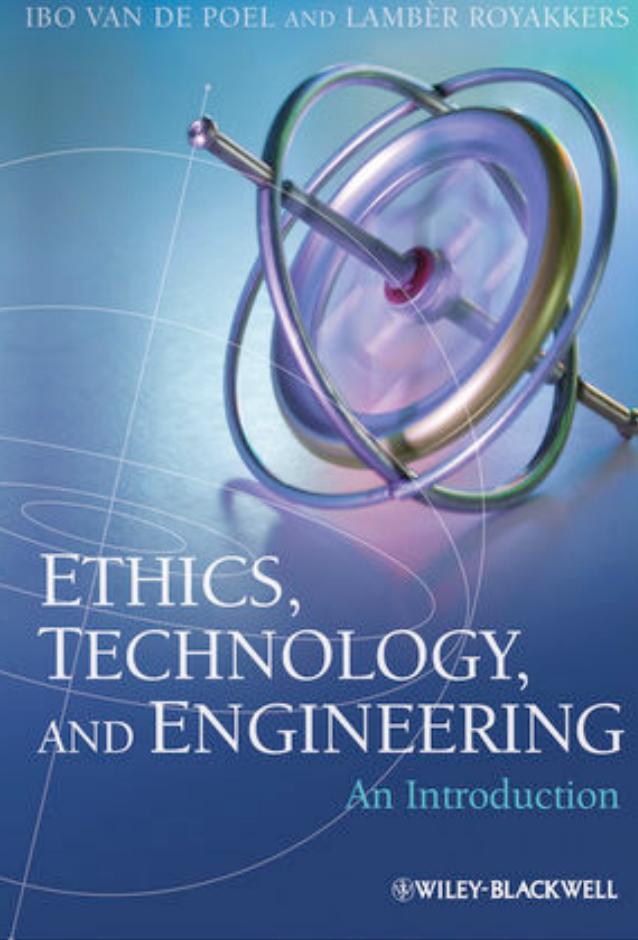


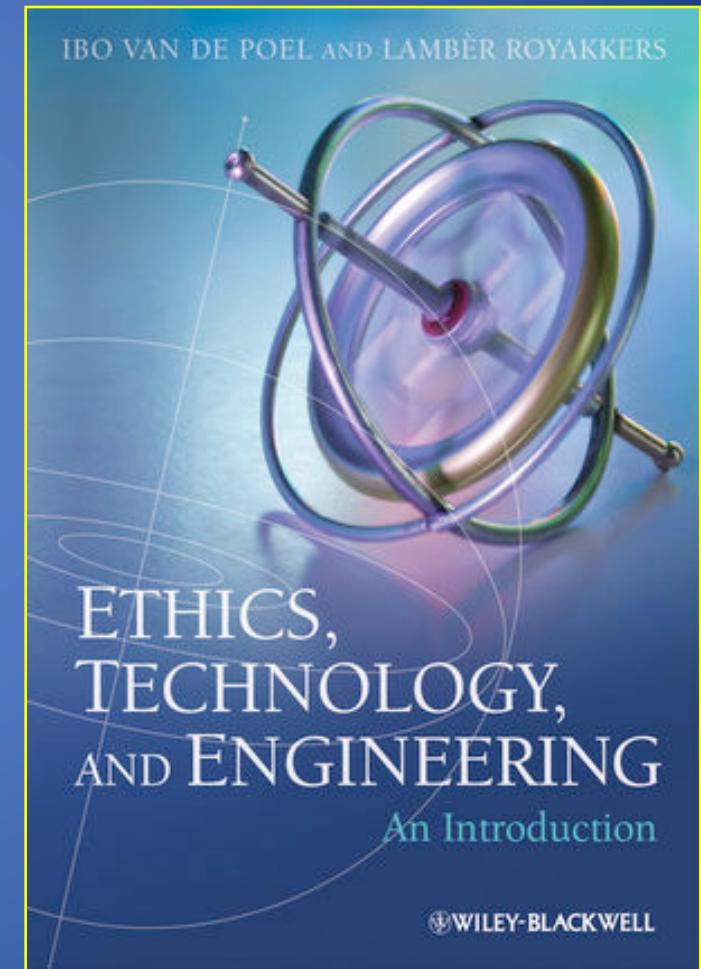
Engineering 101: Ethics in Engineering

- The glory of me...
- TA: Chichi Peng
 - Readings
 - GS site
 - Assignments
 - Midterm
 - Attendance policy
- Crashers?



Engineering 101: Ethics in Engineering

- The glory of me...
- TA: Ross Melczer
 - Readings
 - GS site
 - Assignments
 - Midterm
 - Attendance policy
- Crashers?



Course Requirements:

- Complete Human Subjects training online module (5%)
- Individual Papers (2) (10% each; 20% total)
- Individual Article Presentation & Discussion Leading (20%)
- Midterm (25%)
- Group Project (30% total)
 - Blog / Diary of Project (5%)
 - Group Presentation (10%)
 - Final Report (10%)
 - Group Review (5%)

Attendance and overall in-class participation will be noted and may be used to either **bump up borderline** final grades at the end of the term, or **reduce them**.

- 2 unexcused absences allowed
- Each unexcused absence after those = -2% points
- More than 5 unexcused absence = **dropped from class**

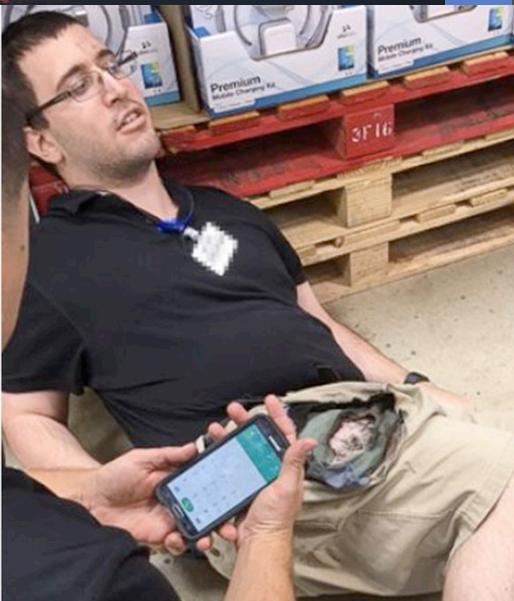
Why ethics in engineering?



Price of new ideas?



Why ethics in engineering?



Why ethics in engineering?

IN THE 70S: THE CIA IS TRYING TO SPY ON US!



TODAY: CIA SPY, WHAT'S THE WEATHER LIKE?

imgflip.com

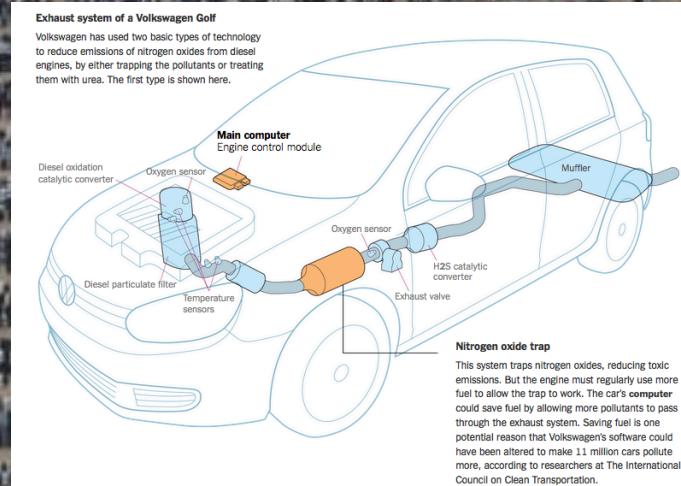
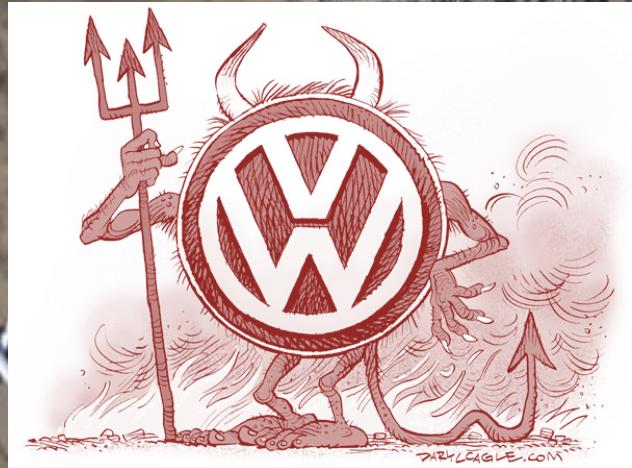






Victorville, CA

Why ethics in engineering?



CEO Weinterkorn resigned

Chief Engineer Schmidt &
Head Software Engineer Liang
imprisoned/ fined

Why ethics in engineering?

Forbes

Billionaires Innovation Leadership Money Consumer Industry Lifestyle Features

104,712 views | Jun 28, 2014, 01:10pm

Facebook Manipulated User News Feeds To Create Emotional Responses



Gregory S. McNeal Contributor ⓘ
Washington



epic.org ELECTRONIC PRIVACY INFORMATION CENTER

Facebook's 2014-15 “Emotional Contagion” study
Of 690,000 users, without their knowledge

Why ethics in engineering?



9 year-old Kim Phúc
in Nick Ut's iconic
1972 "Napalm Girl"
Censored by Facebook
Sept 2016



Woman livestreams the
fatal police shooting
of Philando Castille
Censored by Facebook
July 2016

Why ethics in engineering?

NOT Censored
by Facebook
In 2016



Army of Jesus

Sponsored

Like Page

Today Americans are able to elect a president with godly moral principles. Hillary is a Satan, and her crimes and lies had proved just how evil she is. And even though Donald Trump isn't a saint by any means, he's at least an honest man and he cares deeply for this country. My vote goes for him!

SATAN: IF I WIN CLINTON WINS!
JESUS: NOT IF I CAN HELP IT!

PRESS 'LIKE' TO HELP JESUS WIN!

97 Reactions 15 Comments 29 Shares

Like Comment Share

This block represents a Facebook post from a page called 'Army of Jesus'. The post features a profile picture of Jesus and includes a sponsored status update. The main text discusses the election of Donald Trump over Hillary Clinton. Below this is a graphic of Jesus holding back a dark, muscular figure labeled 'Satan'. The post concludes with a call to action for users to like it to help Jesus. At the bottom, standard Facebook interaction metrics are shown: 97 reactions, 15 comments, and 29 shares, along with standard like, comment, and share buttons.

What are engineering ethics?

What is the First Principle?

- “The study of the ethical aspects of the actions and decisions of engineers”

Genius
→



Expert
↔

- “Engineers shall hold paramount the safety, health and welfare of the public.”

↑
Smarty pants

Think BROADLY

What are an engineer's social responsibilities?

- What are social, political, economic, environmental impacts?
- Will you improve or exacerbate known problems? (E-waste)
- How will you handle trade-offs in the design process? (WTC)





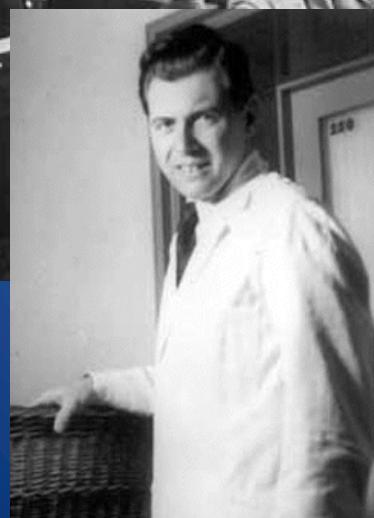
Clip 1: *The Corporation* (2003)

What Are the Attributes of a Profession(al)?

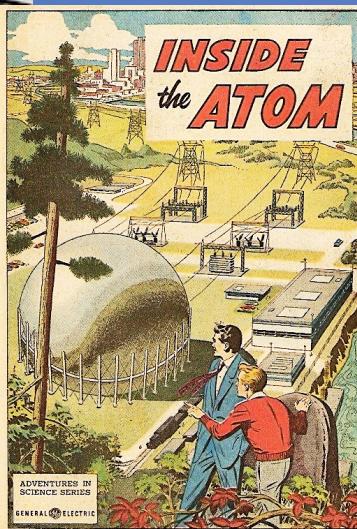


- Sophisticated skills, judgment, discretion
- Extensive formal education
- Professional societies
- Results in significant public good
- Human Subjects module
Assignment due 1/24

Society may hold you responsible (even if this seems “unfair” & you were “just following orders”)



A Very Brief History of Engineering in U.S.

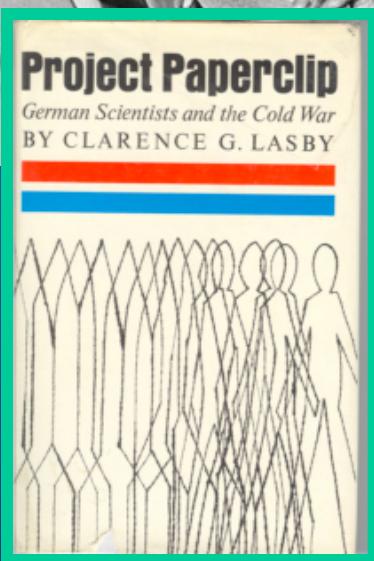


- Important to early U.S. development
 - slave labor
- Professionalization: 1880s-1940s
 - Codes of ethics
 - “industry exemption”

Rising status during Cold War



Do Engineering skills even trump war crimes?

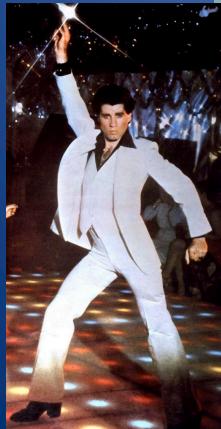


Loss of public faith in engineering

1970s an era of growing concern over harmful effects of science and technology

Disasters of the 1970s:

- DC-10 crashes
- Ford Pinto
- Three Mile Island
- BART
- Disco



Thinking Ethically

For Monday, 8 October

Please Read

Robert Barger's

“Can We Find a Single Ethical Code?”
(1987)

On GS site

For an in-class discussion

Thinking Ethically

GOT AN "A" IN ETHICS
COURSE



BY CHEATING

memegenerator.net

NOT SURE IF I'M MORALLY
RIGHT...

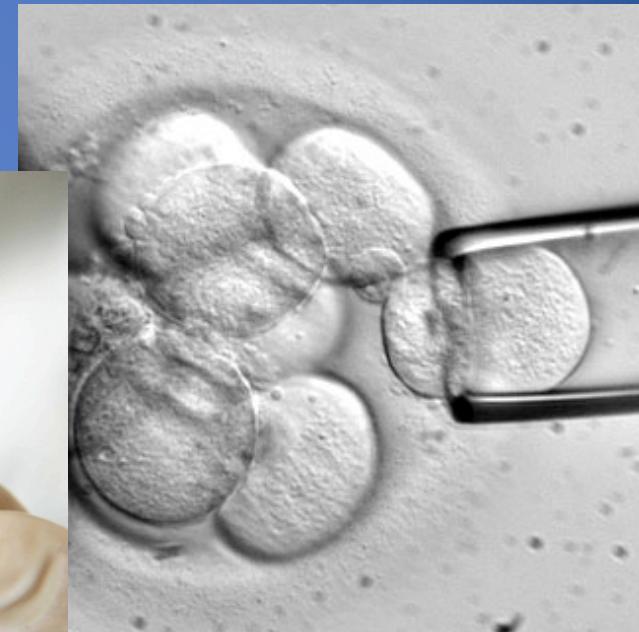
OR IF I'M JUST A
PRAGMATIST

Ethical issues can be profound or mundane...

Thinking Ethically



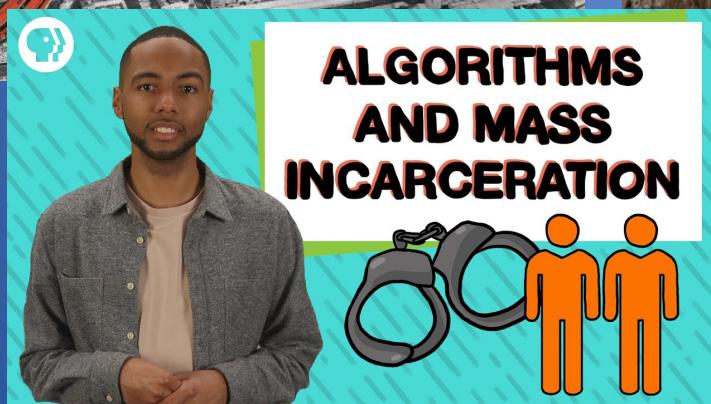
How do we deal with competing interests?



Do Technologies Have Morality?
(and how would you know?)

Thinking Ethically

How do we deal with competing interests?



Do Technologies Have Morality?
(and how would you know?)

Ethical “rules of thumb”



1. Don't do anything you wouldn't do with your **mother** or (**insert significant other here**) standing next to you.
2. Don't do anything that you wouldn't want on **60 Minutes** or (**insert favorite media platform here**) for everyone to see.

Justine Sacco
@JustineSacco

Going to Africa. Hope I don't get AIDS. Just kidding. I'm white!

Reply Retweet Favorite More

2,678 RETWEETS 1,206 FAVORITES



Justine Sacco
@JustineSacco6

JUST STOP. PLEASE. IM SOBBING RIGHT NOW WITH TREMBLING FINGERS. I. AM. FINISHED.

12/21/13, 3:24 AM

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12/21/13, 3:24 AM



Defining Ideas

Ethics: Considering morality in a systematic way, seeking out right and wrong

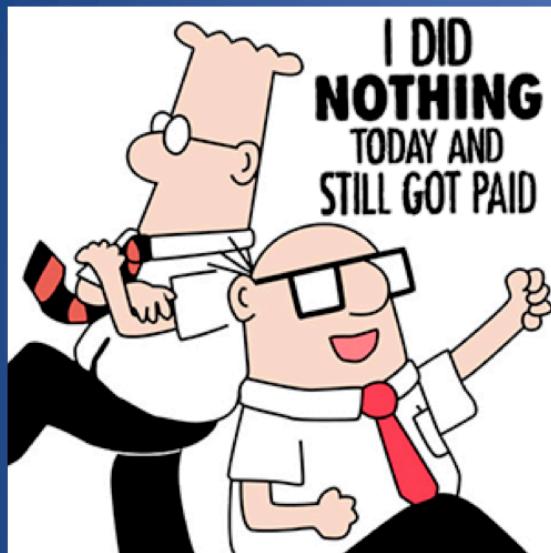
Morality: A collection of beliefs expressing right and wrong, for individuals, groups, societies, etc.

Descriptive Ethics: what society finds morally correct & incorrect (without judgment)

Prescriptive (Normative) Ethics: Making judgments about how things *should* be, prescribing proper types of behavior, action

Defining Ideas

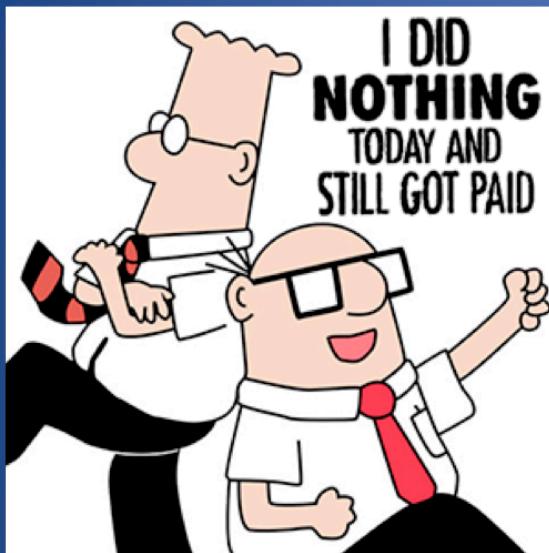
Test of Integrity: You know what's right, but it's difficult to make that choice



“cyberloafing”

Defining Ideas

Test of Integrity: You know what's right, but it's difficult to make that choice



“cyberloafing”



Defining Ideas

Test of Integrity: You know what's right, but it's difficult to make that choice.



Ethical Dilemma: It's harder to easily determine right from wrong and right course of action. You may also face a combination of both test of integrity & ethical dilemma.

Defining Ideas

Test of Integrity: You know what's right, but it's difficult to make that choice.



Ethical Dilemma: It's harder to easily determine right from wrong and right course of action. You may also face a combination of both test of integrity & ethical dilemma.

Ethical frameworks are supposed to help you get past an impasse to make a decision & take action.

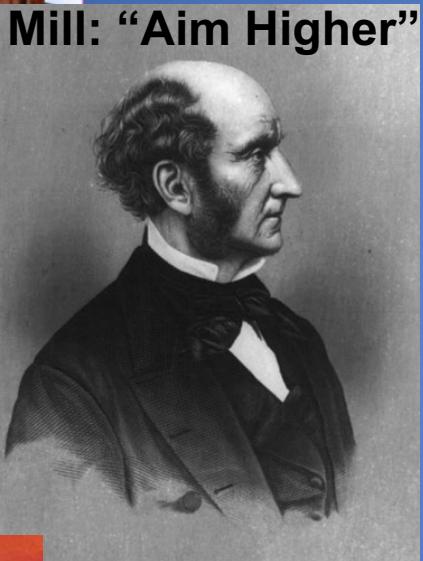
JEREMY BENTHAM



Bentham's
autoicon

Utilitarianism (consequentialism)

Seeks to **balance good and bad outcomes**, taking into account perspectives of all involved.



Mill: "Aim Higher"

- Tries to **maximize well being** of society as a whole.
- **Jeremy Bentham**: utility principle
 - Pleasure/happiness vs. pain
 - “Ends always justify the means”
- **John Stuart Mill**: harm principle, higher pleasures

Spock: “*The needs of the many, outweigh needs of the few or the one.*”

Unintended consequences? How can we even know all consequences? Are all forms of happiness equal? How can we weigh them?



Cost-Benefit Analysis



I am Jack's ethical gray areas...



BENEFITS - COSTS
= DECISION

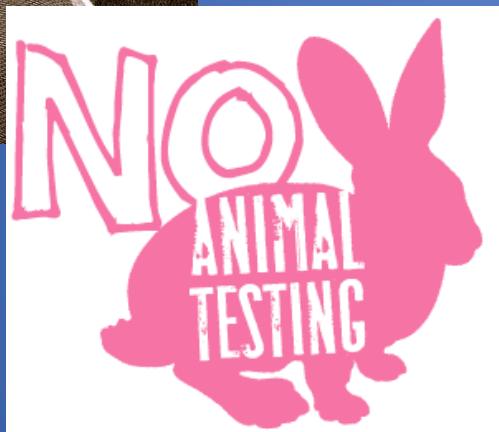
- Problem: How can we assign a dollar value to everything?

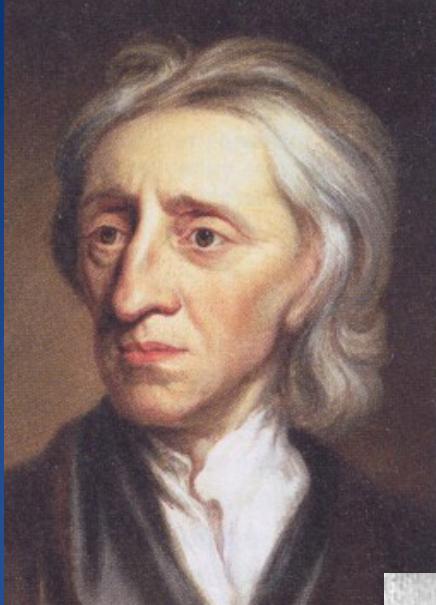
<i>Component</i>	<i>1971 costs (US\$)</i>	
Future productivity losses	Direct	132 000
	Indirect	41 300
Medical costs	Hospital	700
	Other	425
Property damage		1 500
Insurance administration		4 700
Legal and Court		3 000
Employer losses		1 000
Victim's pain and suffering		10 000
Funeral		900
Assets (lost consumption)		5 000
Miscellaneous accident cost		200
<i>Total per fatality</i>	<i>200 725</i>	

FORD values human life...
literally

Deontological or Duty ethics

- Honor codes/ sets of rules
 - West Point, etc.
- Poster Boy: Immanuel Kant
 - Q: What should I do?
 - A: Act morally!
 - *Respect others, treat fairly*
 - *Don't injure others*
- Categorical Imperative(s)
 - Universalism & Respect
- Not flexible & not primarily concerned with attaining most optimal results.

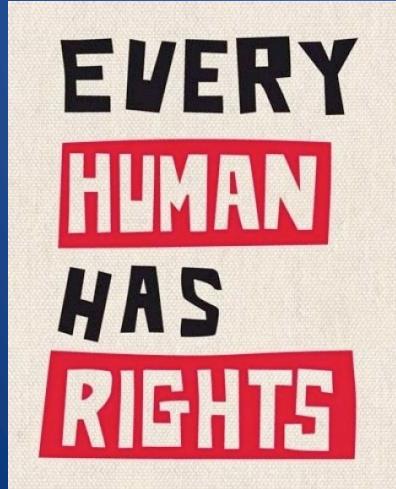




Rights ethics

Do not violate the rights of others

- John Locke/ Thomas Jefferson
- Civil Rights Movement(s)



What are the problems with rights & duty ethics?

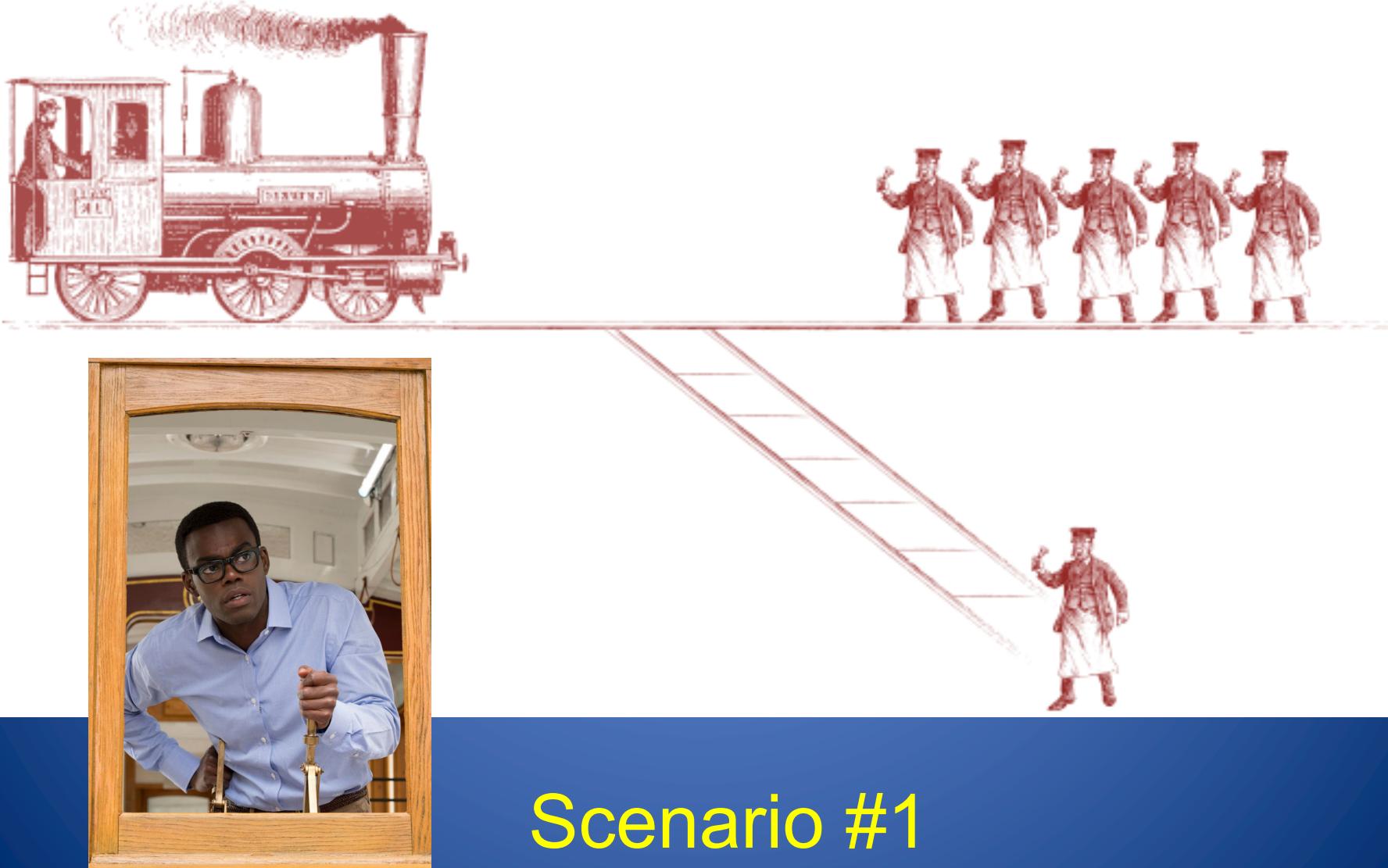


- How to balance competing duties & rights?
- How do you best account for the public good?



NIMBY!

The Runaway Trolley Problem



Scenario #1

The Runaway Trolley Problem



Scenario #2

Virtue ethics

Plato and Aristotle

- Based on adhering to good character traits (*eudaimonia*)

- Loyalty, faith, honor...
- Avoiding vices

Aim for “sweet spot” b/t deficiency & excess:

- Apathy, concern, zealotry
- Chaos, order, regimentation
- Tyranny, freedom, anarchy
 - Not much guidance in terms of proper actions



Stoicism (not in textbook)

A version of virtue ethics

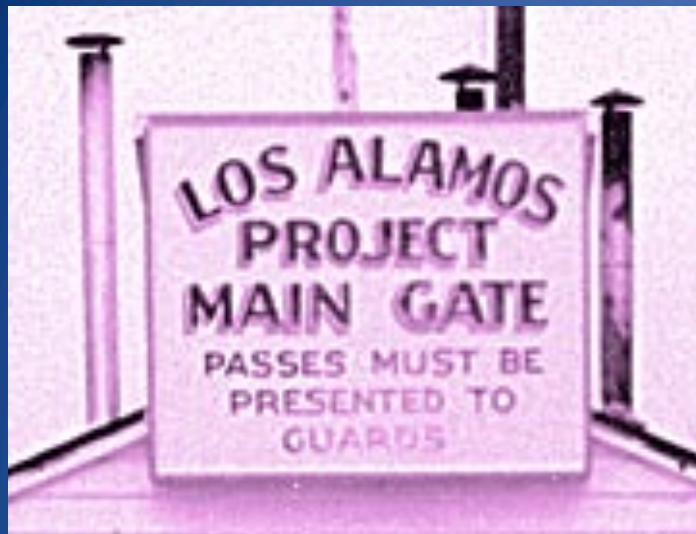
- Gen. Marcus Aurelius
- Adm. James Stockdale
- “Make the best of what power you have, and take the rest in stride”
- How you react matters



“Bear and forebear”

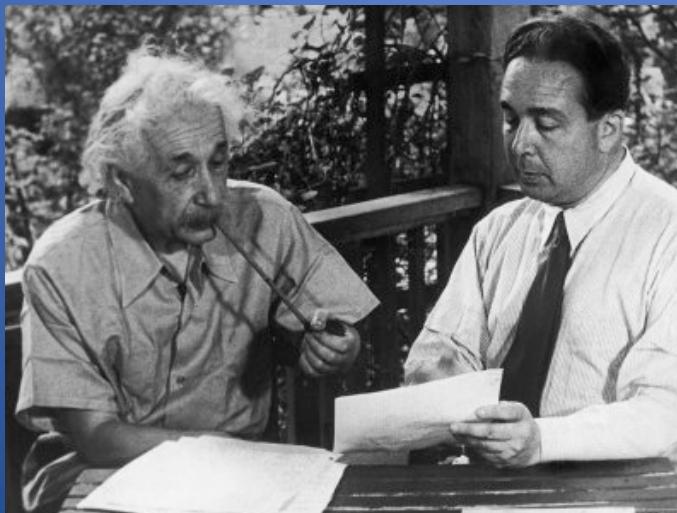
Too closed off to emotions?

Pragmatism (not in textbook)



- Opposite of idealism
- Context is essential in assessing the facts.
- Emphasizes flexibility in weighing competing values.
- Good for making decisions in crisis situations(?)

Albert Einstein & Leo Szilard



Meet George



This is His Buddy Frank



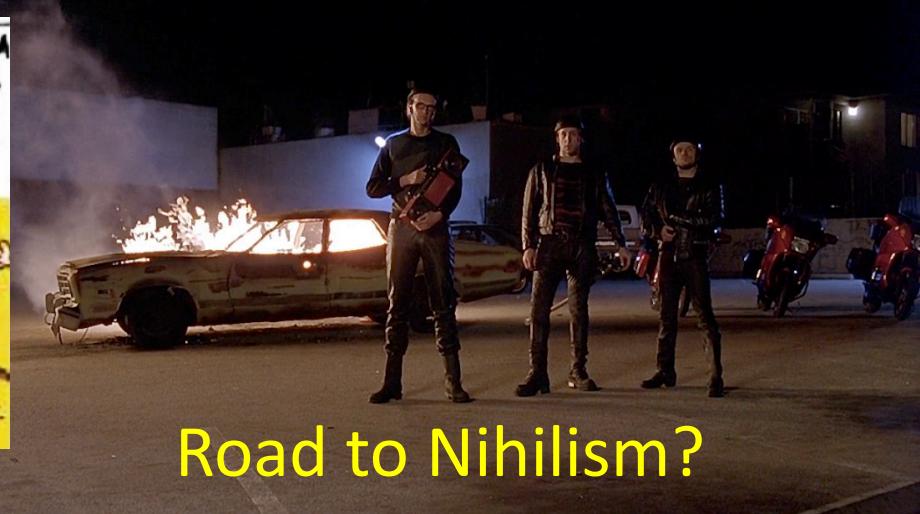
This is Sam



George's Dilemma...



The Pitfalls of Pragmatism?



Danger of **moral relativism**

As if *no* right answers...

...or *all* answers seem right.



Finding your own ethical framework



Must fit your
deeply held
beliefs.

Best frameworks
have:

1. Accuracy
2. Power
3. Scope

INDIVIDUAL ARTICLES PRESENTATIONS & DISCUSSION LEADING

1) Brief analysis & discussion of designated article. Will include:

- A (very) brief summary/ overview (just main points)
- What are the author's big arguments? Do you agree?
- Important context (why/when written?)
- How does it relate to class topics?
- What moral dilemmas does it raise/ discuss/ ignore?
- What ethical frameworks or ethical implications are in article?

2) Find an article on your own that either supports or offers an counterargument to the one you've been assigned, & explain why you've chosen it/ why it should be favored over the other.

3) Each presenter will also prepare (& submit) 4-5 discussion quex to elicit class discussion. Complete ideas, not just Y/N quex!

TIPS: Be concise. NO laundry lists, don't read from article. Only brief synopsis of overall concepts. Like you're briefing a friend who didn't read. 5 MINUTE LIMITS (since others will also be presenting). Mark your calendars!

Ex: Barger, Robert. "Can We Find a Single Ethical Code?" (1987)