



Technology & Ethics

Marist CLS

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Paul Stoddard

The Trolley Problem:

A thought experiment in ethics

(proposed by philosopher Philippa Foot in 1967)

- ▶ Watch [video](#) (1:37)
TED Ed [version](#) (5 minutes)
- ▶ What decision would you make?
- ▶ Let's consider some variations on the problem.

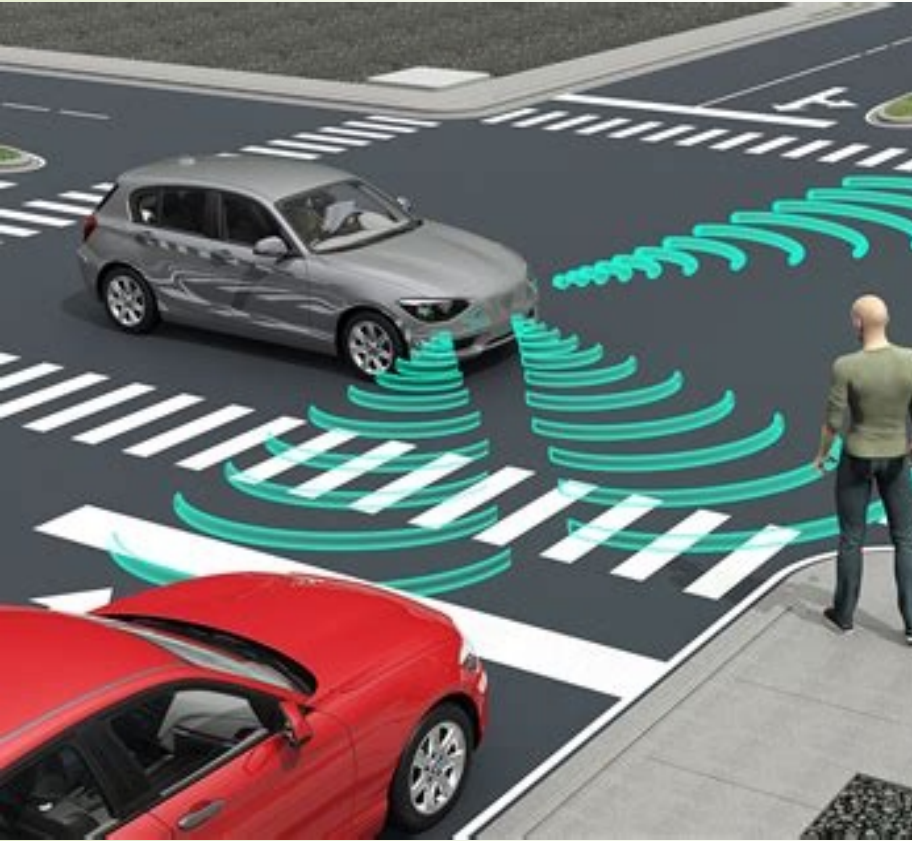


The Trolley Problem - continued

- The Trolley problem is hypothetical and unrealistic. (Have you ever seen a run-away trolley?)

...until now.

The Trolley Problem - continued



- Consider autonomous vehicles (self-driving cars). Suppose you were an engineer at a company that makes AVs, and you must write a program that decides what to do in an emergency.

What should the car do if it has to choose between hitting another car or a pedestrian?

- Can you think of more dilemmas?

Autonomous Vehicles – ethical questions



- If there is an accident, who's responsible? The owner of the car? The company that built it? The software engineer? Regulators? (Consider the Boeing 737 Max)
- Would you trust autonomous vehicles to be safer than human drivers?
 - Some experts believe AVs are safer than people, who are easily distracted, and that there would be far fewer accidents if all vehicles were autonomous.

Autonomous Vehicles - continued




- The NHTSA is investigating Tesla's Autopilot because of several crashes. This [Report](#) says drivers are misusing it.
- Role reversal - this Verge [article](#) is about an autonomous delivery vehicle that was hit by a car driven by a human.
- Additional info: The National Highway Traffic Safety Administration defines [5 levels](#) of driving automation.



What is/are “ethics”?

Some possible answers

- Moral Philosophy
 - Guidelines for determining how we “ought” to act
 - Guidelines for how to live a “good life”
 - Rules established by religions
 - Laws established by governments
- 



Ethics vs



morals

Ethics or **moral philosophy** is a branch^[1] of philosophy that "involves systematizing, defending, and recommending concepts of right and wrong behavior".^[2] (Wikipedia)

Morality (from Latin: *moralitas*, lit. 'manner, character, proper behavior') is the differentiation of intentions, decisions and actions between those that are distinguished as proper (right) and those that are improper (wrong).^[1] (Wikipedia)

" **Ethics** is the science of **morals**, and **morals** are the practice of **ethics**."
- H. G. Fowler



A definition from the Dalai Lama

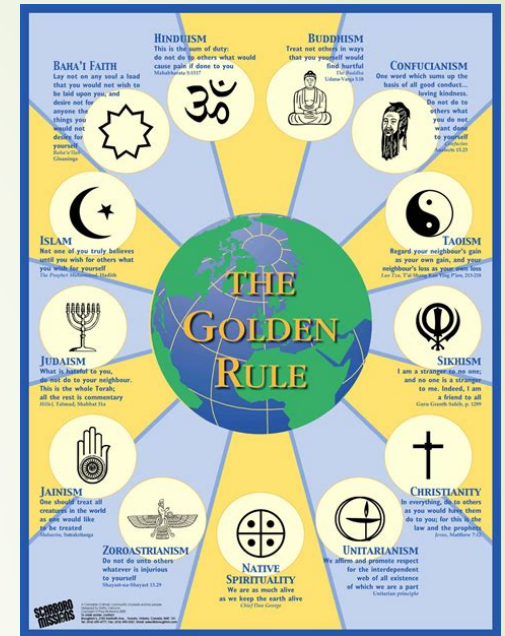
“It is in everybody’s interest to do what leads to happiness and avoid that which leads to suffering. But because ... our interests are inextricably linked, we are compelled to accept ethics as the indispensable interface between my desire to be happy and yours.”

Ethics for the New Millennium

page 47

Some Common Ethical Concepts

- The Golden Rule
- The New York Times test
- There's No Such Thing as a Free Lunch
- Small ethical lapses result in a “slippery slope” (so don't start)
- Collective Utilitarian Principles – individual acts may be insignificant but a group acting ethically is beneficial for all (example: if we all drive less, air pollution is reduced)
- Social Contracts - People surrender some of their freedoms and submit to authority in exchange for protection of their remaining rights or maintenance of the social order.



The Golden Rule has many versions

- ▶ Do unto others as you want them to do unto you. – Jesus (Matt. 7:12)
- ▶ Silver rule: Do not do to others what you would not have them do to you.
- ▶ What is hateful to yourself, do not do to your fellow man. This is the whole Torah; the rest is just commentary. – Hillel
- ▶ ...never impose on others what you would not choose for yourself.
– Confucius
- ▶ Do not do to others that which angers you when they do it to you.
– Isocrates (436–338 BC)
- ▶ That nature alone is good which refrains from doing to another whatsoever is not good for itself. – Pahlavi Texts of Zoroastrianism
- ▶ Whatever you do, you do to yourself. – Buddha
- ▶ To do harm is to do yourself harm. To do an injustice is to do yourself an injustice – it degrades you. – Marcus Aurelius
- ▶ What we intend for others we create for ourselves. – Dr. Roger Walsh

Ethical Frameworks

Brown University [webpage](#)



- Consequentialist theories
 - ❖ Utilitarian – greatest good for the greatest number
 - ❖ Egoistic – greatest good for the self
 - ❖ Common good – “what is best for the people as a whole”
- Non-consequentialist theories
 - ❖ Duty based – the intention to act ethically
 - ❖ Rights – protect the rights of those affected by an action
 - ❖ Fairness – treat everyone fairly
 - ❖ Divine command
- Agent-centered theories
 - ❖ Virtue – act virtuously in all areas of life (not just a single action)
 - ❖ Feminist – adds the principle of care

Consequentialist/utilitarian ethics

A pair of scales of justice is shown against a dark background. The left pan is higher and contains a single red heart. The right pan is lower and contains several gold coins. The scales are balanced, suggesting a comparison between the heart and the coins.

► Examples

- Building a hydroelectric dam benefits many
- Requiring vaccinations protects the entire population

► Strengths

- Flexible – can be used in most circumstances
- Pragmatic

► Weaknesses

- It's hard to predict future consequences
- It's hard to define what is good – example: How to define happiness?
- It's hard to measure the amount of goodness or harm (social scientists attempt to measure the Value of a Statistical Life – see [Wired](#) or [Wikipedia](#) articles)
- Gathering the data may take too long (technology could help if the pros and cons are measurable)
- Ignores motives, character, fairness

Duty based ethics



► Examples

- Be honest – don't lie or cheat.
- We should all pay our taxes.
- Employees have a duty to do their jobs well.
- Soldiers have a duty to obey their commanding officers.

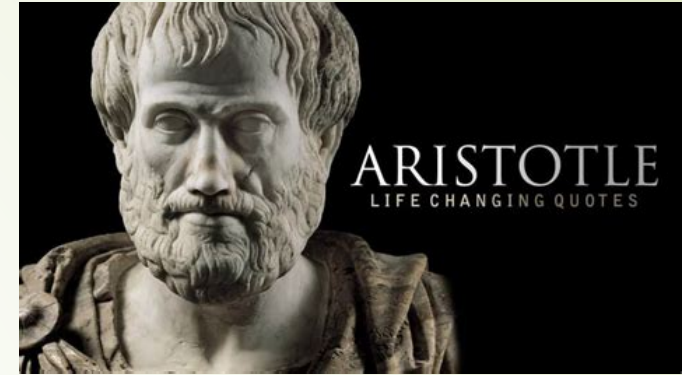
► Strengths

- Emphasizes the value of all humans, supports human rights
- Having rules about what is right provides clarity
- Considers intentions, motives

► Weaknesses

- Rules don't always work, then you need lots of exceptions to the rules (and lawyers)
- What about conflicting duties (soldiers at My Lai)?

Virtue ethics



► Examples

- Followers of Gandhi, Martin Luther King, Jr. used non-violent resistance to fight injustice.
- Mandela – reconciling blacks and whites in S. Africa.
- “What would Jesus do?”
- Corporate whistle blowers “doing the right thing”

► Strengths

- Flexible to different situations
- Considers all parts of human experience

► Weaknesses

- No general agreement on what the virtues are, or who are the right role models
- Unclear about what to do in an ethical dilemma

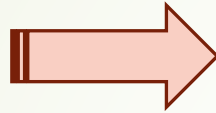
Aristotle and virtues

Aristotle's Concept of the Golden Mean		
Deficiency (-)	BALANCE	Excess (+)
cowardice	COURAGE	rashness
stinginess/miserliness	GENEROSITY	extravagance
sloth	AMBITION	greed
humility	MODESTY	pride
secrecy	HONESTY	loquacity
moroseness	GOOD HUMOR	absurdity
quarrelsomeness	FRIENDSHIP	flattery
self-indulgence	TEMPERANCE	insensibility
apathy	COMPOSURE	irritability
indecisiveness	SELF CONTROL	impulsiveness



AI & ML

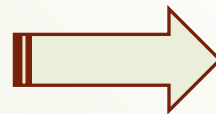
Brain analogy – what's missing?



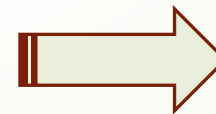
Senses collect a constant stream of information



Brain creates and modifies mental models, predictions, and determines reactions.



System receives a lot of big data



System "learns" from lots of data and creates and modifies statistical models and predictions.





How do we make ethical decisions?

A [Framework](#) for ethical decision making (from the Markkula Center for Applied Ethics at Santa Clara U.)

Some additional things to consider:

- Often decisions must be made quickly.
- Do some stakeholders have hidden agendas? (Be savvy.)
- New technology – Could there be unintended consequences we didn't think of? Should we plan for them?



Discussion questions

- ▶ Is torture acceptable?
Utilitarian view says yes, Duty ethics says no.
- ▶ What is the difference between a great leader and a sociopath? Examples: Steve Jobs, Stalin
- ▶ How do we know when someone is using people as a means to an end for their own selfish purposes?
(Also applies to using animals, or the environment, as a means)
- ▶ Are nuclear weapons bad? The first use of the atomic bomb is now seen as a terrible thing. But in 1945 it was believed to have saved hundreds of thousands of lives because it avoided an Allied invasion of Japan. (Joseph Nye, *Do Morals Matter?*)



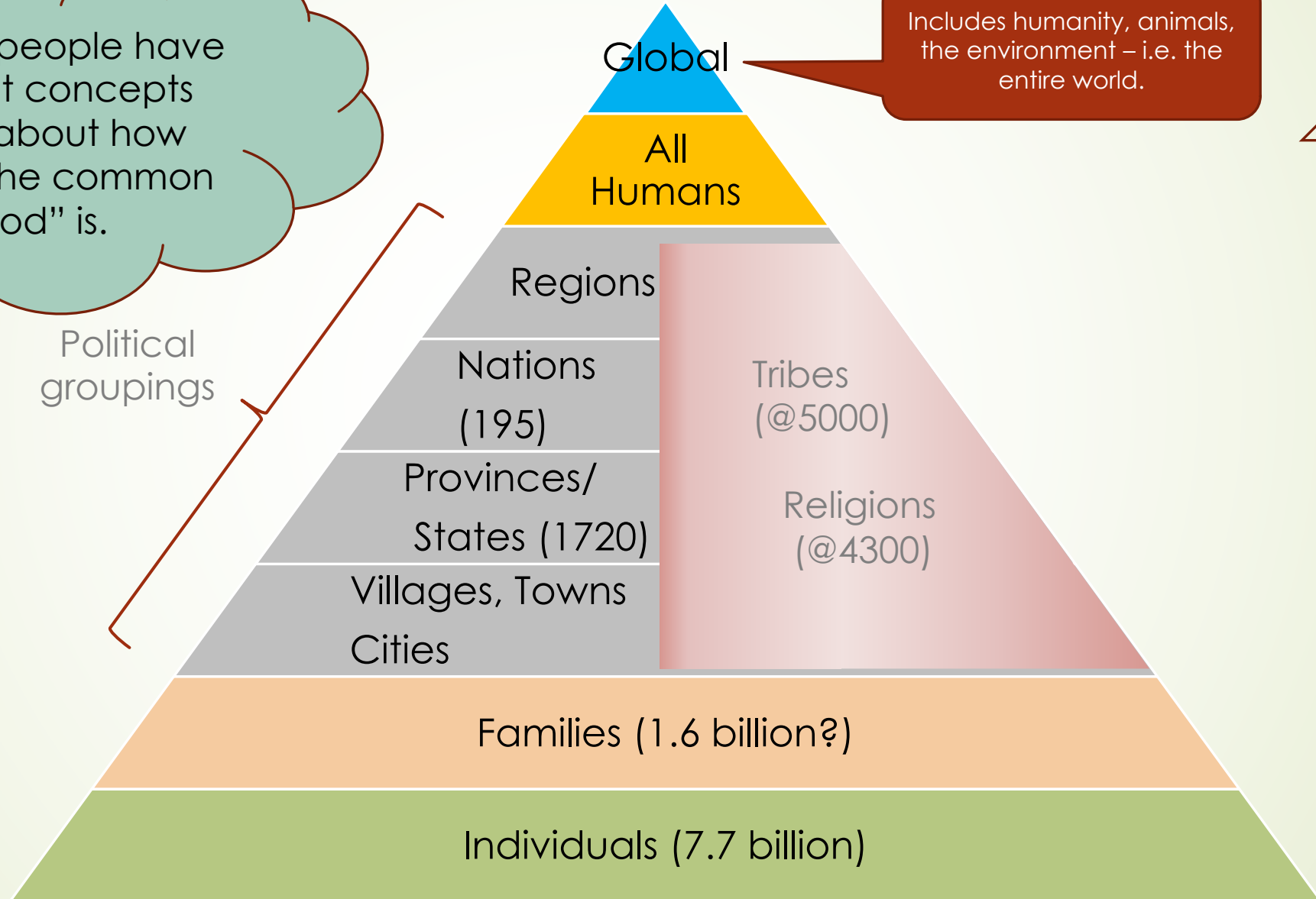
The Tragedy of the Commons

- ❑ “Commons” refers to common resources such as land, air, water, fish, forests.
- ❑ The Tragedy of the Commons describes the ethical problem of managing short-term selfish thinking vs. long-term communal thinking.
- ❑ William Forster Lloyd wrote an essay in 1833 about shared pastures. Garrett Hardin wrote an article in 1968 expanding on the idea.
- ❑ Elinor Ostrom was awarded the 2009 Nobel Prize in Economics for her book *Governing the Commons*, which included examples of how local communities were able to cooperate to protect common resources without top-down regulations or privatization.

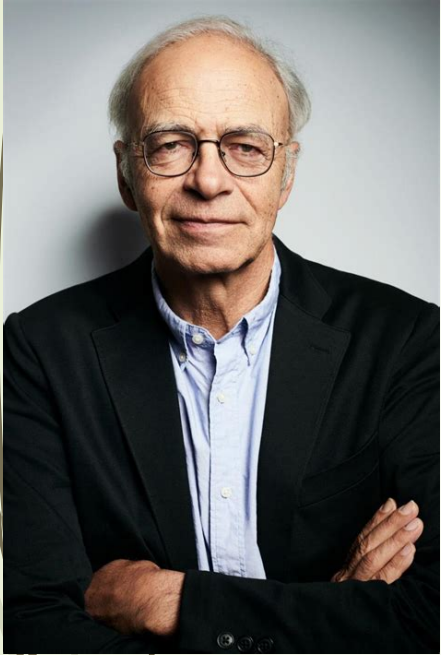
How do we define “the common good”?

Different people have different concepts about about how broad “the common good” is.

Political groupings

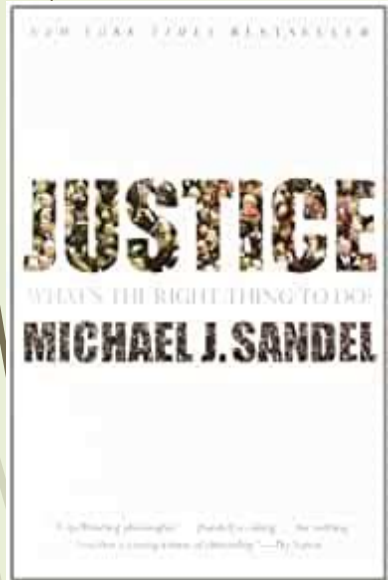


If you're interested: Justifying the Means



- ▶ Hidden Brain podcast – [Justifying the Means](#): What It Means To Treat All Suffering Equally
 - Interview with philosopher Peter Singer, a utilitarian philosopher
 - What if 2 different moral theories conflict (example: lying is ok if it saves people). Singer says, “There are no moral absolutes.”
He also says, “The ends justify the means.”
 - How do doctors decide who lives and who dies when there are limited hospital resources?
 - COVID19 – is the cure worse than the disease?

Resources for further study



- [Interview](#) with Sophia the robot about the Trolley Problem.
- [The Good Place](#) - available on Netflix (pokes fun at ethical theories including the Trolley problem)
- [Justice, What's the Right Thing to Do?](#) By Michael Sandel (Good summaries of various ethical theories)
He also wrote [What Money Can't Buy: The Moral Limits of Markets](#).
- [The Power of Ethics](#) by Susan Liautaud
(lots of examples of how corporations displayed weak or strong ethics, including Being and the 737 Max debacle)
- [Do Morals Matter?](#) By Joseph Nye
(morals and foreign policy)

“The worst mistake which was ever made in this world was the separation of political science from ethics.”

- Percy Bysshe Shelley