

# Ethics

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# Ethics

- Ethics
  - A framework for moral choices
  - Not a religion
  - Legality  $\neq$  Ethical
- Personal and Business/Professional ethics
- Why Engineering Ethics?
  - Position of professional responsibility
  - Decisions affect others
  - Many possible solutions: what is “right”?

# Professional Responsibility

- What is a Profession?
  - Highly skilled, requiring **judgement** and **discretion**
  - Formal education - not just training or apprenticeship
  - Significant **public good** results from practice
  - Self-regulating societies to set standards
- Professional Societies
  - **Social Contract** / **Business**
  - Relatively few practicing engineers are members
  - Code of Ethics

# Example

Karen is an undergraduate engineering student who has saved to buy a four-year-old car. According to a recent law, the car must pass an emissions test in order to be registered for use on the roads. Karen brings the car to the local garage where the necessary inspection is carried out by the mechanic, Terry.

“Karen, everything is fine with the car, except that the emissions levels are too high,” Terry says.

“Is that a problem?”, asks Karen.

“Well,” says Terry, “I think that the catalytic converter has failed. Converters usually last a lot longer than this, but occasionally they have a problem. It is going to cost \$600 to replace.”

Karen is very upset. “How can there be anything wrong? It doesn’t blow smoke or anything like that! I just can’t afford to spend hundreds of dollars at the moment. Surely something can be done?!”

Terry thinks for a moment. “I guess the emissions were only just over the limit. But if I get caught passing a defective car, I could lose my licence. I tell you what, give me \$50 and I’ll forget about the test results. We could always say that the catalytic converter must have failed after the test.”

# Ethical Theories

- Utilitarianism
  - right decisions see benefits outweigh costs
- Duty Ethics
  - ethical acts are the proper performance of duties
- Rights Ethics
  - individual rights are paramount
- Virtue Ethics
  - right decisions support virtuous values

# Utilitarianism

- Common “instinctive” attitude amongst engineers, economists.
- Basis of risk analysis, cost-benefit analysis.
- Maximise the well-being of society.
- Some problems:
  - can ignore the needs of individuals.
  - depends on knowing what is the greatest good - often impossible.

# Duty & Rights Ethics

- People have duties, including protecting the rights of others.
- People have rights.
- Some problems:
  - which duties & rights are most important? e.g. the right to life, or the right to have a gun?
  - overall good of society not always accounted for.

# Virtue Ethics

- Is this action honest? Have I acted in a responsible fashion?
- Applies particularly to confidentiality & proprietary information: test results & data, designs, formulae, number of people working on project, suppliers, strategies, production costs & yields.
- Seek guidance from supervisor.

# Which to Use?

- Try to balance rights of individuals (duty/rights ethics) vs social good (utilitarianism).
- Try to assess certainty/risk of outcomes.
- Try to separate fact from opinion.

# The Five P's

- **Purpose** What is my objective? Am I comfortable with that as a purpose
- **Pride** Can I take pride in my solution?  
(The “journalist test”)
- **Patience** Have I taken time to think it through?
- **Persistence** Have I tried hard enough to find a good solution that is fair and balanced?
- **Perspective** Have I considered the “big picture”  
(Would I be OK with others applying the same principles to a decision affecting me?)

# Some Ethical Dilemmas (1)

- Conflict of Interest

- Do I (appear to) gain personally from my engineering decisions?
- What to do about gifts from suppliers?
- Generally, no, never: < \$20, OK sometimes

- Unethical or illegal behaviour

- by colleagues            - Is it ok to “dob in”?
- by your employer       - Is “whistleblowing” ok?
- Consider social vs individual good.

# Some Ethical Dilemmas (2)

- Confidentiality
  - Can I use what I learnt in my last job?
  - Not what was confidential.
  - General experience & know-how: yes.
- Lack of Evidence
  - The “Precautionary Principle”
  - If you are not very certain, assume the worst case.

# IE Aust Code of Ethics

- Guidance on priorities; ethical decisions often difficult.
- Public interest is number one.
- Duty to employer is important, but a lower priority.

# Back to the Example

- From an ethical viewpoint, what are the key facts in this situation?
- Is Terry doing the right thing by offering to help Karen?
- What is the ethical problem facing Karen?
- Would the ethical problem be any different if
  - The car was emitting smoke?
  - The car was only driven occasionally?
  - The car was only driven in the country?

# Tutorial in Ethics

- Question 1: The inspector is being asked to pass defective products by his/her supervisor.
- Key words to think about:
  - Safety
  - Retribution
  - Teamwork
  - Full investigation

# Conclusions: Two Key Points

- Can I take pride in my solution?  
(The “journalist test”: Would I be happy with a complete front-page description of my solution in the SMH?)
- Would I be OK with others applying the same principles to a decision affecting me?