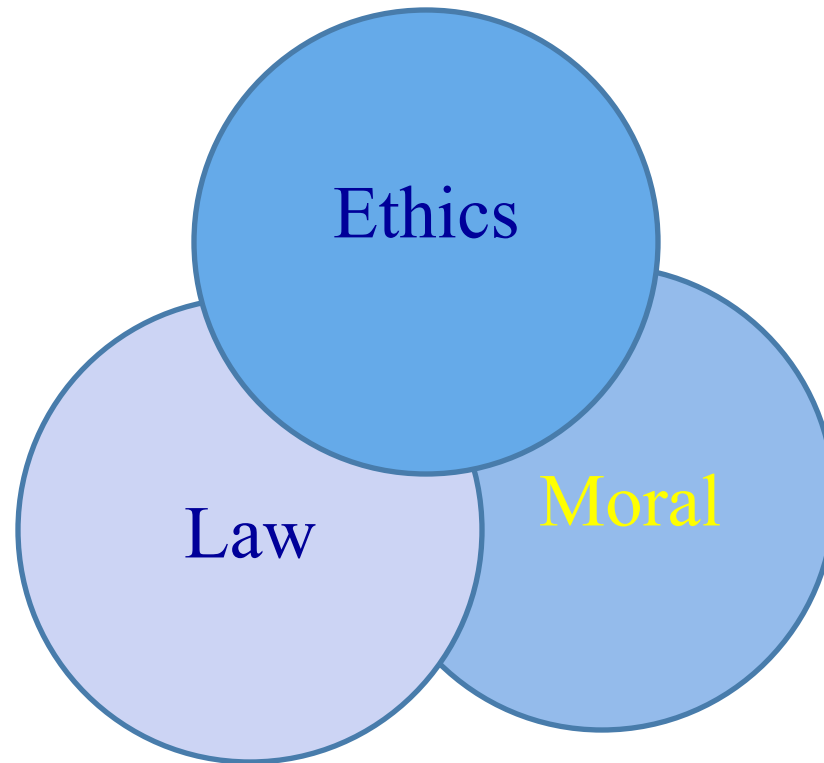


# Ethics Theories and Engineering Ethics

# Societal Normative Systems



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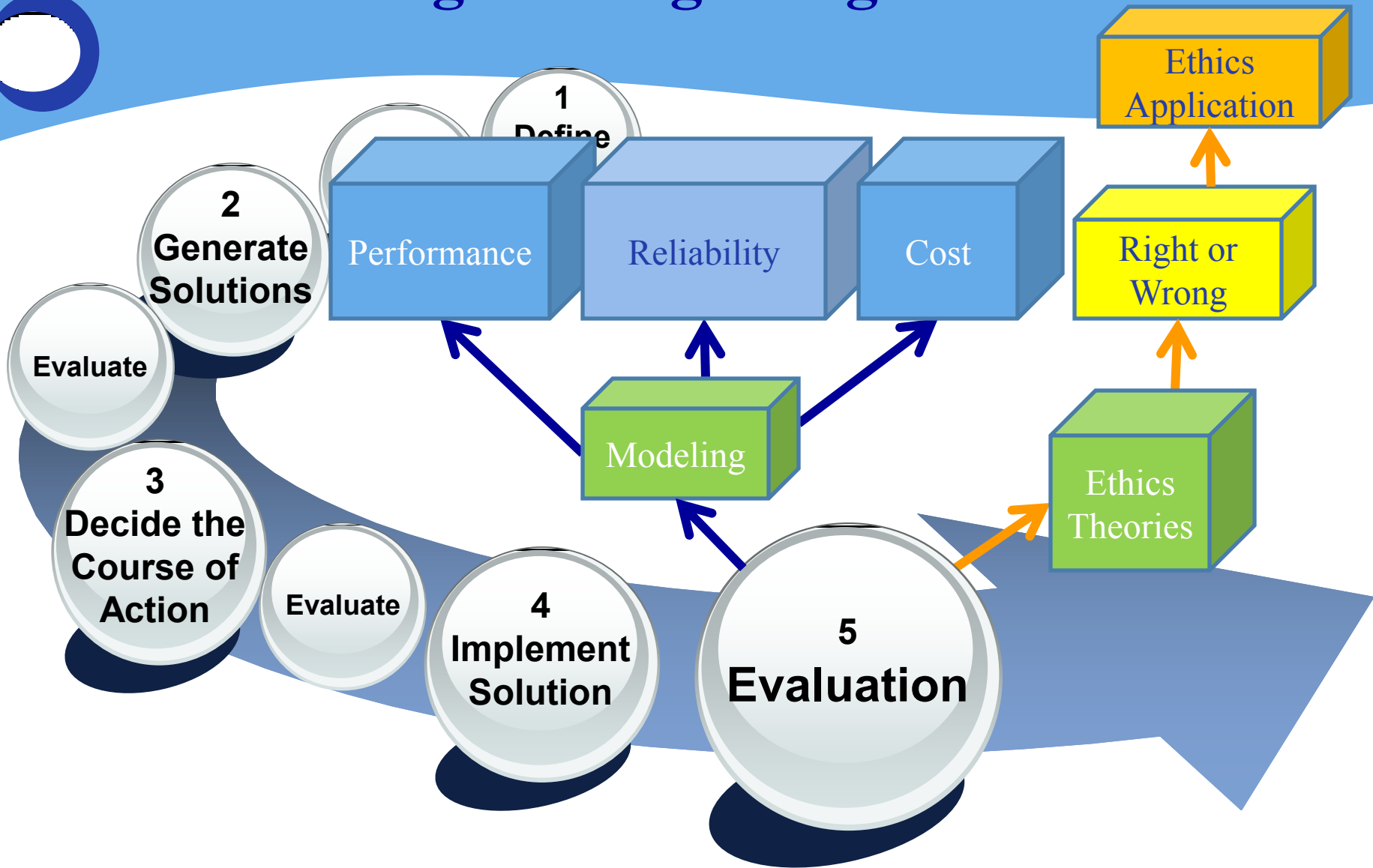
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**Normative Ethics Theories**

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# The Engineering Design Process

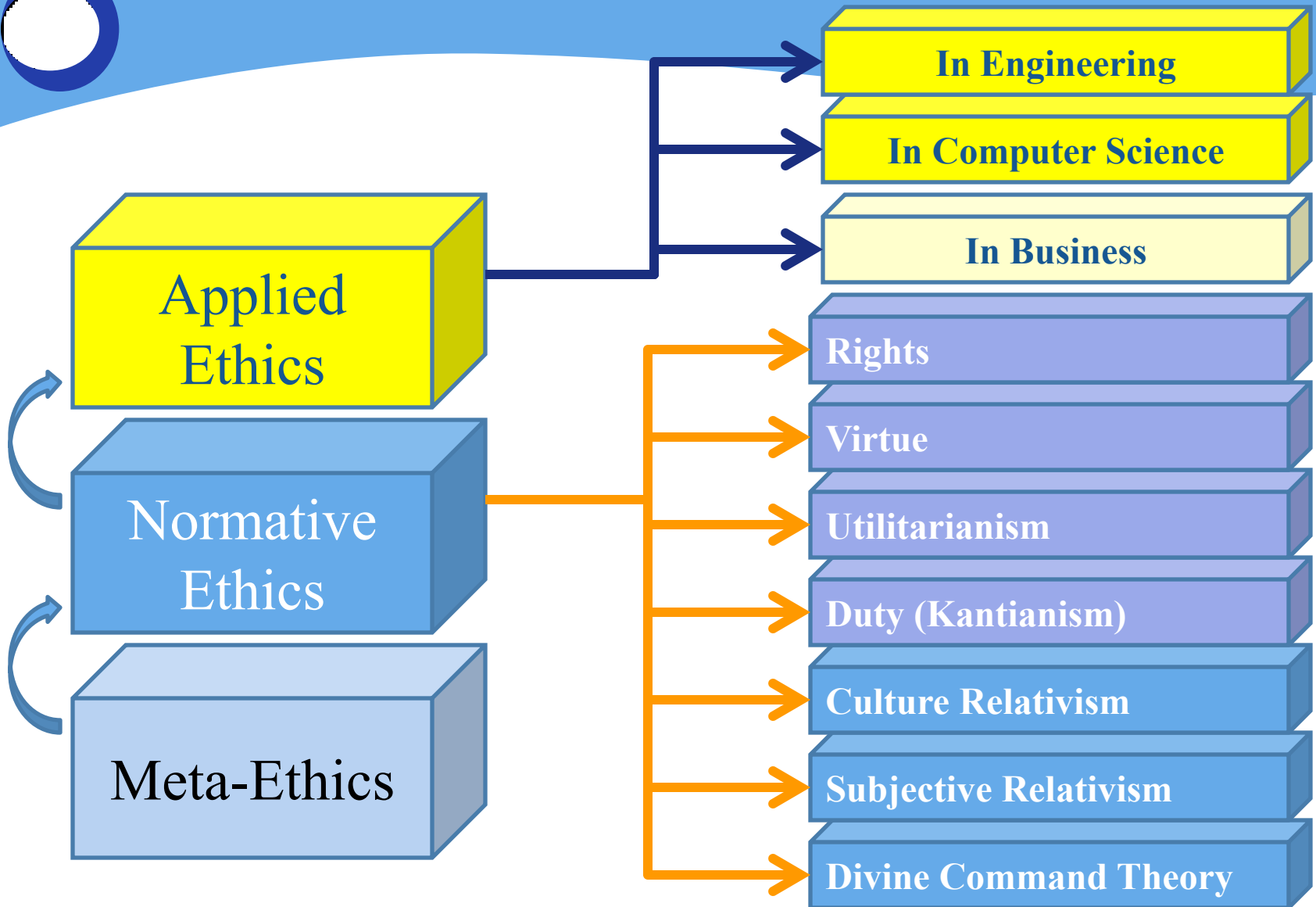


# Ethics...



- ❖ Rules, principles, or standards that govern the conduct of the person or the conduct of the members of a profession!
- ❖ Theories that define terms in uniform ways and links ideas and problems together in consistent ways

# Subdivisions of Ethics



# Subdivisions of Ethics

- ❖ Ethics has three main subdivisions:
  - Meta-ethics: Deals with the origin, purpose, and nature of ethical evaluations (*not* deciding what is right & wrong)
  - Normative ethics: Determine how to identify right from wrong, and how to make ethical decisions
  - Applied ethics: Applies principles of normative ethics to particular subjects or topics (e.g., business ethics, engineering ethics, ethics of abortion or other current issues, etc.)

# Ethical Thought

- ❖ Important theories for analyzing cases
- ❖ Ethical conduct is fundamentally grounded in a concern for other people
- ❖ Having multiple theories to apply actually enriches the problem-solving process
  - Allows problems to be looked at from different angles
  - Each theory stresses different aspects of a problem





# Kantianism (Duty) Ethics

- ❖ “Always treat humanity, whether in yourself or in other people, as an end in itself and never as a mere means.”
- ❖ Act only from moral rules, which are universal moral laws and duty.
- ❖ Duty Ethics

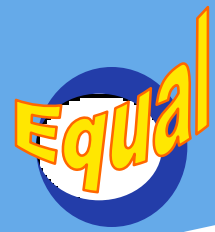


Immanuel Kant  
1724-1804



# Basic Insights of Kantianism Ethics

- ❖ The only thing in the world that can be called good without qualification is a good will.
- ❖ Be honest, do not cause others to suffer, and be fair.
- ❖ Specific duties to be performed regardless of whether it leads to the most good result.
- ❖ Actions are good that respect the rights of the individual
- ❖ Consequences for society as a whole are not the only moral consideration



# Basic Insights of Kantianism Ethics

- ❖ All persons are treated as moral equals.
- ❖ The same morality (rule) ought to apply to all people of all history, which allows moral judgments based on the history.
- ❖ Kantianism ethic is rational, which allows us to use logic to explain the reason behind the solutions to ethic problems.

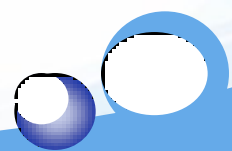
# The Cases Against Kantianism Ethics

- ❖ Sometimes, no single rule fully characterize an action.
- ❖ There is no way to resolve a conflict between rules.
- ❖ No exception is allowed. For example, if your girlfriend has an ugly haircut and she asks you if you like her haircut. If you say “It looks good”, then you are violating the duty ethics code.
- ❖ You should feel guilty to take your child to Disneyland, instead of using the money to feed 1000 hungry children in Africa.



# Utilitarianism Ethics

- ❖ Get a balance between the good and bad consequences of an action
- ❖ Balance the needs of **individual** with the needs of **society** that will provide the most benefit to the most people
- ❖ What's best, in general, for everyone?



# Basic Insights of Utilitarianism

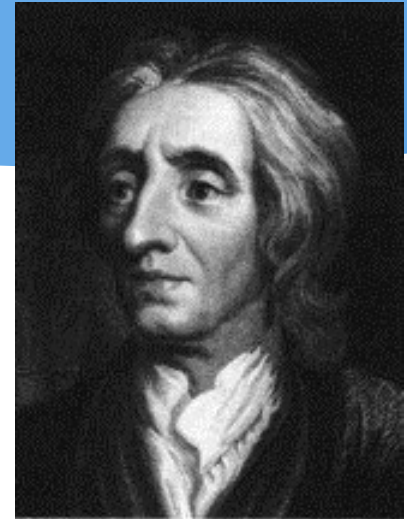
- ❖ To make the world a better place
- ❖ We should do whatever will bring the most benefit to all of humanity
- ❖ Consequently, the emphasis in utilitarianism is on consequences, not on intentions
- ❖ Is a demanding moral position that often asks us to put aside self-interest for the sake of the whole.
- ❖ Can be criticized for its view that “the ends justify the means”.



# Rights Ethics



- ❖ Do not violate people's moral rights
- ❖ "Humans have a right to life, liberty and property"
- ❖ Respect individuals and protect the rights of others
- ❖ Duty Ethics and Rights Ethics:
  - Duty: More on the right of majority
  - Rights: Everyone's right



John Locke  
1632-1704

# Virtue Ethics (by Aristotle)



- ❖ Virtue = “goodness”
  - Intellectual virtue, developed through education
  - Moral virtue, coming from repetition of the appropriate acts
- ❖ Virtue ethics are about **happiness** through character—and the type of person we should strive to be
- ❖ Actions are considered right if they support good character traits (virtues)
- ❖ And wrong if they support bad character traits (vices)





# Virtue Ethics (by Aristotle)

Virtues (good characters) that result in happiness include

- Benevolence
- Civility
- Compassion
- Conscientiousness
- Cooperativeness
- Courage
- Courteousness
- Dependability
- Fairness
- Friendliness
- Generosity
- Honesty
- Industriousness
- Justice
- Loyalty
- Moderation
- Patience
- Prudence
- Reasonableness
- Self-disciplined
- Self-reliance
- Tactfulness
- Thoughtfulness
- Tolerance



# Strengths of Virtue Ethics

- ❖ It provides a motivation for good behaviors.
  - Utilitarianism and Kantianism's reasons behind the action is cold and analytical;
  - Virtue ethics stresses the importance of loyalty, thoughtfulness, courteousness of health social interactions
- ❖ It provides a solution to the problem of impartiality
  - Utilitarianism and Kantianism require to be completely impartial and treat all human beings as equals.
  - Virtue ethics justifies you to take your children to Disneyland, instead of donating the money to starving children in Africa.



# Weakness of Virtue Ethics

- ❖ The multiple virtues can allow the justification of injustices.
- ❖ One cannot apply virtue ethics alone in many cases. One has to set different priorities to different virtues in different situations.
- ❖ Example: You have limited resource to fight one of the two fires
  - Prudence: Fight the fire that can cause more property damage (Utilitarianism)
  - Fight the fire in the area that paid the city tax (Duty)

# What are Engineering Ethics?

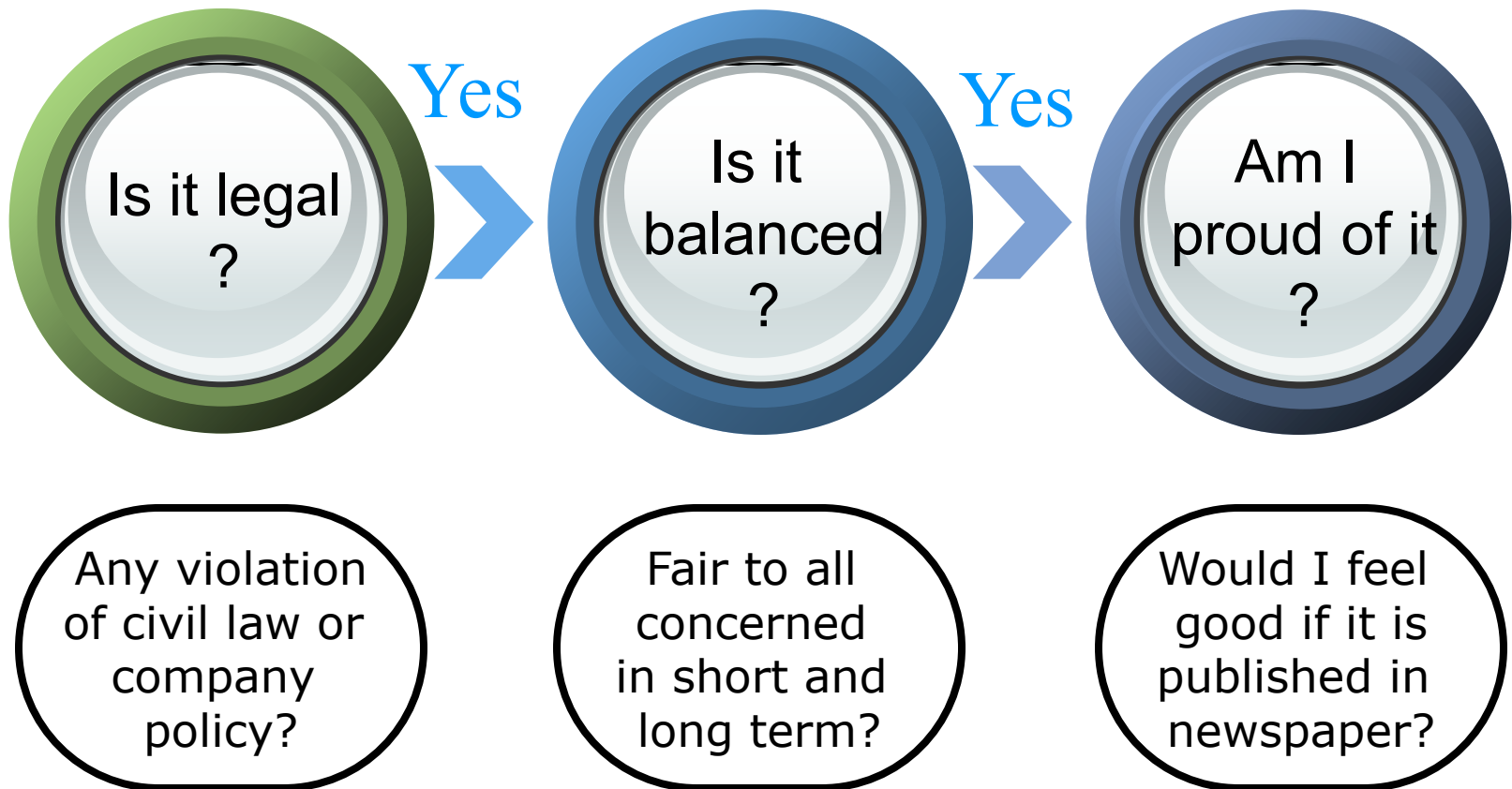
## Engineering ethics

- ❖ deal with what is good, what is bad, and what are moral duties and obligations
- ❖ are a set of moral principles and behavioral standards that everyone is expected to follow.
- ❖ define code of conduct that all engineers are expected to follow.

# General Ethical Code in Engineering

- ❖ Duty and rights ethics take precedence over utilitarian ethics and virtue ethics
- ❖ A balanced approach is necessary

# Check Questions in Engineering Ethics



# IEEE Code of Ethics

<http://www.ieee.org/portal/pages/iportals/aboutus/ethics/code.html>

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;
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;

# IEEE Code of Ethics

<http://www.ieee.org/portal/pages/iportals/aboutus/ethics/code.html>

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