THE EVOLUTION OF ENGINEERING ETHICS

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TOPICS

• Man’s Historical Search for Defining Ethics & Morality;
• Trends in the History of Ethics;
• Modern Ethics in Professions; and
• Engineering Ethics of Today.

And because, as we have seen, our interests are inextricably linked, we are compelled to accept ethics as the indispensable interface between my desire to be happy and yours.

-- The Dalai Lama
The EVOLUTION of MAN.

Food / Thought
Evolution of Ethics = at core is evolution of philosophy.

Because philosophers spend their lives contemplating, researching, and speaking of what is right and wrong...
“Ethics” Timeline: 4000 BC to Date

- **4000 BC – 1000 BC**: Man contemplates and documents right from wrong (e.g., 10 Commandments)
- **1000 BC – 0**: Greek, Roman, and Asian Philosophers philosophize
- **0 – 1500 AD**: Religion and Philosphic Morality Merge into Christianity; goes global.
- **1500AD–1800AD**: Ninety-five Theses, Bill of Rights, U.S. Constitution.
- **1800AD - Date**: Modern philosophers and governments establish ethics standards and requirements.

- **4000 BC – 1000 BC**: Major world religions take root.
- **Hippocratic Oath 400 BC**: Hippocratic Oath
- **1500 AD - Date**: Foundations for secular governments established.
Modern Hippocratic Oath

I swear to fulfill, to the best of my ability and judgment, this covenant:

I will respect the hard-won scientific gains of those physicians in whose steps I walk, and gladly share such knowledge as is mine with those who are to follow.

I will apply, for the benefit of the sick, all measures [that] are required, avoiding those twin traps of overtreatment and therapeutic nihilism.

I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.

I will not be ashamed to say "I know not," nor will I fail to call in my colleagues when the skills of another are needed for a patient's recovery.

I will respect the privacy of my patients, for their problems are not disclosed to me that the world may know. Most especially must I tread with care in matters of life and death. If it is given me to save a life, all thanks. But it may also be within my power to take a life; this awesome responsibility must be faced with great humbleness and awareness of my own frailty. Above all, I must not play at God.

I will remember that I do not treat a fever chart, a cancerous growth, but a sick human being, whose illness may affect the person's family and economic stability. My responsibility includes these related problems, if I am to care adequately for the sick.

I will prevent disease whenever I can, for prevention is preferable to cure.

I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm.

If I do not violate this oath, may I enjoy life and art, respected while I live and remembered with affection thereafter. May I always act so as to preserve the finest traditions of my calling and may I long experience the joy of healing those who seek my help.
The term “Ethics” comes from the Greek word “ethos” and “Moral” comes from the Latin word “mos.”

- Morality was thought to be a “set up customs or habits that shape how one thinks” and if one thinks in a way that is good for all human life, one thinks and thus acts with ethics.
- Theory was summarized in Nicomachean Ethics taught by Socrates and Aristotle in 200 BC
- Effort to define the way man should act and define the moral man.

Evolution of Modern Ethics did not stop with the Greeks and Romans

**Rene Descartes**: the goal of life should be the realization of happiness through enjoying the best existence that a human can achieve. Pursue that goal in all you to do act ethically.

**Immanuel Kant** had a more severe interpretation of ethics and believed in a Categorical Imperative (command unconditionally): An ethical action serves the self as well as everyone else and it is your duty (as an ethical person) to always act in the best interest of others.

CONSISTENT MANTRA THROUGHOUT HISTORY/PHILOSOPHY

The Ethical Person always seeks excellence in one’s self or one’s station.
In other words ...

Ethics boils down to one very simple concept:

**BE EXCELLENT TO EACH OTHER.**

It's a surprisingly good ideal.

Be the best you can be at what you do and treat others as you would treat yourself.
Every major religion proclaims it; Be Ethical.

The Golden Rule

That nature only is good when it shall not do unto another whatever is not good for it's own self.

Blessed is he who prefers his brother before himself.

What is hateful to you, do not do to your fellow man. That is the entire Law; all the rest is commentary.

Hurt not others with that which pains yourself.

This is the sum of duty: do naught to others that which if done to thee would cause pain.

No one of you is a believer until he desires for his brother what he desires for himself.

Do unto others as you would have them do unto you.
HOW DO THESE ANCIENT, CONSISTENT, AND TESTED IDEALS TRANSLATE INTO MODERN ETHICS?

Its complicated! So let's define it.

Ethics is:

“META ETHICS”: A Moral Compass dictated by religious, philosophical, and social values;
“NORMATIVE ETHICS”: Moral principles that govern a person's behavior or the conducting of an activity; and/or
“APPLIED ETHICS”: A condition where a person is obligated to make a certain decision within the context of the situation.

Broken down for engineers.

• Engineering Ethics is:
  • An application of right and wrong in the context of a decision applied by a professional engineer.
    • In our context, definition should include what decision is being made that BEST SERVES THE PUBLIC INTEREST.
We can find our commitment to ethics in our professional guidelines:

ENGINEER’S CREED

As a Professional Engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare.

I pledge:

• To give the utmost of performance;
• To participate in none but honest enterprise;
• To live and work according to the laws of man and the highest standards of professional conduct; &
• To place service before profit, the honor and standing of the profession before personal advantage, and the public welfare above all other considerations.

In humility and with need for Divine Guidance, I make this pledge.

Adopted by National Society of Professional Engineers June, 1954
But do we always make the ethical/ altruistic choice?

• Sadly, people don’t always behave in an “ethical” manner, and certainly don’t treat others as they would like to be treated.
• So as philosophers and sages debated ethics and as individuals and groups of people continued to fail to meet ethical standards, industries and governments began to “codify” thing like ethics, civility, and professionalism.
• In essence we (as flawed humans) have brought the need to be “trained” in ethics upon ourselves.
• 1850s, the concept of “Professional Development” began to take hold, due in part to rapidly increasing population and fewer master/apprentice relationships;
• 1900s, New York Attorney’s formalized training to help young attorneys (*fee based*);
• Continuing education for teachers started to evolve;

Definition of “work ethic” = the principal that hard work is internally virtuous and worthy of reward.
• 1914: Ethical guidelines for Engineers adopted by ASCE;
• 1930s, the Feds created Rules of Civil Procedure for federal courts -- a formal and known way of doing business – expectations;
• 1970s all states have adopted rules of procedure and many continuing education requirements that required the teaching of these rules; Watergate Happened;
Continuing education took on an ethics, professionalism, and civility component;

1980s all states had training requirements for lawyers as well as other professionals;

Training was required by law for many professions;

About 2005, Continuing Education Required by Ohio P.E. & P.S.s;

2017 Ethics Training now **mandatory** for P.E.s & P.S.s.
Training and Guidelines and Laws Oh My!

**DOCTORS** – HIPPOCRATIC OATH, LICENSURES, CONTINUING ED.

**LAWYERS** – RULES OF CIVIL PROCEDURE, RULES OF PROFESSIONAL CONDUCT, RULES GOVERNING THE BAR, CONTINUING ED.

**ACCOUNTANTS** – GAAP, LICENSURE, CONTINUING ED.

**ENGINEERS** – LICENSURE, CONTINUING ED.

**NOW ETHICS IN OHIO FOR P.E. & P.S. ... BUT WHY?**
## WELL ... PUBLIC PROFESSIONALISM PERCEPTIONS

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OSU CE 2090 “PROFESSIONAL ASPECTS OF CIVIL AND ENVIRONMENTAL ENGINEERING”

- What makes a profession;
- Who can call themselves an Engineer;
- PE Exam Requirements
- Risk & Safety;
- Honesty, Trust, and Reliability;
- Gifts, Bribes, Kick-backs, and Confidentiality
- Ethical Dilemmas;
- Ethics in the Workplace;
- Ethical Theories
- Loyalty, Equality in Workplace, Rights;
- Environmental and Global Responsibility and Sustainability;
- International Corruption, Nepotism, and Exploitation
UPDATE TO ORC 4733.151
We professional engineers and surveyors in Ohio now must receive two hours of ethics training biannually along with our 28 other hours.

R.C. 4733.151

- Sec. 4733.151. (A) For registrations expiring on the last day of December 2011, each registrant for renewal shall have completed, in calendar year 2011, at least fifteen hours of continuing professional development for professional engineers and surveyors. Thereafter, each registrant shall complete at least thirty hours of continuing professional development during the two-year period immediately preceding the biennial renewal expiration date.

- (C)(2) Beginning with registrations expiring on or after the last day of December 2017, a person registered as a professional engineer or professional surveyor shall complete AT LEAST TWO of the thirty hours required under division (A) of this section on PROFESSIONAL ETHICS or rules relevant to the practices of engineering or surveying.

http://codes.ohio.gov/orc/4733.151v1
WHY WAS THE LAW NEEDED?

• **OHIO HOUSE REP BLESSING (P.E.)** SAID IT WAS NEEDED BASED ON HIS EXPERIENCE AS A PROFESSIONAL ENGINEER; HE INTRODUCED THE LAW.

• **JOE WARINO** REPRESENTING OSPE SAID THAT BECAUSE P.E.S AFFECT PUBLIC HEALTH, SAFETY AND WELFARE, THEY NEED THIS ETHICS TRAINING. ALSO, HE EXPRESSED CONCERN ABOUT PLAN STAMPING, WHISTLE-BLOWING, AND HUMAN TRAFFICKING. LASTLY, HE NOTED THAT THE ETHICS REQUIREMENT SUPPORTS THE “ENGINEER’S CREED.”

• **JOHN GREENHALGE** FROM THE OHIO ENGINEERS BOARD STATED THAT THE BOARD SUPPORTED THE LEGISLATION BECAUSE ETHICS INSTRUCTION HAS REDUCED THE INCIDENCES OF PLAN STAMPING AND OTHER RULE VIOLATIONS.

• **MELINDA GILPIN**, EXECUTIVE DIRECTOR OF THE PROFESSIONAL LAND SURVEYORS OF OHIO, INC. SUPPORTED THE CHANGE BECAUSE IT IS SIMILAR TO WHAT IS REQUIRED IN OTHER STATES AND THAT ANECDOTAL EVIDENCE SHOWS ETHICAL VIOLATIONS ARE RELATED TO A LACK OF TRAINING.

• LASTLY, **TIMOTHY AUSTIN** OF THE NSPE SUPPORTED THE LAW BECAUSE IT IS CONSISTENT WITH THE NSPE CODE OF ETHICS.
DOES R.C. 4733.151 (C)(2) REALLY CHANGE ANYTHING OR ARE WE JUST KEEPING UP WITH THE PROFESSIONAL JONESES?

Neither in my opinion, for at least two reasons.

According to the Supreme Court of Ohio ...

Beginning with the 2013/2014 Attorneys still will be required to earn two and one-half hours of instruction in “professional conduct.” However, they will no longer be required to earn one hour of ethics, one hour of professionalism, and one-half hour of substance abuse education every two years.
EXAMPLE: ETHICAL COMPROMISE

“Algorithmic Morality of Self Driving Cars”

• How should the car be programmed in an unavoidable accident situation: 1 vs. many?
  • Hit wall vs. other car = ok
  • Public sentiment is utilitarian but selfish: “yes but not me”
• We all may be magnanimous enough to be willing to sacrifice ourselves, but how about our children? No.

The “Ethical Engineer” makes each decision using his/her highest mental capacity, diligence and skill while continually keeping the best interest of the public in mind.

-- me

THANK YOU

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QUESTIONS?