

Ethics in Engineering and Research

Lecture #9 Engineers' Right and Responsibility

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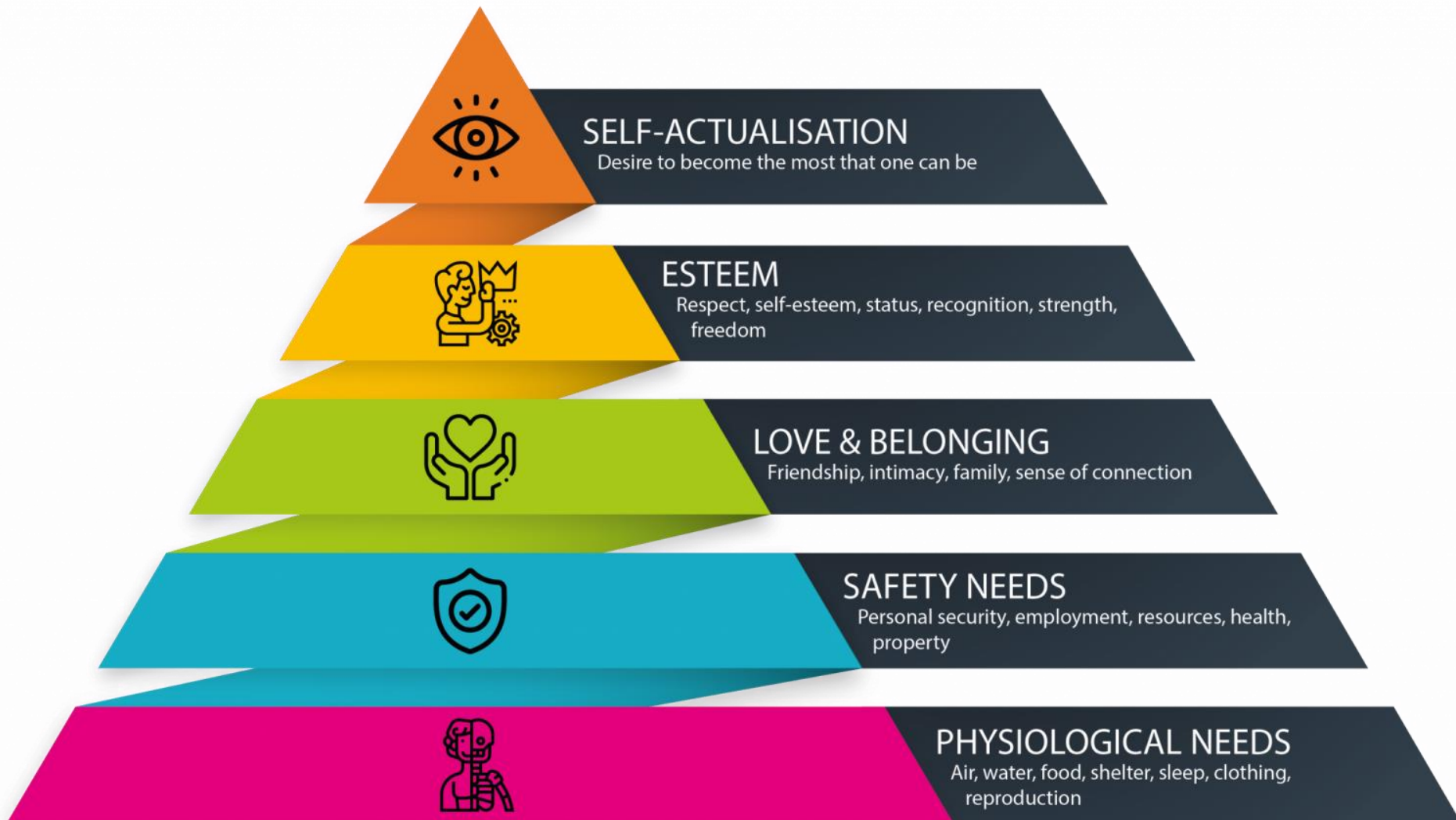
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Professionalism at the workplace...

- What motivates people at work? (Ego and the money?)
- Professionalism at work involves competence, a sense of fun and excitement, good conduct, and personal commitments
- Engineer's main responsibility:
 - ☐ Top performance at a professional level
 - ☐ Perform responsibly
 - ☐ Maintain confidentiality
 - ☐ Avoid conflict of interest

Maslow's Hierarchy of Needs

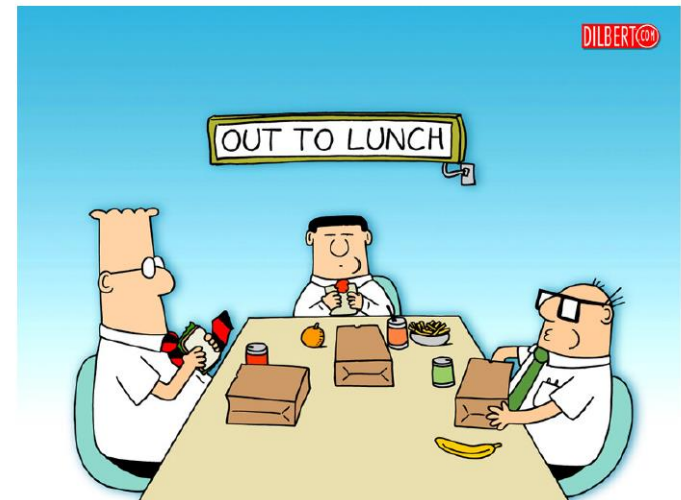


- What are the key issues at work?
- Some things matter, some do not? Which ones?
- Many different perspectives...
- **Example:** Dress code?
- **Example:** Office space/decor “code”? Tech inspire



Teamwork

- **Ethical corporate climate:**
 - Ethical values in full complexity are acknowledged
 - Responsibilities to constituencies affirmed (other teams, departments, administration, clients/customers)
 - Ethical language is acceptable (you can say what you think is right and wrong)
 - Management (you?) sets moral tone in words, policies, and personal examples, and each person does too.
 - **Examples:** Lunch/break lengths, work diligence, time sheets
 - **Procedures for conflict resolution in teams are important**
- Ethics is not just doing what makes the company money!



Loyalty and collegiality

- **Agency-loyalty** (obligation)
- As an employee, fulfill contractual duties to employer (get the job done to your best abilities)
- **Attitude-loyalty** (a virtue but not strictly an obligation)
 - ☐ Willingly seek to perform duties
 - ☐ Enthusiastic, not “forced”
 - ☐ Over long time periods good attitude can be difficult to maintain (due to changing ownership, merger, trading of shares)
- **Example:** Upon acceptance of job offer, what do you owe the company? Can you go for another interview? Take another offer?

Managers and Engineers

- Why **respect for authority**?
 - ❑ Meeting organizational goals
 - ❑ Clearly identifying responsibility and accountability
- How relate to each other? Top-down control or sort of professor and administrators interaction in university
- It depends on **company orientation**.
 - ❑ Engineer-oriented company (safety, quality vs cost, scheduling)
 - ❑ Customer-oriented company (customer satisfaction)
 - ❑ Finance-oriented company (profit)
- Different roles and authority
- Different attitude and approaches

Confidentiality and Conflict of Interest

- Confidentiality
 - What to keep secret?
 - “Proprietary information” - disclosure to competitors would hurt the company. The company has a right to some secrets.
 - What about a right to secrecy about poor practice, unethical policies and practices, etc.?
- Changing jobs:
 - Confidentiality to old employer does not cease!
 - But, there is a *soft boundary* as you always bring along your expertise and experiences (i.e., your brain)!

- **Management policies?**
 - Mark documents as “proprietary”?! Make clear statements about what is and is not confidential.
 - “Employment contracts”
 - Have you signed one?
 - Did you read the fine print?
 - **Example:** Do you own work that you do at home at night on unrelated projects?
- **Clear policies are critical!** They help set a professional tone since they set clear boundaries. *Everyone then knows what is right or wrong.*

Conflicts of Interest

- Situations that if pursued could keep employees from meeting obligations to employer:
 - Gifts, bribes, kickbacks? Have you done this?
Is is always unacceptable? When/where is it acceptable?
 - Interests in other companies (suppliers?)
 - Insider information (impact on stocks)

Rights of Engineer

- Engineers have several types moral rights
- Example: human right, employee right, professional right
- Professional rights
 - ❑ Right of professional conscience (moral autonomy)
 - ❑ Right of conscientious refusal (can refuse to be unethical just because you view it to be that way)
 - ❑ Right to recognition, fair pay

Employee Rights

- Any rights that involve the status of being an employee (both moral and legal)
- Can be overlapped with professional rights
- **Privacy Right**, example: to pursue outside activities
- **Right to Equal Opportunity**
 - ☐ Preventing Sexual Harassment
 - ☐ Nondiscrimination
 - Sex, race, skin color, age, political or religious outlook
 - ☐ Affirmative Action
 - giving favour to a member of group that in the past was not equally treated, example: woman, minority

- The PRC Civil Code and management measures to prevent sexual harassment in the workplace
- **Further reading**: do your own research at the government website or <https://cms.law/en/int/expert-guides/cms-expert-guide-on-sexual-harassment-in-the-workplace/china#>
- Despite the legal procedure, **education** and **seeking a reasonable solution** through appropriate action are better
- Case study and lesson learned
(<https://www.linkedin.com/pulse/case-sexual-harassment-workplace-lessons-learned-직장내-성희롱-bongsoo-jung>)

“Groupthink” (Harris et al.)

- Only within-group discussions, form a “parochial” perspective (for technology, ethical and social justice issues)
 - Illusions of invulnerability (we can do no wrong)
 - Illusion of morality (in group, view all as ok)
 - Self-censorship (result from a desire not to disturb an existing situation)
 - Illusion of unanimity (interpret silence as consent)
 - “Mind-guarding” (not letting in outside views)
- Need disagreement, diversity, outside surveys/
market research/critical evaluations

Group shift (opposite of Groupthink)

- A shift in the group's decision-making
- Tendency to make/take more extreme decisions/actions
- Towards either a more cautious or a riskier position
- <https://thisvsthat.io/group-shift-vs-groupthink>



Whistle-Blowing

弊端揭发, 告密

- What is whistle-blowing?
- Disclosure by employee outside approved channels, to group that may take action
- Topic is a significant moral problem (e.g, public safety)
- **Examples:** Ernest Fitzgerald and the C-5A, Dan Applegate and the DC-10 (see the book)... here, consider the Virginia Edgerton phone/police car case...

Computers and Police Cars

(S. Unger)

- Virginia Edgerton worked as a system analyst for the New York City Police Department in 1977, when the department was implementing a new computer system called PROMIS. Edgerton was on the PROMIS team, and when she learned that the system was going to be installed on the same server that ran SPRINT, an online police car dispatching system, she questioned whether this should be done before investigating whether running both systems on the same server would impact the SPRINT response time. Her supervisor did not give her concern any weight and proceeded with the project. Edgerton went to IEEE for advice and support in resolving this potential safety issue. **Did she do the right thing?**

Moral guidelines for whistle-blowing...

- “Permissible and obligatory” if:
 - Actual or potential harm is serious
 - Harm is documented
 - Concerns have been reported to superiors
 - Do not get satisfaction, explore all other organizational channels to the top
 - Reasonable hope that whistle-blowing will help prevent or remedy the harm
 - **Example:** Challenger case
- But, specific cases raise problems with such guidelines



Commonsense procedures...

1. Except in rare emergency, work through channels
2. Know the rules for making appeals
3. Be prompt in objecting
4. Be tactful, low-key, avoid getting emotional (stay professional, focus on objective issues)
5. Be considerate of feelings, avoid personal criticisms

Additional commonsense approaches...

1. Keep supervisors informed (discussions and memos)
2. Be accurate, document
3. Consult trusted colleagues
4. Before going outside, consult ethics committee of professional society
5. Consult a lawyer

Bay Area Rapid Transit (BART) System

- Links San Francisco with cities across the bay
- Built with tax funds
- Had tremendous cost overruns and delays – attributed to introduction of innovative methods of communicating with individual trains and controlling them automatically

- Plain fail-safe operation was replaced by complex redundancy schemes
 - Fail-safe systems have a train stop if something breaks down
 - Redundancy tries to keep trains running by switching faulted components to alternate ones
- Opportunity to build rail system from scratch, unfettered by old technology

- Engineers felt that too much experimentation was done without safeguards
- Three engineers: H. Hjortsvang, R. Bruder, M. Blankenzee identified dangers only recognized by management much later
 - Unsafe automatic train control
 - Testing it and operator training inadequate
 - Computer software problems pervasive
 - Insufficient monitoring of contractors

- The three engineers wrote a number of memos and voiced their concerns to their employers and colleagues (even though none of them were not specifically assigned to the safety of the automatic control system)
- Hjortsvang wrote an anonymous memo summarizing the problems and distributed it to nearly all levels of management

- Memo argued for a new systems engineering dept.
- Management felt that the memo was suspicious and unprofessional (being unsigned) since done outside normal channels of accountability
- Management felt that Hjortsvang wanted to be the manager of the new dept.

- The three engineers contacted members of BART's board of directors when their concerns were not taken seriously by lower levels of management
- Management perspective on this was that they acted improperly since not an approved organizational channel
- To get independent view, the engineers contacted a private engineering consultant

- One BART director, D. Helix, listened and agreed to contact top management while keeping the engineer's names confidential
- Helix released unsigned engineer's memos and the consultant report to local newspapers
- Management sought to locate source of Helix's information. Engineers lied about their involvement

- At Helix' s request engineers later agreed to reveal themselves by going in front of board of directors to try to remedy safety problems
- But they were unable to convince the board of those problems

- Engineers were given the option of resigning or being fired (for insubordination, incompetence, lying to superiors, causing staff disruptions, failing to follow understood organizational procedures)
- Subsequent studies proved the safety judgements of the engineers were sound (changes in automatic train control were made)

- Engineers sued BART (settled out of court)
- IEEE filed a “friend of the court” document noting in the engineer’ s defense the engineer’ s professional duty to promote the public welfare as stated in IEEE’ s code of ethics

- Do you agree with the following observations, and do you have others?:
 - Engineers should have been better-prepared to present their case before the board of directors (they needed to be able to absolutely convince them that there were safety problems)
 - Should not have sent an unsigned memo to all levels of management (should have informed boss and sent signed memo, then if not satisfied justified to go to board of directors)