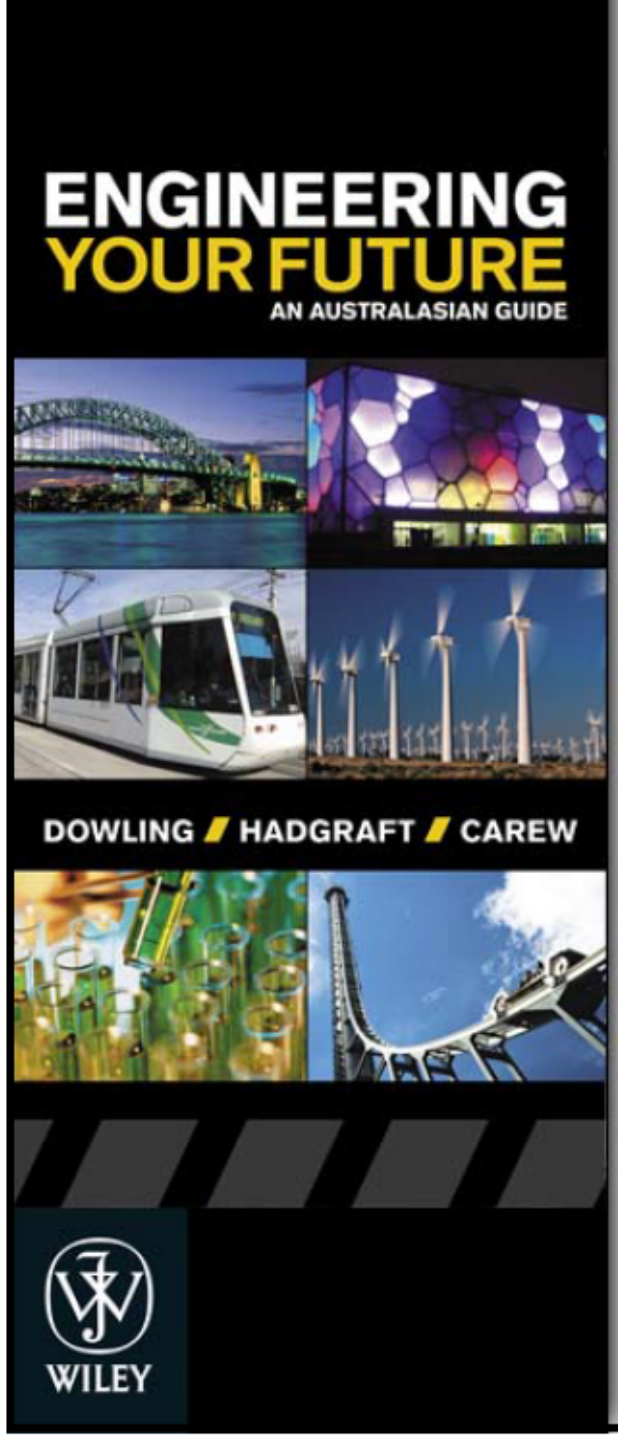


Ethics in Engineering and Engineers Australia

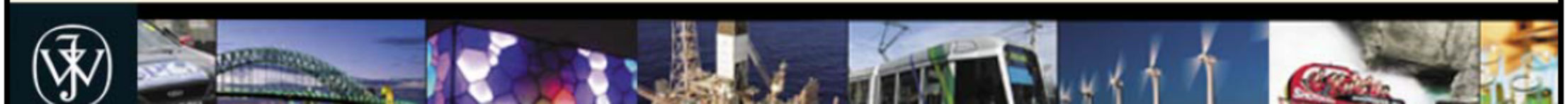
Chapter 7:

pp. 327-350

Based on PPT presentation by Peter Wypych (UOW) and S. Iveson (UON)

Learning Objectives

- Describe Codes of Ethics (CoE) and Engineers Australia (EA)
- Understand various types of ethical dilemmas
- Discuss the importance of recognising personal limitations in engineering practice
- Describe how to balance conflicting interests
- Explain how culture affects ethical decisions
- Discuss personal liability for ethical decisions

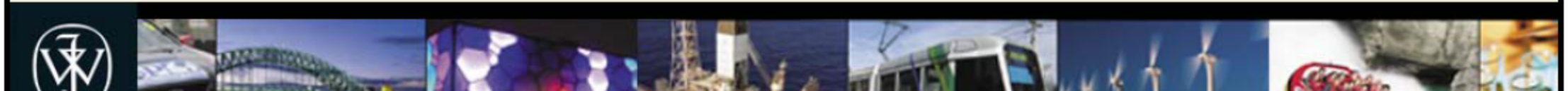


Introduction

- Many people drawn to engineering because they like maths, science and challenge of finding solutions to technical problems
- However finding technically **correct** solutions in modern world is only part of problem
- Increasingly important for engineers to also decide whether a solution is **"good"**
  - e.g. Manhattan Project → 1st atomic bombs

Engineers Australia

- Formerly called Institution of Engineers Australia (IEAust)
- Dedicated to advancement of engineering field in Australia as well as professional development of all its members
- EA Chartered Engineers regarded as trusted professionals in Australia and worldwide
- *Aims and activities…*



Engineers Australia

- Celebrate excellence in engineering outcomes
- Draw inspiration from engineering heritage
- Sustain the integrity of profession
- Accredit engineering degrees
- Assess migration skills
- Comment on govt policies and initiatives
- Raise the profile of engineers and provide a voice for its members

Engineers Australia

1. Successfully complete undergraduate degree accredited by EA

2. Collect evidence (over 3 years) to build portfolio proving your competence in criteria specified under EA's Stage 2 Competency framework:
   www.engineersaustralia.org.au

our CODE of ETHICS

ENGINEERS AUSTRALIA

In the course of engineering practice we will:

- **1. Demonstrate integrity**
  - 1.1 Act on the basis of a well-informed conscience
  - 1.2 Be honest and trustworthy
  - 1.3 Respect the dignity of all persons
- **2. Practise competently**
  - 2.1 Maintain and develop knowledge and skills
  - 2.2 Represent areas of competence objectively
  - 2.3 Act on the basis of adequate knowledge

our CODE of ETHICS

ENGINEERS AUSTRALIA

In the course of engineering practice we will:

- **3. Exercise leadership**
  - 3.1 Uphold the reputation and trustworthiness of the practice of engineering
  - 3.2 Support and encourage diversity
  - 3.3 Communicate honestly and effectively, taking into account the reliance of others on engineering expertise
- **4. Promote sustainability**
  - 4.1 Engage responsibly with the community and other stakeholders
  - 4.2 Practise engineering to foster the health, safety and wellbeing of the community and the environment
  - 4.3 Balance the needs of the present with the needs of future generations

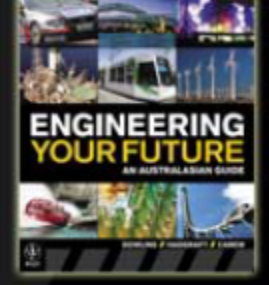
Learning to apply CoE

- Aligning personal morals with CoE should not be too difficult
- But there is difficulty in knowing how to apply these principles in different situations
- Ethics is not commonly discussed in public and experienced engineers may feel uncomfortable discussing previous failings
- Your conscience (feelings) often good first sign that you are facing an ethical issue

Common ethical dilemmas
2. Duty of care

- Your duty of care extends to more than just those who report to you directly
- Important to keep records and not cover up issues → health and safety of others
- In what ways might an UG engng. student be tempted to falsify records?
  - falsifying log/journal of weekly reflections
  - using last year's lab results

Possible ethical dilemmas associated with routine engineering tasks



Task	Ethical problem
Conceptual design	Engineer's knowledge out of date Violating patent or intellectual property
Preliminary analysis	Overly detailed analysis of engineer's main area of expertise and limited analysis in other aspects of the design
Design specification	Unrealistically tight, leading to likely cost and time overruns Design changes not incorporated into specification
Tendering	Specification written to favour one vendor or contractor
Fabrication of parts	Variable or poor quality workmanship, materials or components Design alterations not detected or noted
User safety	Reliance on complex or failure prone safety devices Too high an expectation of user compliance with safe use instructions
Product implementation or commissioning	Insufficient instruction given to purchaser in use of the design Training subcontracted out without sufficient care
Use and maintenance	Inadequate or overly expensive supply of spare parts Failure to offer adequate ongoing product support