college without paying for them. Taken as a whole, Alexis's actions do not appear to be characteristic of a virtuous student.

Virtue ethics is not an appropriate theory to use when evaluating the action of a government or business, so we skip Scenarios 2 and 3.

Two virtues associated with a good employee are honesty, industriousness, and loyalty. Out of loyalty to the company, you want to find a way for your company to stay in business in the short run and prosper in the long run. However, honesty compels you to inform the customer regarding the true state of the software. Rather than cover up the problem, you should find a way to work with the customer to ensure the customer sticks with your company's product. As an industrious employee, you should volunteer to put in some extra time if that will help reduce the delay in getting the product to market.