

Engineering, Ethics and Society: Personal Ethics & Going Forward

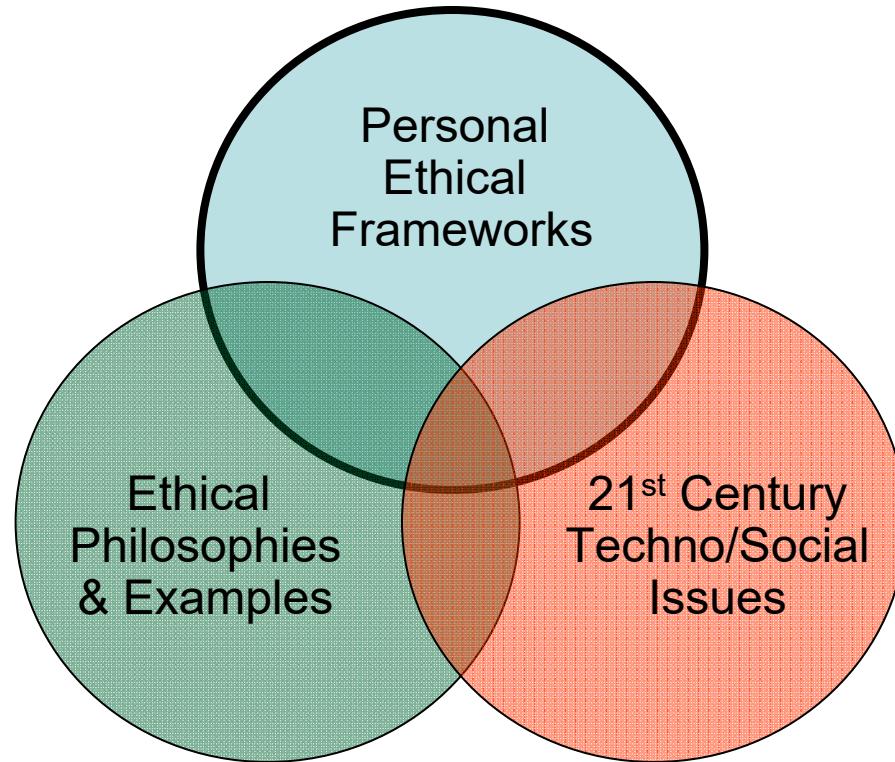
- Log on to UCLA_WIFI
- Go to <https://onlinepoll.ucla.edu>
- Wait for further instructions

Dr. Gershon Weltman
Engineering 183EW, UCLA SEAS
Lecture 17

Lecture Contents

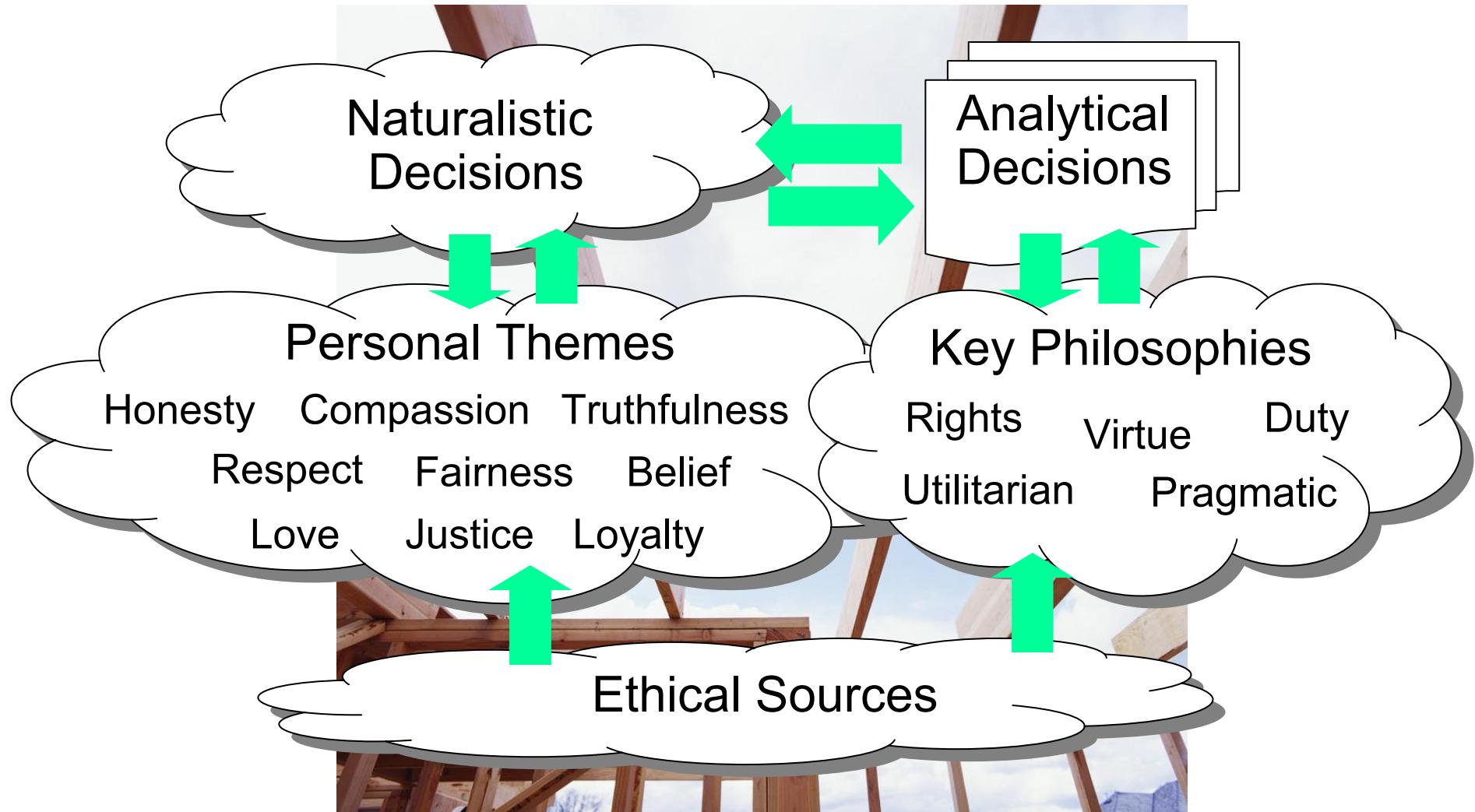
- Objectives Review
- Personal Ethical Frameworks
 - Construction
 - Professional Ethics
 - Within Organizations
 - Conflicts of Interest
 - Adaption and Utilization
- Ethics of Whistle Blowing
 - Societal Ambivalence
 - Ethical Case 1: Boeing 737 MAX on whistleblowing
 - Present Day Responses
 - IEEE Guidance
- Applying Course Ethics Knowledge
- Ethics & Society: Continued Learning
 - Needs and Goals
 - Available Sources
 - Ethical Case 2: MADMEN on business ethics
- Wrap Up

Course Objectives



We combine several key objectives in one course,
but our focus is on building a personal ethical framework.

Building a Personal Ethical Framework



Engr 183EW Personal Ethical Dilemmas

- Lying and Cheating ~ 40%
- Stealing and Receiving ~ 35%
- Teams & Authority ~15%
- Technical Risks & Hazards ~ 10%

In your careers, organizational dilemmas will likely predominate;
Your responses will depend on your Personal Ethical Framework.

Organizational Ethics: Team & Project

- Interactions with Team Members
 - Showing Respect to All
 - Maintaining Communication
 - Keeping Promises
 - Exhibiting Loyalty (Within Reason)
- Interactions with Higher Management
 - Accepting Responsibility
 - Protecting Data and Results
 - Moving Problems Upward (and Maybe Outward)
- Interactions as a Manager
 - Exhibiting Leadership
 - Respecting Subordinates as People
 - Avoiding Harassment – Sexual or Any Other Kind
 - Hiring and Assigning to Projects
 - Dismissing and Transferring from Projects
 - Making Technical and Financial Decisions

These actions are most liable to involve ‘Conflict of Interest’ issues

Organizational Ethics: Conflict of Interest

- Typical Situations
 - Hiring or appointing a friend or relative
 - “Giving a pass” to a friend or relative who transgresses
 - Recommending a technical or financial option that
 - Benefits you directly
 - Benefits a close friend or relative
- Methods of Resolution – Not Necessarily in Order
 - Test 1: “How does it fit into MY Ethical Framework?”
 - Test 2: “Who is Harmed?”
 - Does the action violate an organizational policy?
 - Are the various interests *actually* in conflict?
 - Can any conflicts be fairly and equitably resolved?
 - Test 3: “How Does it Smell?”
 - How will others in the organization feel about this?
 - How will it affect customers and/or stakeholders?
 - How will it play on news media and/or social networks?

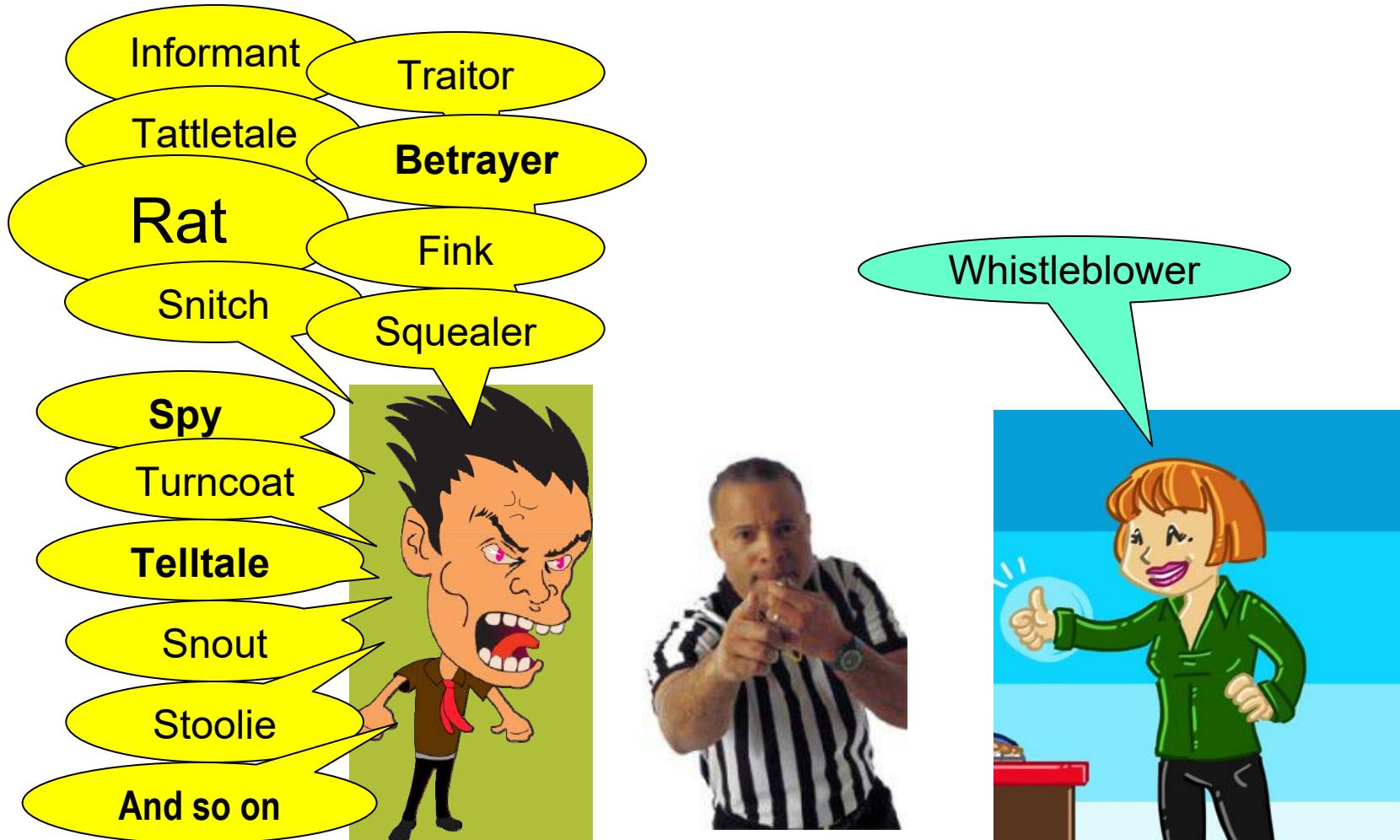
Large organizations are often most concerned with Test 3: The “Smell Test.”

Using Your Ethical Framework 1

- As a Reference
 - Rationalization for previous actions
 - Guidance for future actions
- To Test and Modify
 - Exceptions within structure
 - Evolution of societal and personal ethics
- To Evaluate
 - Your actions
 - Other peoples' actions
- For Whistleblowing
 - Extension of personal conduct
 - Society's ambivalence

A cadet will not lie,
cheat or steal –
or tolerate those
who do.

Society's Ambivalence



Ralph Nader coined 'whistleblower' to mean a person trying to maintain order

Ethical Case 1: Boeing 737 MAX

New engine placement leads to
Maneuvering Characteristics
Augmentation System (MCAS)

Boeing allegedly deficient in:

- MCAS design
- Provision of failure alert
- MCAS testing & certification
- Customer notification
- Pilot training
- Problem analysis
- Problem acknowledgement
- Preventive Action



Ethical Case 1: Whistleblower's Complaint

787 Synthetic Airspeed

- Calculated from angle of attack and inertial data
 - AOA – voted dual sensors plus inertial data
 - Accurate Coefficient of Lift (C_L)
 - Airplane Mass from FMC - Validated after Takeoff
- Algorithm developed for enhanced stall protection
- Avoid displaying data known to be bad
 - Loss of valid voted V_{CAS} = Display synthetic airspeed
 - Loss of valid voted P_{STATIC} = Display GPS altitude

© The Boeing Company

Engineer Curtis Ewbank said in a memo:

- Airspeed and AOA are critical data
- 737 MAX MCAS used standard sensors
- Standard sensors often in error
- 737 MAX cockpit analysis revealed potentially serious safety problems
- 787 Dreamliner has Synthetic Airspeed computation system as backup to data from standard sensors
- Engineers recommended installation of Synthetic Airspeed to increase safety
- Management refused, reflecting a new corporate culture of
 - Cost/schedule over safety/quality
 - Ignoring engineers' proposals
- Synthetic Airspeed installation would have prevented 737 MAX crashes

The question is: Why were engineers not more aggressive at the time!

Ethical Case 1: The Reason Why

“Given the nature of this complaint, *the fear of retaliation is high*, despite all official assurances that this should not be the case. There is a *suppressive cultural attitude* towards criticism of corporate policy — especially if that criticism comes as a result of fatal accidents.”



Curtis Ewbank, Boeing safety engineer

Mr. Ewbank acknowledged the problem that whistleblowers are often attacked and harmed despite the positive results of their revelations.

Society's Attitude Seemed to be Evolving...

Snowden asylum in

The US wanted Russian intelligence leaker so



ECUADOR

2013

Employed at
Booz Allen Hamilton in

① May

Contacts the *Washington Post* and *The Guardian* news
Reveals details of secret
intelligence program

② 20 May

Leaves Hawaii and flees

* US National Security Agency

Analyst admits to cyber-spying leaks

An NSA contractor steps forward and calls U.S. surveillance abilities 'horrifying.'

By BOB DROGIN
AND KATHERINE SKIBA

WASHINGTON — Calling America's spying capabilities "horrifying," a 29-year-old former CIA employee revealed himself Sunday as the primary source of unauthorized disclosures of highly classified U.S. telephone and Internet surveillance systems that were among the intelligence community's most closely held secrets.

Both the Washington Post and the British newspaper the Guardian said Edward J. Snowden gave them his consent to reveal his identity as an analyst for the National Security Agency, which is America's largest spy organization and conducts cyber-spying. Both papers have published a startling series of top-secret documents in recent days.



EWAN MACASKILL, The Guardian

EDWARD SNOWDEN
has fled to Hong Kong and says he will seek a country for asylum.

The Guardian said Snowden was staying in a luxury hotel in Hong Kong and had lined his hotel room door with pillows to prevent eavesdropping.

"I have no intention of hiding who I am because I know I have done nothing wrong," he was quoted as saying. He said he expected U.S. authorities to "demonize" him and said he planned to "ask for asylum from any countries that believe in free speech and oppose the victimization of global privacy."

In a 12-minute video interview [See Surveillance, A7]



1983
Elizabeth City
(North Carolina)

2002
Computing
S state of Maryland
to obtain his diploma

Job with a Japanese
media company

2004
Training with the US
Special Forces.
ended after breaking
in a training

or the CIA
Iva (Switzerland)

ed at the NSA
Technician

AFP

www.yahoo.com, November 28, 2013

...Into Somewhat Different Responses...



But Recently Old Style Attacks Return...

Cohen accuses Trump of criminal acts



J. SCOTT APPLEWHITE Associated Press

"I AM ASHAMED that I chose to take part in concealing Mr. Trump's illicit acts rather than listening to my own conscience," Michael Cohen, President Trump's former personal lawyer, told members of Congress.

President's former lawyer alleges extensive financial and moral wrongdoing

BY CHRIS MEGARIAN, DEL QUENTIN WILBER AND JENNIFER HABERKORN

WASHINGTON — Michael Cohen, once among President Trump's most ardent defenders, fiercely turned on him Wednesday, describing a culture of rampant criminality and nonstop lying around Trump involving payoffs to his alleged mistresses, inflated personal wealth and secret efforts to build Europe's tallest skyscraper in Moscow.

Cohen, who worked as Trump's personal lawyer and New York fixer for more than a decade, suggested in a congressional hearing that Trump had skirted or violated federal banking, tax and campaign finance laws, and he indicated that some of those actions were already under criminal investigation.

Cohen provided fresh details on scandals that already have come to light — most notably displaying a \$35,000 check signed by the president in August 2017 to reimburse Cohen for a hush-money payment — and he provided House Democrats with new clues for their probes into a president he described as a "racist," a "con man" and a "cheat."

"I am ashamed that I chose to take part in concealing Mr. Trump's illicit acts rather than listening to my own conscience," Cohen said.

Asked about his most recent conversation with the president, which occurred

CBS News. October 2, 2018

But Recently Old Style Attacks Return...

A screenshot of a HuffPost Politics tweet from Matt Gaetz (@mattgaetz). The tweet is framed by a black border. It features a profile picture of Matt Gaetz, his name in bold, and a blue checkmark indicating verification. Below his name is his handle @mattgaetz. The tweet itself reads: "Hey @MichaelCohen212 - Do your wife & father-in-law know about your girlfriends? Maybe tonight would be a good time for that chat. I wonder if she'll remain faithful when you're in prison. She's about to learn a lot..." The tweet has received 15.7K likes and was posted at 4:12 PM on Feb 26, 2019. The background shows the HuffPost website interface with other news items and social sharing options.

...Questioning both Motives and Value

Former top vaccine official Rick Bright said that the government's response to the coronavirus pandemic had been slow and chaotic,

**President Trump, in response to '60 Minutes' interview,
claimed whistleblowers like Rick Bright
are 'causing great injustice and harm'**

Timothy Bella, The Washington Post, 5/18/2020



Rules for Ethical Whistleblowing¹

- Don't trust too much!
- Collect persuasive evidence
- Don't exaggerate
- Build support among colleagues
- Seek outside guidance
- Weigh your options carefully
- Choose the right opportunity
- Present a helpful approach
- Anticipate a personal attack
- Prepare an escape route

¹Jean Kumagai, The Whistle-Blower's Dilemma, IEEE Spectrum, April 2004

It's In the News

Workers need to know that blowing the whistle can make a difference

That's the only reliable way to marshal insiders as corporate watchdogs.

By Benjamin van Rooij and Adam Fine

LAST MONTH, A former employee of Deutsche Bank hit the jackpot. The U.S. Commodity Futures Trading Commission awarded this publicly unnamed whistleblower almost \$200 million for supplying "specific, credible, and timely original information" that aided the agency in its investigation into the illegal rigging of inter-bank interest rates. This was the largest whistleblower payment in history.

The former bank employee now joins a select group of whistleblowers who not only spoke out and were heard by the authorities but also were rewarded handsomely for their effort. The system worked this time, but far more often those who attempt to blow the whistle are ignored, silenced and punished.

West Point graduate and Gulf War veteran John Kopchinski is also a member of this group. Although he ultimately received \$51.5 million for informing authorities about illegal sales practices at Pfizer, Kopchinski's road to fortune was anything but easy.

Working as a sales rep at the

end its illegal and damaging practices. This is also the reason our laws provide whistleblower protection. Having employees inform authorities about illicit corporate practices should help uncover major forms of abuse that remain hidden inside. In theory, blowing the whistle should help prevent further wrongdoing.

Unfortunately, there is very little evidence that whistleblowing is effective. Prior to Kopchinski, Pfizer had faced a whistleblower complaint about illegal sales practices at one of its subsidiaries regarding another drug, Neurontin. Apparently, this earlier case did little to change the corporate strategies.

Studies have demonstrated an uncomfortable truth: In the instances when employees do overcome all obstacles and speak out, it does not necessarily lead to permanent change. A study of the whistleblower provisions in the Sarbanes-Oxley Act, the 2002 law adopted to prevent corporate and accounting scandals in the wake of what happened at Enron and WorldCom, concluded that whistleblowers did not help uncover the vast corporate fraud that resulted in the 2008 financial crisis.

To fix corporate misconduct, we need to look beyond the rare successes of the few whistleblowers who got payouts and media attention. Employees have a crucial role to play, as they have the best view of what happens inside corporate America. But they can only do

Los Angeles Times, November 29, 2021

Using Your Ethical Framework 2

- Professional Career
 - Submitting resumes and endorsements
 - Choosing jobs and positions
 - Deciding and communicating at all levels
- Societal Exchanges
 - Everyday interactions
 - Advice and recommendations
 - Promises and commitments
 - Respect of privacy
 - Participating in social or professional groups
 - Participating in online communities
 - Buying and selling products and services

Example: \$10 False Endorsements

CL santa barbara > gigs > labor gigs post | account

[reply](#) [prohibited](#) [print](#)

Posted 14 days ago

★ Love amazon? Make \$10 per review

We're looking for great individuals or companies to help us grow our online reputation on Amazon in the form of reviews. Your reviews will help us launch new products into the marketplace and maintain current ones. For every review posted, you will earn \$10 or receive free new and exciting products. There is also room for growth! Once you successfully post 10 reviews in total, we will start paying \$12

All you need is active, good-standing Amazon accounts that can leave positive reviews for our product listings. You do NOT need to buy the item in order to leave the review. The only requirement is for the review to be at least 50 words (sometimes less is okay) and 5 stars.

If interested, please get back to us with your contact #.

Thank you!

- do NOT contact me with unsolicited services or offers



© craigslist - Map data © OpenStreetMap
(google map)

compensation: \$10 / Review

Example: \$17K-\$3M False Qualifications

A8 WEDNESDAY, MARCH 13, 2019

Los Angeles Times

LATIMES.COM

COLLEGE ADMISSIONS SCANDAL

Wealthy parents cheated admissions

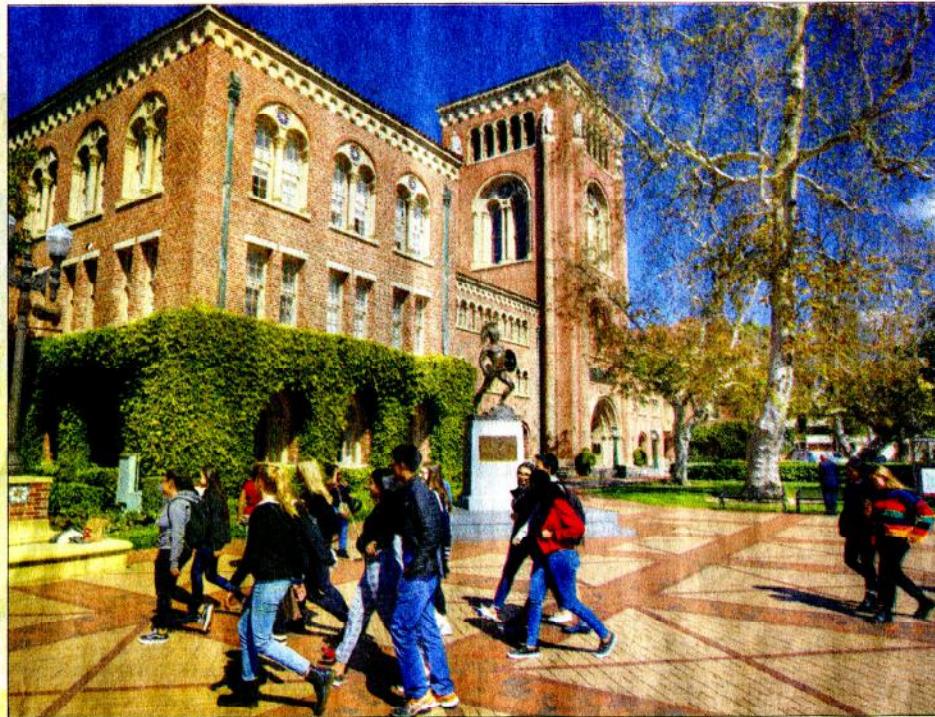
[Scheme, from A1]

Federal investigators said they have charged 50 people in the case, including the USC administrator who helped Loughlin's kids, and accomplices Singer allegedly paid to rig college admission test scores — as well as coaches at USC, UCLA, Stanford and Yale.

The charges stunned the upper echelons of American academia, heightening debate about the advantages the ultra-rich enjoy in accessing the country's best colleges amid intense competition in which merit alone is not enough to assure admission, even for students with perfect grade-point averages and stellar resumes. The accusations also raised serious questions about how university admissions officials, athletic departments and others could have allowed such blatant fraud to go undetected.

There was particular upheaval at USC, a campus already reeling from several scandals. Prosecutors alleged that a top athletic department leader as well as three current and former coaches accepted nearly \$2 million in bribes to get students into the school.

The case names celebrities, corporate executives, investment bankers, business owners, top-tier law-



ALLEN J. SCHABEN Los Angeles Times

USC was rocked by the scandal. A senior associate athletic director and the coach of the men's and women's water polo teams were fired Tuesday after being indicted. UCLA's men's soccer coach was indicted as well.

"He didn't have inside information about the answers, he was just smart enough to get a near-perfect score on demand or to calibrate the score," Lelling said of Riddell.

Huffman, who allegedly told Singer she was interested in hiring him again for her younger daughter but ultimately decided against it, made a brief court appearance Tuesday afternoon. As Macy watched from the gallery, she told a federal magistrate she understood the charges against her and was released on bond.

For larger fees, parents could avail themselves of the contacts Singer built with Donna Heinel, the senior associate athletic director at USC, as well as coaches at USC and other schools who were willing to lie about students' athletic abilities in exchange for bribes. In some instances, Singer had photos doctored to superimpose the faces of children onto the bodies of athletes. Coaches used the fake images to prove to colleagues that the kids were athletes.

Of the \$1.2 million Singer admitted to taking from a family that wanted to go to Yale, \$400,000 was paid to the women's soccer coach, Rudolph "Rudy" Meredith, prosecutors said. The young woman was admitted to the

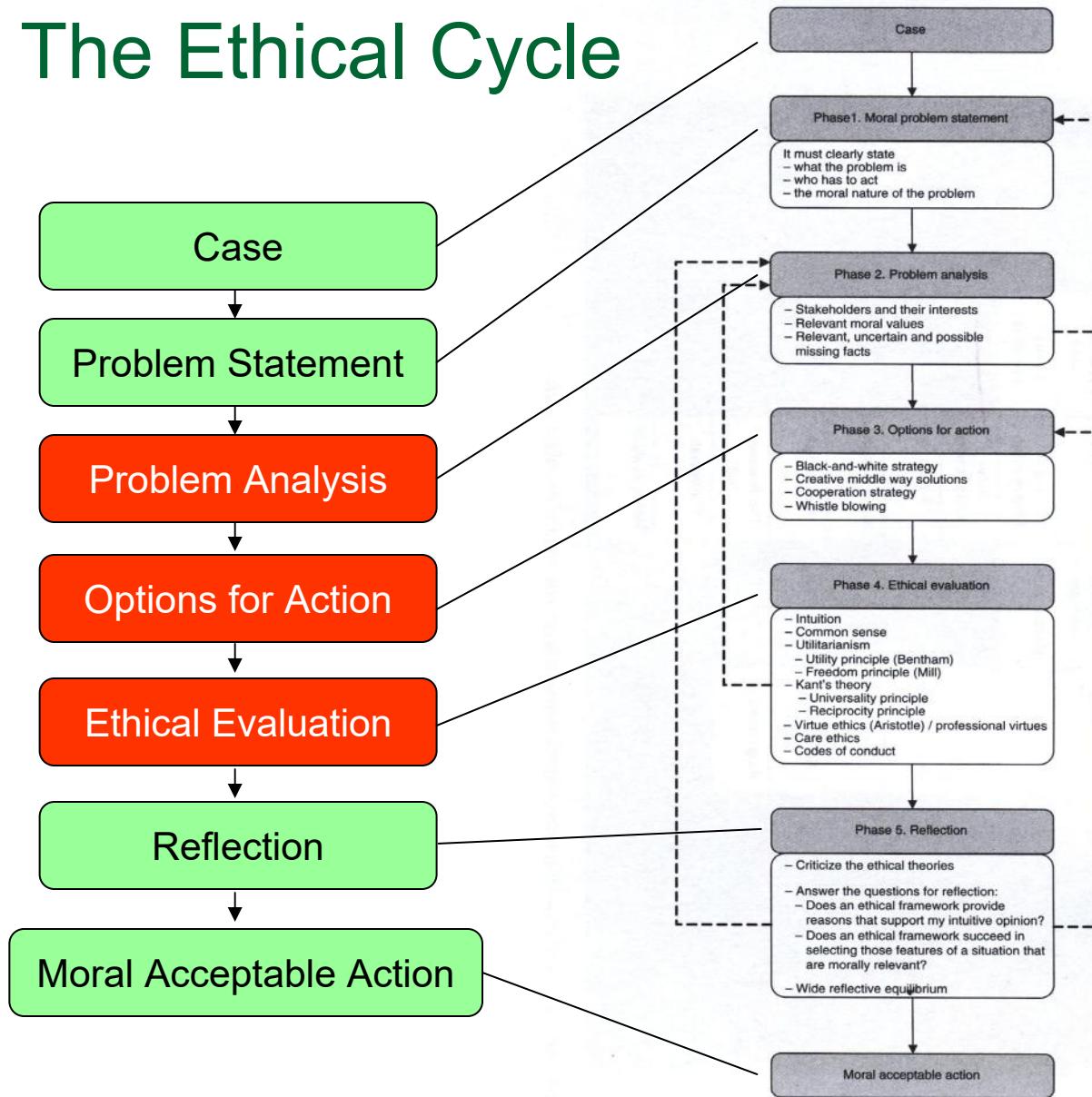
Using Your Ethical Framework 2

- Professional Career
 - Submission of resumes and endorsements
 - Choice of jobs and positions
 - Decision making and communication at all levels
- Societal Exchanges
 - Everyday interactions
 - Advice and recommendations
 - Promises and commitments
 - Respect of privacy
 - Participation in social or professional groups
 - Participation in online communities
 - Buying and selling of products and services
- Parenting & Mentoring
 - Establishing an ethical environment
 - Reinforcing children's ethical conduct

Moving Forward: The Path to *Being Ethical*

- Theoretical Approach
 - **Recognize the important decision points!**
 - Identify the options and **ALL** their consequences
 - Include relevant ethical and societal factors
 - Apply some type of analytical decision making process
 - Choose the right thing to do

Example: The Ethical Cycle



Moving Forward: The Path to *Being Ethical*

- Theoretical Approach
 - ❑ Recognize the decision point
 - ❑ Identify the options and consequences
 - ❑ Apply some type of analytical decision making process
 - ❑ Include relevant ethical and societal factors
 - ❑ Choose the right thing to do
- The Practical Problems
 - ❑ Identifying the set of suitable options
 - ❑ Understanding the societal as well as the technical consequences
- One Solution: Real-Life Experience
 - ❑ Is arbitrary
 - ❑ Takes too long
- Another Solution: Directed Continued Learning
 - ❑ ‘The Two Cultures’ revisited: Engineering *and* Society together
 - ❑ Simulation returns: Condensing experience

Engineering and Society Sources

- Scientific/Technical Journals
- University Courses
- Literature
- Investigative Magazines
- Movies and TV
- Drama and the Arts
- Serious Games
- Current News Media
 - Daily newspaper (?)
 - Online news and blogs
 - TV and radio news and specials
- Social Networks



New News Media



NBC's "STAY TUNED" covers the major stories of the day but also gives attention to news of interest to a young adult audience (nearly half of Snapchat users are ages 18 to 24). Above, co-anchor Gadi Schwartz tapes a program in the Rockefeller Center studio.

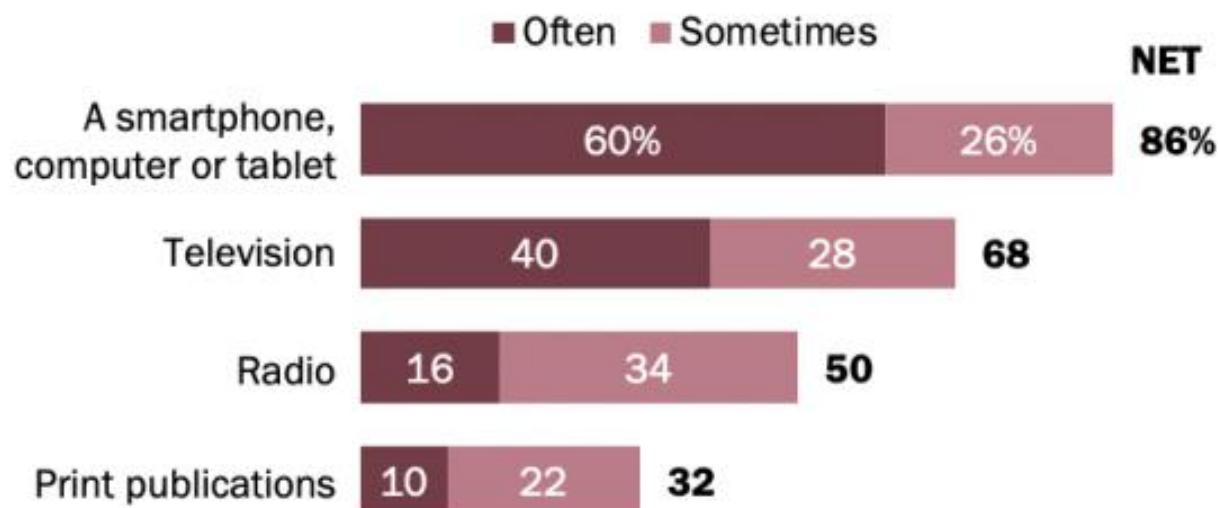
TV news via Snapchat?

Audiences for traditional formats are getting smaller and older. Here are some ways broadcast networks are trying to stay afloat.

New News Media

Large majority of Americans get news on digital devices

% of U.S. adults who get news ____ from ...



Source: Survey of U.S. adults conducted Aug. 31-Sept. 7, 2020.

PEW RESEARCH CENTER

Literature: The Broad-Ranging Resource

- Contributions to science and technology
 - The Double Helix, The Crime of Galileo, The Ancient Engineers, The Machine that Changed the World.....etc., etc.
- Fiction as well as non-fiction
 - Grapes of Wrath, Catch 22, Catcher in the Rye, Lord of the Flies, Bonfire of the Vanities, The Human Stain...etc., etc.
- Popular authors as well as Noble Prize contenders
 - Detective stories, adventure and exploration, biography and autobiography, historical novels.....etc., etc.
- Science Fiction & Fantasy as well as reality
 - 1984, Brave New World, Animal Farm, Clockwork Orange, I Robot, The Martian Chronicles, Jurassic Park, Lord of the Rings, Snow Crash, Hyperion, etc., etc.

There are numerous lists of “100 greatest” non-fiction works and novels.

Movies & TV: America's Grand Contribution

- Technology Effects and Influences
 - *Imitation Game, Social Network, The Right Stuff, Apollo 13, The Aviator, Tucker: The Man and the Car, On the Beach, Park, No Highway in the Sky, The Man in the White Suit...etc.,*
- Emotional Intelligence
 - *Death of a Salesman*

Arthur Miller's play about salesman Willy Loman is perhaps the one best American play. It covers the importance of work and also the technical transition in society.

Willy Loman in Bernard's Office



Willy activates the tape recorder and doesn't know what it is or how to turn it off; Bernard clicks the off switch. The message is: 'old times gone, new times begin.'

Movies & TV: America's Grand Contribution

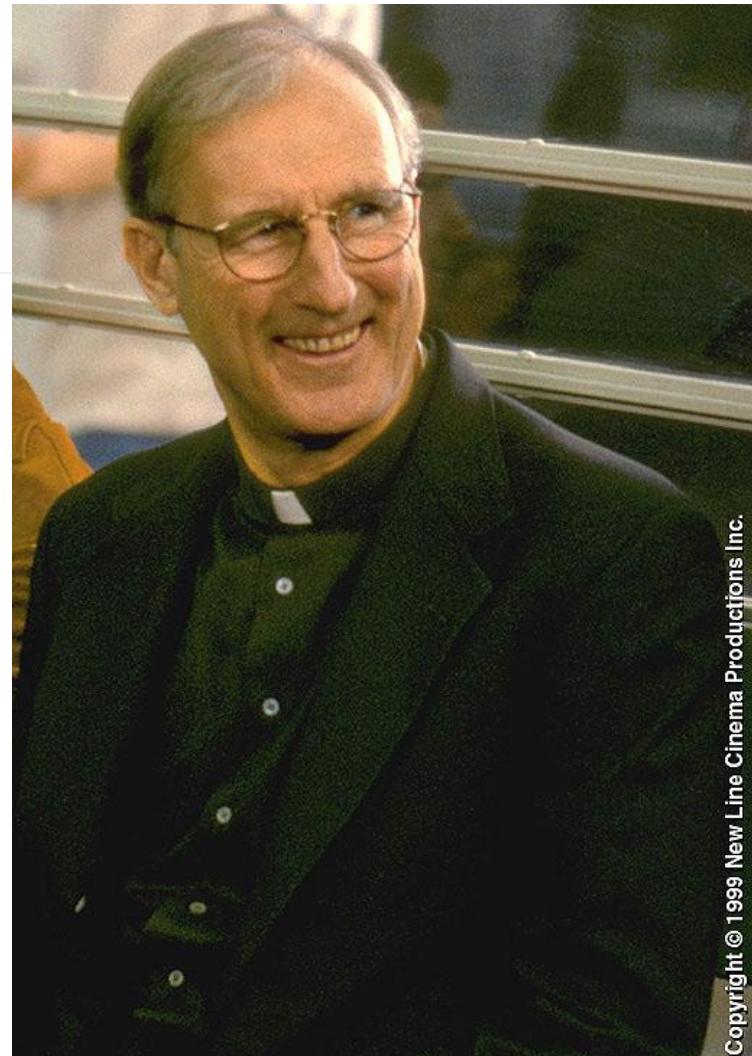
- Technology Effects and Influences
 - *Imitation Game, Social Network, The Right Stuff, Apollo 13, The Aviator, Tucker: The Man and the Car, On the Beach, Park, No Highway in the Sky, The Man in the White Suit...etc.,*
- Emotional Intelligence
 - *Death of a Salesman, Twelve Angry Men, Raging Bull, Taxi Driver.....etc.,*
- How Businesses and Organizations Operate
 - *MADMEN, The Godfather Trilogy, Up in the Air, Wall Street, Good Night and Good Luck, Frost/Nixon, Citizen Kane, Schindler's List, Wonderful Life, Erin Brockovitch,,etc.,*
- Moral and Ethical Narratives
 - *Lord of the Rings, Harry Potter, Hunger Games, Star Trek, Star Wars, The Matrix, Avatar.....etc., etc.*

Downloads, streaming and DVDs make the movie library easily available

What We Can Learn

"One of the functions of a good movie or play is to mirror back to the audience a reflection of itself, so that the individual can recognize the choices the characters make and evaluate their effectiveness and appropriateness. This empowers the individual to make better -- that is, more conscious and conscientious -- choices in his or her own life."

—
James Cromwell
Actor and Activist
San Luis Obispo Film Festival
March 10, 2007



Copyright © 1999 New Line Cinema Productions Inc.

Ethical Case 2: A **MADMEN** Story



MADMEN Writers Room

Ethical Case 2: A **MADMEN** Story

Sterling Cooper agency is competing for prestigious Jaguar car account

The head of the Jaguar dealers association says he will make sure that they don't get the account...

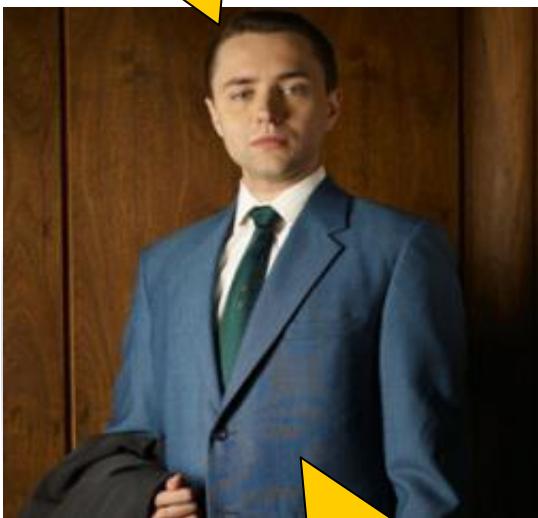
Don Draper, agency president, says definitely: "No! That's not us!"



...unless they give him a night with Joan, the capable and curvaceous office manager.

Ethical Case 2: **MADMEN** Continued

Account executive Pete Campbell says: "Let's ask Joan if she'll do it - for a large amount of money"....



Joan first says "No way," but after getting some outside advice and considering it further ...



The board agrees, Joan complies, the agency gets the Jaguar account, Joan becomes a partner, and....



...and the agency Board of Directors agrees with Pete, overriding Don Draper.

...then says, "I'll do it if you make me a Partner, with a 5% share in the agency."

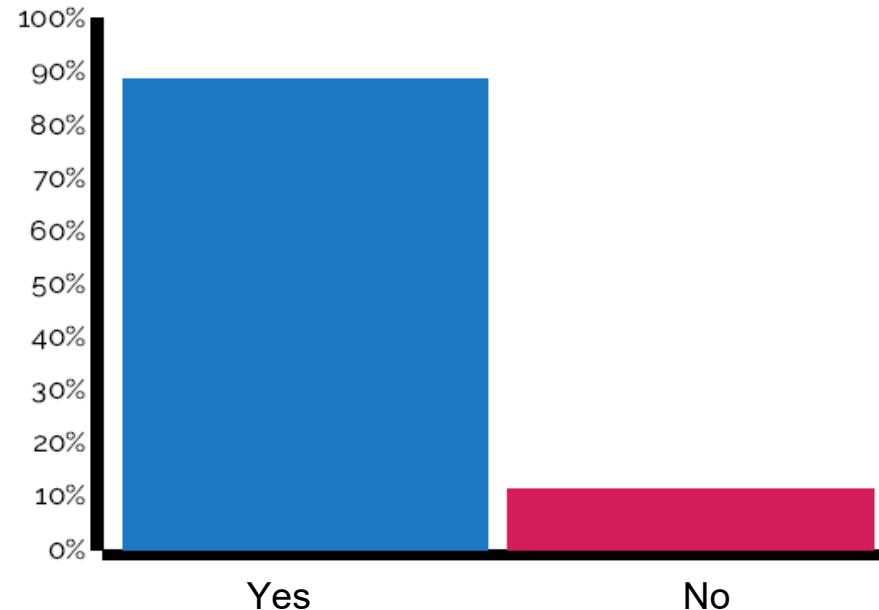
...the audience is left to consider the wisdom and ethics of these decisions.

MADMEN Online Poll

- Log on to UCLA_WIFI
- Go to <https://onlinepoll.ucla.edu>
- Search for Engr 183EW – MADMEN
- Password: 1234
- Answer the 4 multiple choice questions
- Hit “SUBMIT”
- Finish in 5 minutes

Online Poll: Engineering Enterprises Also?

Can this type of ethical issue ever apply to engineering or technology companies?



Students got this mostly right; ethical issues such as this *can* come up in engineering organizations.

Engineering Equivalents

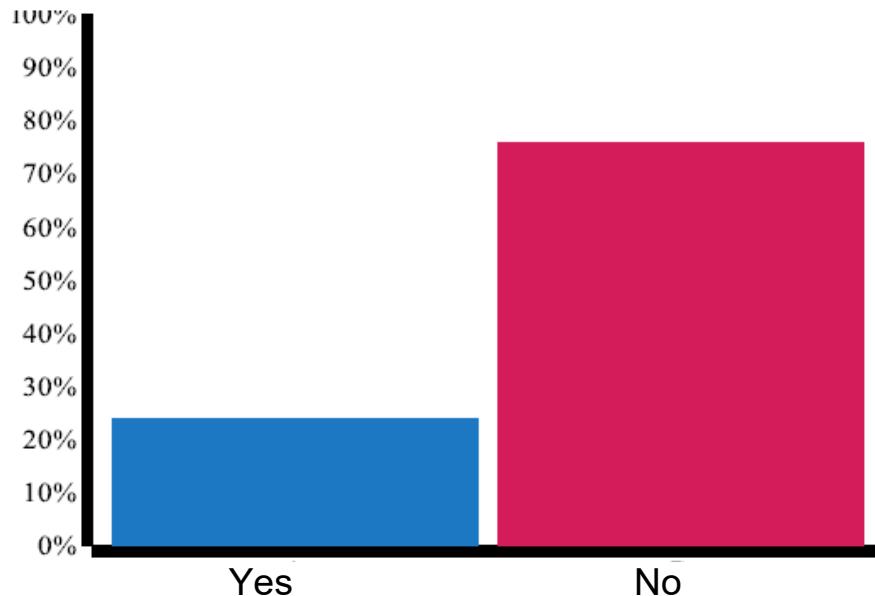
A client or customer demands/requests that the enterprise:

- **Provide undesirable favors:** Sexual acts, supplier or employee rewards, finder kickbacks, bribes to officers or officials, etc.
- **Bend its rules:** Against discriminating, providing protected IP, spying on other companies, falsifying or ignoring data, etc.
- **Reduce product quality:** Use materials, parts or processes inferior to established specifications and/or experience, etc.
- **Ignore safety:** Bypass or violate standards, regulations or laws in contradiction to usual practice, etc.

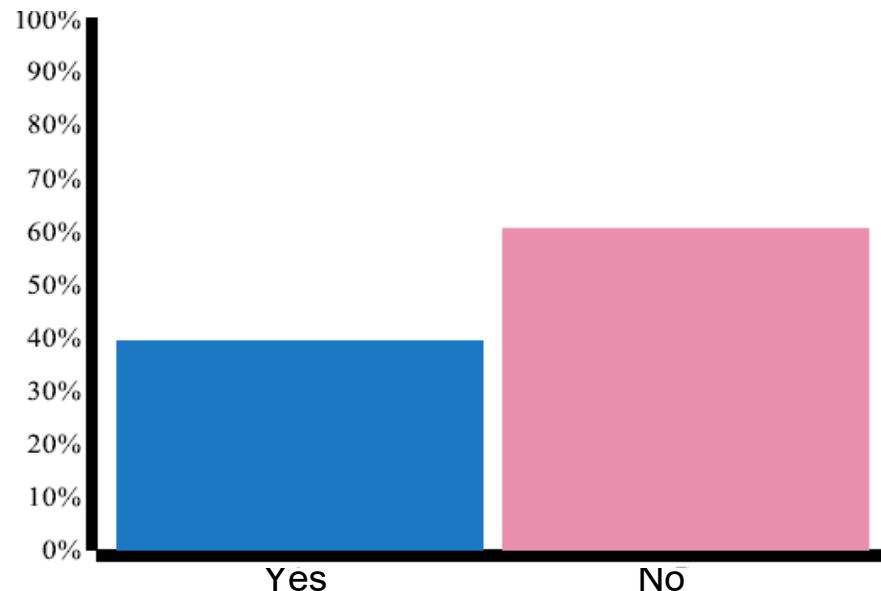
A common element is that an executive or an employee is asked to do something that violates norms and/or the company's ethical framework.

Online Poll: Personnel Ethics

Did the agency do the right thing by asking Joan to make the decision?



Did Joan do the right thing by asking for and accepting the partnership deal once she was asked?

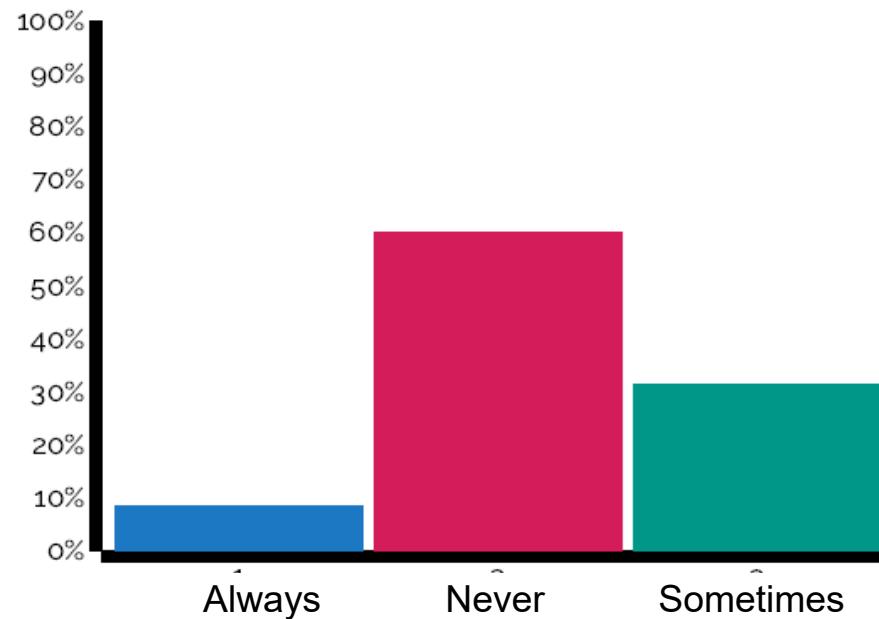


The majority tend to get this correct. We've said sometimes ethics trumps economics. This is one of those times. Asking Joan puts her in a position where it is nearly impossible to say no.

Once Joan has been asked, the decision is up to her, but there are negative consequences that need to be weighed carefully, as we have previously emphasized in class.

Online Poll: Enterprise Ethics

Is it right to bend your organization's ethical principles when you're blackmailed or for "good" business reasons?



Always is definitely not a good answer and the class agrees. Never is much better, and it's nice to see it at 60%; and while it is tempting to believe ethical principles can sometimes be waived, the results are frequently bad.

Additional Help: Professional Societies



Association for Computing Machinery



American Society of Mechanical Engineers



American Society of Civil Engineers



American Institute of Chemical Engineers



Institute of Electronic & Electrical Engineering



Materials Research Society



American Institute of Aeronautics & Astronautics



Biomedical Engineering Society



Human Factors & Ergonomics Society

These and other Societies can provide ethical guidance in special fields.

The Main Point: Effective Use of Resources

- Continued Study: *Ethical Engineering Practice*
- Awareness of Objectives: *Cases and Principles*
- Evaluation and Feedback: *Own and Others' Actions*
- Desired Results: *The Best Possible Decisions*

The Reason Being...

Ethics is a lifelong enterprise --
not a one course requirement.

.. So in Summary



**“Go Forth and Be Ethical
-- People *and* Engineers!”**

And Finally

Please complete the
Course Evaluation Form.
We welcome your feedback
-- particularly now!

It's been a different quarter,
we hope it was instructive.

Thank you for attending
-- and for your attention!