ECE 481

Ethics in
Electrical and Computer Engineering

Lecture #2: Ethical Dilemmas, Choices, and Codes of Ethics

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Resolving Moral Dilemmas

1. **Moral clarity**
   - Need to know something is wrong! *Do not ignore problems!*
   - Loyalty to employer, responsibilities to public and environment (and complex relations between these)

2. **Know the facts**
   - Get hard, documented facts, discuss with others
   - Competence matters in gathering technical facts

3. **Consider options**
   - Diversity of actions to take? Evaluate/discuss.
   - Long-term, short-term perspectives, repercussions?

4. **Make a reasonable decision**
   - Weigh all factors, recognize “gray areas”/compromises
   - An engineering design problem?
Engineer A is employed by a software company and is involved in the design of specialized software in connection with the operations of facilities affecting the public health and safety (i.e., nuclear, air quality control, water quality control). As the part of the design of a particular software system, Engineer A conducts extensive testing and although the tests demonstrate...
that the software is safe to use under existing standards, Engineer A is aware of new draft standards that are about to be released by a standard setting organization-standards which the newly designed software may not meet. Testing is extremely costly and the company’s clients are eager to begin to move forward. The software company is eager to satisfy its clients, protect the software company’s finances, and protect…
...existing jobs; but at the same time, the management of the software company wants to be sure that the software is safe to use. A series of tests proposed by Engineer A will likely result in a decision whether to move forward with the use of the software. The tests are costly and will delay the use of the software by at least six months, which will put the company at a competitive...
...disadvantage and cost the company a significant amount of money. Also, delaying implementation will mean the state public service commission utility rates will rise significantly during this time. The company requests Engineer A’s recommendation concerning the need for additional software testing.
Codes of Ethics

• Why are codes important?
  – Serve and protect the public
  – Guidance/support for engineers
  – Inspiration, deterrence, discipline
  – Shared standards, education, mutual understanding
  – Profession’s image

• Limitations of codes
  – Too vague to be useful in every day ethical decision-making?
  – Impossible to cover all eventualities
IEEE Code of Ethics

We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:
1. To accept responsibility in making engineering decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;

**Concern:** “consistent” vs. ABET: Engineers shall hold **paramount** the safety, health, and welfare of the public in performance of their professional duties.
2. To avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
3. To be honest and realistic in stating claims or estimates based on available data;
4. To reject bribery in all its forms;
5. To improve the understanding of technology, its appropriate application, and potential consequences;
6. To maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;
7. To seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
8. To treat fairly all persons regardless of such factors as race, religion, gender, disability, age, or national origin;
9. To avoid injuring others, their property, reputation, or employment by false or malicious action;
10. To assist colleagues and co-workers in their professional development and to support them in following this code of ethics.
Critique the code…

• You have moral autonomy - do not take it as given - challenge it! Demand that right!

• Some problems: “paramount” vs “consistent” disussed earlier +
  – Short! Compare to NSPE, ASCE, ASME…
  – Leaves out possibility of much education/guidance by reading it.
  – Omissions? Yes! Consider our earlier definitions of professionalism that lead others to put in statements on “public service”…
Relevant portions of IEEE Code of Ethics

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5. To improve the understanding of technology, its appropriate application, and potential consequences;
National Society of Professional Engineers (NSPE)

• III. 2. A. Engineers shall seek opportunities to participate in civic affairs; career guidance for youths; and work for the advancement of the safety, health, and well-being of their community.

• This is THE code for the professional engineer!
• Cannon 1(e) says “Engineers should seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health and well-being of their communities, ...”.
Software Engineering Code of Ethics and Professional Practice

• ACM/IEEE-CS Joint task force on software engineering ethics and professional practices

• Principle 1: Public: “…software engineers shall, as appropriate:”
  – 1.08. Be encouraged to volunteer professional skills to good causes and contribute to public education concerning the discipline.
American Medical Association (AMA), Principles of Medical Ethics (June 2001)

- **Section VII**: A physician shall recognize a responsibility to participate in activities contributing to the improvement of the community and the betterment of public health.
• Rule 6.1: Voluntary Pro Bono Publico Service: “... Every lawyer has a professional responsibility to provide legal services to those unable to pay. A lawyer should aspire to render at least (50) hours of pro bono publico legal services per year.”
The 1979 IEEE Code of Ethics

• Article IV: Members shall, in fulfilling their responsibilities to the community:
  1. Protect the safety, health, and welfare of the public and speak out against abuses in these areas affecting the public interest;
  2. Contribute professional advice, as appropriate, to civic, charitable or other nonprofit organizations;
  3. Seek to extend public knowledge and appreciation of the profession and its achievements
IEEE destroyed a key aspect of the spirit of professionalism with their 1990 revision/shortening of the 1979 code
Attendance Question

Should the following phrase be added to the IEEE Code of Ethics?

“To encourage engineers to volunteer professional services to civic, charitable, nonprofit, or humanitarian organizations.”

Please answer “yes” or “no”

Please: Put your name on the sheet of paper and turn it in...