TEXTBOOK ON
PROFESSIONAL ETHICS

ANKUR VYAS

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INTRODUCTION TO ETHICS

Introduction to Ethics: Basic terms- Moral, Ethics, Ethical dilemma, Emotional intelligence. Moral development theories of Kohlberg and Piaget. View on ethics by Aristotle. Governing factors of an individual's value system. Personal and professional ethics .

1.1 Basic terms- Moral, Ethics, Ethical dilemma, Emotional intelligence

(i) Morals

Morals are not qualities. It is the attributes of the person, but outside his or her control. It is understood to be those that make person purely “good”.

A moral is a message conveyed or a lesson to be learned from a story or event. The moral may be left to the hearer, reader or viewer to determine for themselves, or may be explicitly encapsulated in a maxim.

The discipline dealing with what is right or wrong or with moral duty and obligation such as:

a) A group of moral principles or set of values.

b) A particular theory or system of moral values.

c) The principles of conduct governing an individual or a profession, standards of behavior.

(ii) Ethics

Ethics is a set of moral principles. Ethics is the scientific involvement and demonstration of morality.

Some universally accepted ethical standards are as follows:

a) Ethical standards are helpful in understanding and resolving moral determines.

b) They are useful in justifying professional obligations and ideals.

c) They are useful in expressing everyday moral experience and justifying the professional morality.

Different definitions of Ethics

Rushworth Kidder states that "Standard definitions of ethics have typically included such phrases as 'the science of the ideal human character' or 'the science of moral duty'".

Richard William Paul and Linda Elder define ethics as "A set of concepts and principles that guide us in determining what behavior helps or harms sentient creatures".

The Cambridge Dictionary of Philosophy states that the word ethics is "Commonly used interchangeably with 'morality' ... and sometimes it is used more narrowly to mean the moral principles of a particular tradition, group or individual."

Paul and Elder state that most people confuse ethics with behaving in accordance with social conventions, religious beliefs and the law and don't treat ethics as a stand-alone concept.

The word "ethics" in English refers to several things. It can refer to philosophical ethics or moral philosophy a project that attempts to use reason in order to answer various kinds of ethical questions. As the English philosopher Bernard Williams writes, attempting to explain moral philosophy: "What makes an inquiry a philosophical one is reflective generality and a style of argument that claims to be rationally persuasive." And Williams describes the content of this area of inquiry as addressing the very broad question, "how one should live" .

Ethics can also refer to a common human ability to think about ethical problems that is not particular to philosophy. As bioethicist Larry Churchill has written: "Ethics, understood as the capacity to think critically about moral values and direct our actions in terms of such values, is a generic human capacity."

The English word ethics is derived from an Ancient Greek word êthikos, which means "relating to one's character". The Ancient Greek adjective êthikos is itself derived from another Greek word, the noun ethos meaning "character, disposition".

Moral Dilemma(Ethical Dilemma)

Moral dilemma are situations in which two or more moral obligations, duties, rights, goods a ideals come into conflict with each other.

Occurs:

*Problem of vagueness.

*Problem of conflicting reasons.

*Problem of disagreement.

Steps to overcome moral dilemma:

*Identify the moral factors and reasons.

*Collecting all the available moral considerations.

*Ranking the above, collected moral considerations.

*Making factual inquiries.

*Inviting discussions, suggestions from colleagues, friends, etc.

*Taking the final decision.

Gilligan‘s criticism on Kohlberg‘s theory can be made very clear with the help of a famous example used by Kohlberg in his interviews and questionnaires. This is referred as Heinz’s Dilemma.

This example was about a woman and Heinz, her husband, living in Europe. The woman was infected with a serious disease, cancer. The doctors told her to use an expensive drug to save her life. The druggist who also invented that medicine charged him with ten times the cost of manufacturing the drug.

Inspite of his poverty, Heinz took a lot of effort to borrow the money, but he could get only half of the amount needed. He approached the pharmacist and begged him to sell the medicine at a cheaper price or allow him to pay for it later. But the pharmacist disagreed to do so.

Eventually without any hope, Heinz forcibly entered into the pharmacy and robbed the drug. The question that arises here is, was the theft morally right or wrong? By asking this question to the males, Kohlberg received two different sets of answers.

One is based on the conventional level that is Heinz did a wrong thing. Another one is based on the post conventional level that is Heinz was correct as the life of his wife is more important than the property right of the pharmacist.

But when the same question was asked to the women, they gave same answer. They replied that Heinz was wrong. They further added that instead of robbing the medicine, Heinz could have tried some other alternative solution. They also told that Heinz must have convinced the pharmacist to give the medicine.

From the above, Kohlberg concluded that women‘s decisions are always based on conventional rule and also they always have various opinions in applying the general principles and moral rules about the right to live.

Based on the Kohlberg‘s comment on the women, Gilligan came to a different conclusion. She tells that it shows greater sensitivity to people and personal relationships. She concluded that the decisions taken by women is based on the context and not on the basis of general rules ranked in order of priority.

Now, the question here is, how Gilligan‘s theory of moral development relates to the theory of moral autonomy as a goal of studying ethics at the college level?

Autonomy needs independent reasoning on the basis of moral concern and not separated from other people. As per Kohlberg‘s theory and Gilligan‘s theory, moral autonomy must be consistent with ‘context -oriented‘ and also with an awareness on general moral principles and rights.

Emotional Intelligence:

Emotional intelligence consist of the following:

Honesty

Honesty means expressing one's true feelings. It is all emotional intelligence, which gives the ability to accurately identify our feelings. A society in which people are totally honest with each other would be difficult to tolerate.

The requirement of total honesty would mean that the people would have to be mutually frank with one another about their opinions and be unable to exercise the sort of tact and reticence that we associate with polite and civilized society.

Courage

Courage is the ability and willingness to confront fear, pain, danger, uncertainty or intimidation. Physical courage is the courage in the face of physical pain, hardship, death or threat of death.

Courage implies self respect and governs confrontations with danger and risk. It is not excessive rashes or cowardice but it is the middle ground.

Taking risks and being bold in facing are the hallmarks of courage as a human value. It defines the mental make up of an individual in taking bold decisions even under adverse situations.

Honesty:

Honesty is the human quality of communicating with a truthful, direct, and complete intent. It is related to truth as a value.

Honesty means simply, stating facts and views as best one truly believes them to be. It includes both honesty to others, and to oneself and about ones own motives and inner reality.

Engineering profession resembles with the construction process of a structure or building-honesty being its foundation. The value of the engineering services depends on honesty. Unreliable engineering judgment will be the worst. Rather it is better to be with none at all. Honesty also refers to the maintenance of truth or not to misuse the truth. Misuse of truth may indicate failing to communicate the truth also. Communicating the truth when actually they are not supposed to be informed and allowing the judgment with respect to the truth to be corrupted are also an act of misuse of truth.

Lying:

Honesty means to avoid lying also. Lying may be of any type, for instance, an engineer by mistake communicates some test results on a sample testing. Actually lying means a person happened to be intentionally with less knowledge or less awareness, communicating wrong or misguided information. But of course, even in such incidents complications may arise. To be honest, an individual should not give information that he believes to be false even though it is actually true. Even gestures and nodding and some other indirect statements may also bring false statement or meaning during conversation, even though the individual has not said any lie.

(b) Deliberate deception:

Sometimes an engineer may discuss some matters on technical aspects in such a way implying knowledge, which he does not have to impress an employer or a customer. In that case, that engineer is definitely engaging in deliberate deception though he is not lying.

(c) Withholding the information:

Sometimes people hide certain information in conversation. Although it is not a matter of lying, it is another type of deceptive behaviour. Suppose an engineer during the proposals to his executive, fails to indicate some of the negative aspects of the project, he gets involved in serious deception, even though he is not lying. So dishonesty may be considered as a form of omission if anyone fails to pass on the information that his superior or his subordinates would reasonably expect; and such information should not be omitted.

(d) Adequate promotion of dissemination of information:

Sometimes an engineer may involve himself in planning for protection of the public health and safety. In such cases the obligation of the engineer is to ensure the maximum possible effect to disseminate the information regarding safety and health of the public. For instance, in situations like earthquake, tsunami, fire hazard, infectious diseases affected people in those areas must

receive the information well in advance for the purpose of avoiding a disaster. Failing to develop the dissemination of such communication is also a false and dishonest.

(e) Seeking of the truth:

The most honest engineer is the one who is involved in searching and locating the truth not merely to avoid dishonesty. It would not be fair to assume that lying is a serious mistake than deliberate dissemination, withholding information, not adequately promoting the dissemination of information or failing in search of truth.

(f) Maintaining confidentiality:

Engineers should not get interested in disclosing or discussing some confidential information without the knowledge or consent of the clients. Mostly such confidential information may be either, information to the engineer by client or findings by the engineer during the process of the work carried out by the client.

(g) Permitting any judgment leading to corruption:

Professional judgment is an important part of any type of professional services. At times, these judgments may be corrupted or unduly influenced by certain conflicts of interest or some extraneous factors. This attitude is also another kind of misuse of truth. Some occasions, engineers in the design process may submit specification of minute equipment. Though the equipment is of good quality some later developments and innovations related to that equipment might actually be better for the effective functioning. But when the engineer makes use of an idea of a company proposed by any particular individual who is known for so many years by the company, the engineer may be correct and honest in certifying the company but he is not giving his employer the benefit of the latest innovations. Thus he makes unbiased professional judgment. This may also be considered as a form of dishonesty.

Truthfulness and trustworthiness are the two major aspects of honesty. Each one relies on the other or in other words, truthfulness is most essential to being worthy.

Honesty normally includes the activities like not liking, not stealing, not involving in bribes and kickbacks. In simple words, it refers to paying respect to the property of others.

Honesty in beliefs: It denotes intellectual honesty i.e., forming of one's beliefs without self-deception.

Honesty in speech: It refers to the action of not deceiving or not intentionally misleading others. For instance, acts like pretending, manipulating somebody's attention, intentionally lying, misleading and withholding some pertinent information which someone or the client has to know.

3. **Honesty in act:** It means that the individual should not steal, or manipulate accounts, or get bribes and kickbacks.

4. **Honesty in discretion:** It means that an employee should not interfere with the decisions of the employer or the client. He should not interfere with the confidential matters.

Thus, honesty being the basic virtue for those people who engage themselves in the relationships with other employers and clients.

Honesty on campus

Similarly honesty on campus is also an important matter to train the students on the study of ethics. They must be very cautious in making use of the literature survey, which they have made for thesis presentation or fabrications of products or models. New ideas and reports can also be heard that there has been substantial increase in the most serious types of cheating, during examinations. It is found out that the experience of the students in engineering colleges is basically a training period for their professional careers. So part of this training programme must be in the area of professional honesty and ethics.

In general the dishonest attitudes expected from the professional students are forgery, trimming data; plagiarism and multiple authorship in publications could raise, particularly sensitive issues, with regard to honesty in scientific and technological work.

1.2 Moral development theories of Kohlberg and Piaget

It is the ability to think critically and independently about moral issues and apply this normal thinking to situations, that arise during the professional engineering practice.

Lawrence Kohlberg's Theory:

According to Kohlberg, the people progressed in their moral reasoning through a series of stages. His theory is based on the foundation that morality is a form of reasoning that develops in structural stages.

The three levels of moral development suggested by Kohlberg are:

1) Pre-conventional level

2) Conventional level

3) Post-conventional level

1) Pre-Conventional Level

The Pre-conventional level of moral development is based on the desire to derive benefits for oneself. In the first level, individuals behave according to socially acceptable norms, which are taught mainly by parents and teachers.

At this level, individuals are motivated mainly by their interest to avoid punishment or by that desire to satisfy their own needs or by the external power exerted on them.

This is the level of development of all young children and some adults, who are unable to reach beyond a certain limit.

2) Conventional Level

In the second level, the moral thinking and behavior of the individual are determined by the standards of their family, community and society. That is, the norms of customs of one's family/community/ society are accepted and adopted as the ultimate standard of morality.

At this level, individuals are motivated by the desire to please others and to the social units expectations, without bothering much about their self-interest.

Thus as per the second level, individuals give more importance to loyalty and close identification with others than their own self- interest.

The second level of worst thinking is found in society generally. That's why it is named as 'conventional of moral development'.

3) Post-Conventional Level

In the post-conventional level, the individuals are guided by strong principles and convictions, not by selfish needs or pressure from society.

According to Kohlberg, these individuals are called as 'autonomous', because they think for/by themselves and also they do not believe that customs are always right.

The people at this level want to live by general principles that are applied to all people. They always desire to maintain that moral integrity, self-respect and the respect of other autonomous individuals. Kohlberg felt that the majority of adults do not reach the post- conventional level.

Also Kohlberg believed that individuals could progress only through these stages one by one. That is, they cannot 'jump' the stages. He also pointed out that the people at post-conventional level have more moral development and hence the moral autonomy.

Kohlberg's Levels of Moral Development		
Level	**Appropriate Age Range**	**Moral Development**
Pre conventional	Birth to 9 years	•Self-centered attitude •Willingness to avoid punishment •Desire to gain reward
Conventional	9 to 20 years	•Respect for conventional rules and authority •Willingness to please or satisfy others •Importance to loyalty and choose identification with others
Post-conventional	Over 20 years or may be never	•Thinking for and by themselves •Agreed upon universal general principles

		•Personal moral stands.

Piaget's Theory:

Piaget's stage theory describes the cognitive development of children. Cognitive development involves changes in cognitive process and abilities. In Piaget's view, early cognitive development involves processes based upon actions and later progresses to changes in mental operations.

Piaget's Stages of Cognitive Development

The Sensorimotor Stage:

During this stage, infants and toddlers acquire knowledge through sensory experiences and manipulating objects. It was his observations of his daughter and nephew that heavily influenced his conception of this stage. At this point in development, a child's intelligence consists of their basic motor and sensory explorations of the world. Piaget believed that developing object permanence or object constancy, the understanding that objects continue to exist even when they cannot be seen, was an important element at this point of development. By learning that objects are separate and distinct entities and that they have an existence of their own outside of individual perception, children are then able to begin to attach names and words to objects.

The Preoperational Stage:

At this stage, kids learn to pretend but still struggle with logic and taking the point of view of other people. They also often struggle with understanding the idea of constancy. For example, a researcher might take a lump of clay, divide it into two equal pieces, and then give a child the choice between two pieces of clay to play with. One piece of clay is rolled into a compact ball while the other is smashed into a flat pancake shape. Since the flat shape looks larger, the preoperational child will likely choose that piece even though the two pieces are exactly the same size.

The Concrete Operational Stage:

Kids at this point of development begin to think more logically, but their thinking can also be very rigid. They tend to struggle with abstract and hypothetical concepts. At this point, children also become less egocentric and begin to think about how other people might think and feel. Kids in the concrete operational stage also begin to understand that their thoughts are unique to them and that not everyone else necessarily shares their thoughts, feelings, and opinions.

The Formal Operational Stage:

The final stage of Piaget's theory involves an increase in logic, the ability to use deductive reasoning, and an understanding of abstract ideas. At this point, people become capable of seeing multiple potential solutions to problems and think more scientifically about the world around them.

It is important to note that Piaget did not view children's intellectual development as a quantitative process; that is, kids do not just add more information and knowledge to their existing knowledge as they get older. Instead, Piaget suggested that there is a qualitative change in how children think as they gradually process through these four stages. A child at age 7 doesn't just have more information about the world than he did at age 2; there is a fundamental change in how he thinks about the world.

To better understand some of the things that happen during cognitive development, it is important first to examine a few of the important ideas and concepts introduced by Piaget. The following are some of the factors that influence how children learn and grow:

Fundamental Concepts

Schema - A schema describes both the mental and physical actions involved in understanding and knowing. Schema are categories of knowledge that help us to interpret and understand the world.

In Piaget's view, a schema includes both a category of knowledge and the process of acquiring that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing schema.

For example, a Child can have a schema about a type of animal, such as a dog. If the child's sole experience has been with small dogs, a child might believe that all dogs are small, furry, and have four legs. Suppose then that the child encounters an enormous dog. The child will take in this new information, changing the previously existing schema to include these new observations.

Assimilation - The process of taking in new information into our already existing schemas is known as assimilation. The process is somewhat subjective because we tend to modify experiences and information slightly to fit in with our preexisting beliefs. In the example above, seeing a dog and labeling it "dog" is a case of assimilating the animal into the child's dog schema.

Accommodation - Another part of adaptation involves changing or altering our existing schemas in light of new information, a process known as accommodation. Accommodation involves modifying existing schema, or ideas, as a result of new information or new experiences. New schema may also be developed during this process.

Equilibration - Piaget believed that all children try to strike a balance between assimilation and accommodation, which is achieved through a mechanism Piaget called equilibration. As children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge and changing behavior to account for new knowledge . Equilibration helps explain how children can move from one stage of thought into the next.

Final Thoughts

One of the most important elements to remember of Piaget's theory is that it takes the view that creating knowledge and intelligence is an inherently active process. "I find myself opposed to the view of knowledge as a passive copy of reality," Piaget explained. " I believe that knowing an object

means acting upon it, constructing systems of transformations that can be carried out on or with this object. Knowing reality means constructing systems of transformations that correspond, more or less adequately, to reality."

1.3 View on ethics by Aristotle

Aristotle in his Nicomachean ethics, defined the virtues obtained habits. It allows an individual to employ effectively in activities that define him as a human being.

According to his theory, the virtue of wisdom or good judgment is highly essential for accomplishing the rational activities successfully. As per this theory, virtues or tendencies to find the “Golden Mean” between the extremes of excess and deficiency.

Aristotle’s view of the sciences drives his ethical theory. His theory is known more popularly today as virtue ethics.

1. The Hierarchy of Sciences: Every art, science, action and purpose aims at some good. This is a teleological view, one who uses ends or goals to describe our actions. There are different end results for different actions. For instance, the end of medicine is health, of economics wealth and so on. Also, there is bridle-making for horses, horsemanship for military action and strategy, etc. So these ends can be imagined to be in a massive hierarchy.

2. There is an “Absolutely Final” End of all the Sciences. Aristotle says that if there is one end to which all these sub-ends aim and beyond which we do not use it to aim to anything else, it would be of great importance in human life.

3. The “Absolutely Final” End is Happiness. This one end that all people and their actions is aiming at is happiness where happiness is thriving, flourishing or living well and not merely a pleasant or giddy feeling or a smiley person, but happiness means different things to different people. Candidates for happiness includes health, wealth, honor, virtue and pleasure. Plato says that there is a Good Itself that is the cause of these goods (health, wealth, pleasure, virtue, honor), but that does not exist, according to Aristotle. Base people think that happiness is pleasure. “Better people” think happiness is honor, but honor needs and depends on other people. So virtue is the end of political science which implies, politics is the science of human goodness); but a virtuous man is not happy when he’s sleeping or experiencing misfortunes. Aristotle states that the life of money-making is a constraint – wealth is just a way to something else and may even be a burden instead of a great thing. But it does play a role in our gaining happiness: we need money so we can help our friends and people in need.

4. The Function of Humans: In order to define happiness, we have to discover what the unique function of humans, which is: Activity of soul in accordance with reason or not apart from reason in a complete life. The virtue of humans will be such a moral state as makes the humans good and able to perform their proper function well.

5. Happiness needs external goods, since we cannot do noble deeds with no outside means which means, external goods includes friends, wealth, political power, good birth, wholesome children, personal beauty. Ugly people, people with bad children, death of loved ones may cause unhappiness. Animals and children cannot share in the activity of happiness, as they lack reason.

6. Intellectual Virtue Vs Moral Virtue: Virtue is part of the definition of happiness, so let's look at what virtue is further. Virtue is partly intellectual and partly moral. Intellectual virtue is fostered by teaching and needs experience and time. Moral virtue is the outcome of habit and is basically doing good actions Vs deliberating about them. A stone cannot be habituated to anything, but a human has the capacity from nature to habitualized good action. We practice doing brave actions,and we thereby become brave. Keep in mind that the object of Aristotle's inquiry is not purely theoretical; the main object is to become virtuous or good in action. Happiness is an activity for Aristotle.

7. The Golden Mean: Aristotle's rule for ethical action:

a. Theory of excess, deficiency and moderation: Extremes or excesses in both directions, which means excess and deficiency of each virtue, are both fatal and morally wrong and they both result in unhappiness. Too much or too little exercise is not good for one's health. Too much bravery is rashness, too little bravery is cowardice. Other examples include: Ascetic / Temperate / Licentious; Stingy / Magnanimous / Spendthrift. Therefore, the excess and defect are vicious or wrong and the mean is virtuous, the virtue or right.

b. The mean is equidistant from each extreme. The mean may be different for each individual: The right amount vary with each individual; Ex: How much money to donate in order to be generous. Bill Gates requires to give a Lot of money, as he has a lot to give. We don't have to give as much, since we have much less. But we need to give something; we cannot just declare that we don't feel like giving and that is our "mean," if we have money.

c. The virtuous person aims at the mean, but there are many ways in which to go wrong. This feature helps to why the mean is Golden: It is rare to be able to hit the mean in every action, there are not that many people able to do this and hitting the mean allows the agent to achieve happiness. Not every action or emotion has a mean.

d. Virtue is a state of deliberate moral purpose that consist in a mean that is relative to us, the mean being found by reason or as a prudent person will determine it.

e. A good example which sums up the Golden Mean. Ex: One needs to give money to the right person, to give the right.

1.4 Governing factors of an individual's value system

Value or worth seems to have its origin in economics, eventually it was applied analogously to other aspects of life, human values as such.

Value makes actions, characters, traits and objects of anyone good or bad. Evaluating the moral qualities of people or actions and their non-moral characters enviably raises the qualities of the nature or source of those value.

It consists of two possible forms: The first and the simplest one provides a list of values, such as courage or beauty, honesty and compassion. The second tries to answer what exactly is known by beauty or courage or friendship. It may seem to be relatively easy to compile a list of different values, but difficult to answer the second part of the question. Because, the list of values may change from time to time and culture-to-culture. One cannot estimate whether the particular values are useful or not, if no one knows the nature of value in general.

Values are taken from life, environment, from self, society and culture and, beyond all, from the ideal, transcended dimension of human existence and experience. As per the opinions of psychologists and social scientists, values are mere preferences and aversions as, desirable goals, emotions and interests.

The unity and transcendence of the value system, grounded in both human actualities and human possibilities, are seldom envisaged by the sciences of man, society and culture. Values and the process of valuation and development of the value system are analyzed in strikingly divergent and piecemeal manner by the various psychological, social and philosophical studies according to their image of man and their conception of human nature and destiny.

With the aid of values, man delays his satisfactions and sets his mind and behaviour to distant and sometimes unrealizable goals, strivings and ideas. His value judgment enables him to select between alternative courses of behaviour and solve chronic inner tensions and conflicts by accepting standards and demands that control him .

Human values emerge due to two factors. They are,

• The impingement of society and its meanings and norms on the fulfillment of the individual's requirements or drives.

• The introduction of his own awareness, choice and judgment.

These two processes are interdependent. Values are essentially social products and at the same time involve the Individual's assumption of certain common goals and purposes of the atmosphere which have become a part of him.

Therefore, values can be defined as stable, regulative, future-oriented patterns of expression of formalized social life in its relations to man, society and world.

Individuality or integrity, openness or affiliation, integration or unity of transcendence of freedom are the polar attributes of human nature and development which characterizes all human values.

The process of valuation starts at the biological dimension of health, efficiency, well-being and security. Here, the generic values are life-maintenance and enhancement and the values are

wealth, status, equality and justice. It then reaches out and fastens upon potential wholeness, balance and serenity and the realization of being at the ontological or transcendent dimension and the values here are truth, beauty, love, harmony and holiness.

The principal branches of human learning are biology, psychology, social science, ethics and metaphysics which can show multi-dimensional frames of human values. Their findings and explorations now need to be organized into a coherent, general theory of values for the guidance of man, society and civilization.

Values are indispensable, encountered by man everywhere and in all thoughts, relations and actions, no matter what he thinks or believes or how he responds to his fellowman, society and cosmos. Values are subjective, laden with feelings and flexible and at the same time objective, rational and regulative.

'Ethics' generally refers only to professional behaviour.

'Morality' refers to any aspect of human action very often.

`Values' are principles of some one's being good or bad.

Giving respect to others, good listening, sincerity, admiring good actions of others, understanding the responsibility, expressing views, projection of individuality are the values which help any individual to come up in life.

Universal values

• Responsibility

• Commitment

• Integrity

• Patriotism

One of the most important characteristics of moral judgments is that they express human values. Not all expressions of values are moral judgments, but all moral judgments do express the value of human beings. Thus, understanding morality requires investigating what people value and why.

There are three principal types of values which humans can have.

▪ Preferential values

▪ Instrumental values and

▪ Intrinsic values

Each plays an important role in lives of people, but these values don't play equal roles in the formation of moral norms and moral standards.

Preference value, the expression of preference is the expression of some value people hold. When people say that they prefer to play sports, they are saying that we value that activity.

Instrumental values are values like politeness, persistence, courage, ambition etc. They are not the end but a mean of achieving terminal values.

Intrinsic value—Something which has intrinsic value is valued purely for itself - it isn't used simply as a means to some other end and it is not simply "preferred" above other possible options.

This is a concept which regards the subject under consideration, as having some value in its own right, independent of any value placed on it by humans.

1.5 Personal and professional ethics

(1) Personal ethics:

• Personal ethics is concerned with the rules by which an individual lives his or her personal life.

• It also clearly explains how we treat others in our day-to-day life.

Personal ethics refer to a person's personal or self-created values and codes of conduct. From the very beginning, these ethics are instilled in an individual, with a large part having been played by their parents, friends, and family. Common examples may include honesty, openness, commitment, unbiased behavior, and sense of responsibility. What a person develops regarding fairness or learns during childhood remains with him all through his life and is reflected by his actions and words. No matter if he is talking to a friend or his relatives or an elderly, his ethics would be clear from what he says and how he says it. A person's personal ethics are revealed in a professional situation through his behavior.

When examining the concept of personal ethics, this can be understood as individual codes of conduct.These are cultivated within the individual from childhood itself. A person's background and socialization process play a significant role in cultivating these qualities. For example, a child who is being taught honesty by his parents from a tender age itself begins to internalize this quality. As the child grows, his words and actions are influenced by this particular quality. Also, personal ethics has a wide scope that applies in different contexts. When interacting with friends, family and even within the industrial setting, personal ethics of an individual naturally comes out through his conduct. For example, if a person is very committed towards his work and also to those who are close to him, this naturally comes out in his actions. At times, personal ethics of the individual clashes with his professional ethics. In such cases, it creates a dilemma within the individual.

Professional ethics is a personal and corporate standard of behaviour expected of the members of a particular profession.

Professional code of ethics

Many professions that are trusted by the public to apply expert knowledge have a code of ethics which sets out their expectations of a person's behaviour and the boundaries within which members have to operate.

A code of ethics helps us to clarify the profession's values provides a reference point for decision making and can be utilized as a framework for discipline. Most codes of ethics are principles based, providing guidance as to the principles on which decisions and professional judgement should be based, rather than a rigid system of rules.

There tend to be some general themes, so for instance AAT's code of ethics, like that of other professional accountants, sets out five fundamental principles which all the members should apply.

Integrity

Objectivity

Professional competence and due care

Confidentiality

Professional behaviour

Examples

1. I will always speak the truth.

This is something that we would have been taught by our parents and teachers since the time we first began to understand the world. By the time we grow up, this thought would have been ingrained in our system. Following this principle will make us feel satisfied and happy and in case we face a dilemma wherein we need to compromise on our honesty, the result might make us feel sick and remorseful.

2. I will respect all those who are elder to me.

Following this will invariably make we a patient and dutiful human being, yet, we might have to compromise on it if someone is taking advantage of our sincerity and humility.

3. I will never hurt anyone purposely.

This will help hone the way we speak and behave with our family and friends. We will think twice before unnecessarily hurting someone with either our words or actions. If we do so, we will not hesitate to apologize thereafter. Following this principle will make us humble, which is an essential quality that we need in our lives.

4. I will maintain a caring attitude towards everyone.

This will evoke our compassion. It might sometimes be difficult to care for people who have been rude to us in the past, but if we start reacting in the same way, just to be vengeful, what is the use of laying down this principle for ourself? Thus, this ethic is a stringent test of our patience. Our caring attitude even towards our opponents will win them over one day.

Professional ethics:

Professional ethics are as important as personal ethics. Many big well known companies have suffered many destructive effects because the management of the company might have lacked professional ethics. In order to have a successful business, it is important to run a business ethically. However, the term "business ethics", when correctly interpreted, refers to the standards of behavior of every individual in a business and not necessarily only standards of the business, as a whole. Thus, a business or a society that lacks ethical principles is bound to fail sooner or later. The

main components of professional ethics are honesty and respect . Since all the workers are a part of the company, they are expected to denote it ethically. This is why, for the most part, business people normally speak of "we" or "us" rather than the more personal "I". Professional ethics are also commonly known as ethical business practices.

Examples

Since this is something the organization will lay out, the principles vary from one another. Some generalized examples can be essayed as follows:

• Punctuality

No company will tolerate employees who aren't punctual—as regards to arriving at work, submitting your work, meeting deadlines, etc. We cannot enter and leave as we wish, we need to comply to the rules. This is one quality which can be included as a personal ethic too and people who follow this in their personal lives will find it convenient to follow at the workplace too.

• Time Management

Do not whine if we are assigned extra work, time management is crucial for rising up the corporate ladder. Learn the art of managing work in less time and we will be a shining example for our colleagues. Our capability will be found by the quality of work, not the quantity. Before calling it a day, plan for the next day. Learn efficient time management techniques.

• No Gossip

This is an important rule that all should follow. Our workplace is not a place to gossip, especially about our boss or colleagues or even ex-colleagues. If we are caught doing the same, it will reflect very badly on your personality. None of our past goodwill will be taken into account, we will immediately be branded as a gossip-monger or a maverick who can't keep his/her mouth shut. Learn to communicate appropriately and effectively, one small mistake can take us down the drain and if you work in a highly regulated organization, we might as well be cleaning out our desk.

• Safeguard Company Privacy

Some companies even ask their prospective employees sign a legal document preventing them from discussing work outside the company premises. So, preferably, maintain this policy of not discussing our projects or contracts outside the office and if we do, make sure we have prior permission and do not reveal too much in any case. This rule is even more stringent with lawyers and psychiatrists, since they are not supposed to discuss or divulge any details about their clients.

Professional code of ethics

Need For Professional Ethics

Ethics means a code of conduct that directs an individual in dealing with others. Business Ethics is a form of the skill that examines ethical moralities and honesty or ethical problems that can arise in a business environment. It deals with matters regarding morals, principles, duties and corporate governance applicable to a company and its employees, customers, shareholders, media, suppliers, government and dealers. This is what the famous Henry Kravis had to say about professional ethics: “If you don't have integrity, you have nothing. You can't buy accountability. You can have all the money in the world, but if you are not a moral and ethical person, you really have nothing.”

Ethics are also related to the core of management practices like human resource management, accounting information, production, sales and marketing, intellectual property knowledge and skill, international business and economic systems. In the corporate world, the organization’s culture sets standards for shaping the difference between good or bad, right or wrong and fair or unfair. This quote by Albert Einstein says : “Relativity applies to physics, not ethics.” The point being that it is possible to make profits without having to negotiate on ethics. And over and above the factor of correctness associated with ethics, an ethical business and its proprietors only serve themselves, their clients and the whole enterprise much better in the final estimation.

Management gurus often preach on the advantage an ethical company has over their competitors. “A business is successful to the extent that it provides a product or service that contributes to happiness in all of its forms” – these famous words by Mihaly Csikszentmihalyi are a fitting description of this reality.

Lately, ethical issues in business have become more complicated because of the international and diversified nature of many big corporations and because of the difficulty of economic, social, global, political, legal and administrative regulations and peculiarities. Thus, companies have to decide whether to stick to constant ethical principles or to bend according to domestic standards and culture. It may be aptly summed up in the words of John D. Rockefeller: “I believe that every right implies a responsibility; every opportunity an obligation; every possession a duty.”

In every company, the managers needs to remember that leading by example is the first and very important step in nurturing a culture of ethical conduct. Hence, the best way to encourage ethical behavior is by setting a good personal example. Teaching an employee ethics is not always effective. One may explain and define ethics to an adult, but understanding ethics does not necessarily result in the ethical behavior. John Mackey once quoted that “Business social responsibility must not be pushed ; it is a voluntary decision that the entrepreneurial leadership of every company must make on its own.”

Thus, ethics are important not only in business but in all the other parts of life because it is an important base on which a civilized and cultured society is built. A business or society without ethics and scruples is only headed towards self-destruction.

Rules to Professional Ethics in the Workplace

Professionalism is the conduct, aims or qualities which characterize or mark a profession or professional person; it means quality of workmanship or service. Every organization knows that a

professional reputation is the difference between success and failure and they seek to keep their most professional staff.

Professionalism is all about success and influence; having a reputation for excellence and being thought of as someone who exhibits professionalism under any circumstances may open doors for us either in the workplace or in our personal ambition.

Following are ten golden rules to being professional in service to our organization:

• Always strive for excellence; this is the first rule to achieve greatness in whatever endeavor we undertake this is the quality that makes us and our work stand-out. Excellence is a quality of service that is unusually good and so surpasses ordinary standards, it should be made a habit for it to make a good impression on your bosses and colleagues.

• Be trustworthy; in today's society trust is an issue and any employee who exhibits trustworthiness is on a fast track to professionalism. Trustworthiness is about fulfilling an assigned task and as an extension-not letting down expectations, it is been dependable and reliable when called upon to deliver a service. In order to earn the trust of our bosses and colleagues, worth and integrity must be proven over time.

Be accountable; to be accountable is to stand tall and be counted for what actions we have undertaken, this is the blameworthiness and responsibility for your actions and its consequences-good or bad.

• Be courteous and respectful; courteousness is being friendly, polite and well mannered with a gracious consideration towards others. It makes social interactions in the workplace run smoothly, avoid conflicts and earn respect. Respect is a positive feeling of esteem or deference for a person or organization; it is built over time and may be lost with one stupid or inconsiderate action. Continued courteous interactions are needed to maintain or increase the original respect gained.

• Be honest, open and transparent; honesty is a facet of moral character which connotes positive and virtuous attributes such as truthfulness, straightforwardness of conduct, loyalty, fairness, sincerity, openness in communication and generally operating in a way for others to see what actions are being performed. This is a virtue highly prized by employers and colleagues, for it builds trust and increases our personal value to all.

● Be competent and improve continually; competence is the ability of an individual to do a job properly, it is a combination of knowledge, skills and behavior used to improve performance. Competency grows through experience and to the extent one is willing to learn and adapt. Continuous self development is a pre-requisite in offering professional service at all times.

• Always be ethical; ethical behavior is acting within certain moral codes in accordance with the generally accepted code of conduct or rules. It is always safe for an employee to "play by the rules". This is always the best policy and in instances the rule book is inadequate, acting with a clear moral conscience is the right way to go. This can cause friction in some organizations but ethical organizations will always stand by the right moral decisions and actions of their employees.

• Always be honorable and act with integrity; honorable action is behaving in a way that portrays "nobility of soul, magnanimity and a scorn of meanness" which is derived from virtuous conduct and personal integrity. This is a concept of "wholeness or completeness" of character in line with certain values, believes and principles with consistency in action and the outcome.

• Be respectful of confidentiality; confidentiality is respecting the set of rules or promise that restricts us from further and unauthorized dissemination of information. Over the course of our career, information will be passed on to us in confidence – either from the organization or from colleagues- and it is important to be true to such confidences. We gain trust and respect of those confiding in us and increase our influence within the organization.

• Set good examples; applying the foregoing rules helps us to improve our professionalism within our organization but it is not complete until we impact knowledge on those around and below us. We should show and lead by good example. Being a professional is about living an exemplary live within and without the organization.

Professionalism is highly valued by every organization today and professionals are hardly out of work. Apply the ten golden rules of professionalism and enjoy a wonderful, professional and prosperous career.

Difference between Personal Ethics and Professional Ethics

Personal Ethics	**Professional Ethics**
Grooming	
They are developed over a period of time. They can be instilled during our childhood by our parents and people close to us, they can be developed through life-altering experiences or even meeting certain people in life and exchanging ideas with them. Some values can also be inherited or can be developed after a spiritual experience.	They are also shaped over time, but depend a great deal on the company or organization that we work for. They can be developed as we undergo experiences related to business, education, law, politics or any other professional setting. They can be developed through corporate deals, contracts, workshops, etc.
Satisfaction	
They satisfy our personal needs; they only influence our behavior with people we know personally. They define who we are and help us take decisions and hence, control our attitude	They satisfy our corporate needs. Our professional career is influenced by these rules and the more stringently we follow them, the better professional we will be. These values help

towards the people we care about. Whenever we take any decision keeping these values in mind, we invariably think of how it is going to affect us, our behavior or our family and friends.	satisfy the need to feel capable of making fair decisions regarding our position in our workplace.
Results	
Following these ethics result in a clear conscience, positive attitude and a contented spirit. This is because we are following them for ourself and our loved ones. If we fail to follow these principles that we ourself have laid out, we will end up feeling guilty, remorseful, with a sense of failure and lack self-esteem. These consequences may vary from individual to individual.	The results are more predictable, common and obvious in this scenario. Following these ethics may result in an individual being honored as a diligent employee and sincere worker. Not following them may result in being blacklisted in the organization, attract legal issues, loss of money and reputation, etc. These are followed more for the sake of our colleagues, bosses and society.
Reliability	
They rely only on the individual. They are designed by the person himself, to make his life more orderly and disciplined and he depends on them to define his life.	They rely on the organization. They are formulated and laid down by the organization and they need to be upheld by whoever works there, irrespective of his designation or salary. The same rules need not be applied outside the workplace, they are confined within the company and they need to followed with utmost decorum.

2

PROFESSION AND PROFESSIONALISM, ETHICAL THEORIES

Profession and Professionalism: Clarification of the concepts: Profession, Professional, Professionalism, Professional accountability, Professional risks, Profession and Craftsmanship, Conflict of interest. Distinguishing features of a professional. Role and responsibilities of professionals. Professionals' duties towards the organization and vice-a-versa

Ethical Theories: Various ethical theories and their application- Consequentialism, Deontology, Virtue theory, Rights Theory, Casuist theory. Ethical terms: Moral absolutism, Moral Relativism, Moral Pluralism etc. Resolving Ethical Dilemma

2.1 Clarification of the concepts: Profession

A profession is something a little more than a job, it is a career for someone that wants to be part of society, who becomes competent in their chosen sector through training; maintains their skills through continuing professional development (CPD); and commits to behaving ethically, to protect the interests of the public.

We all rely on professionals at many points of our lives – from dentists to teachers, from pension managers to careers advisers, from town planners to paramedics. We rely on professionals to be experts and to know what to do when we need them to.

A profession is a disciplined group of individuals who adhere to ethical standards. This group positions itself as possessing special knowledge and skills in a widely recognised body of learning derived from research, education and training at a high level, and is recognised by the public as such. A profession is also prepared to apply this knowledge and exercise these skills in the interest of others.

A professional is a member of a profession. Professionals are governed by codes of ethics, and profess commitment to competence, integrity and morality, altruism, and the promotion of the public good within their expert domain. Professionals are accountable to those served and to society.

2.1.1 Professional and Professionalism

Engineering is a great profession which helps us to realize anything and everything in the world. Engineering gives homes and jobs to people and also it improves the standard of living.

The important and great liability of engineers when compared to other professions is that the work of an engineer is open to all and all can see the works done by an engineer. He can't hide his mistakes as doctors do. He cannot argue like a lawyer. He can not blame others for his mistakes like the politicians do. If his work is wrong, only he will be condemned by others.

In the modern world today, with the help of the mass communication and other facilities, the products of engineering are much out in the open, than the ancient period. There are also more number of engineers. But, inspite of their large numbers, they have become less visible to the public today.

The invisibility of the engineers makes it difficult for them to keep a sense of accountability and mutual understanding with the public. So the engineers must have some responsibility to do good to the public by their profession or as a professional.

Definition

The word 'Professional' gets different meanings based on the context. In general 'Professional' relates to any work that a person does for an occupation, especially the work which requires some special skill or training.

Profession means a type of job that requires special training and that brings a fairly high status. For example, work connected with medicine, law and education. Whatever may be one's profession one should exhibit one's professionalism, qualities that are typical or expected of a person in that profession.

Professionalism can be achieved by the following criteria:

1. Knowledge

The job/work must include complicated skills, theoretical knowledge a clear judgment and caution. Selection of a person to do a job requires some formal education, like humanistic studies as well as technical studies etc.

2. Organization

Some special societies or organizations must be created for the profession. These organizations and societies must be accepted by the public to set the standards for that particular profession, writing the code of ethics of that profession and also these organizations have to represent that profession to the public. For example, societies like IEEE, ISTE etc.

3. Public good

The job/work must help the public by doing them a favour as quoted in its code of ethics. For instance, medicine is for promoting health, law is for protecting the legal rights of the public and engineering towards improving the public's health, safety and welfare with the help of technological advancements.

To conclude, a job or a work or an occupation can be said to be a profession only when professionals have got all the above mentioned criteria, of late, only engineering, medicine, law and business administration can be called professions. The sanitation work, driving, sports can not be called professions as they are lack the above said criteria.

2.1.2 Professional accountability

Accountability:

• The term “accountability” means being responsible, liable, answerable or obligated.

• In proper terms, the accountability refers to the general tendency of being willing to submit ones action to any type of moral scrutiny and be responsive to others assessment.

• It involves a willingness to present morally convincing reason for ones actions and conduct.

• Morally responsible people are expected to accept moral responsibility for their action.

• According to Stanely Milgram, people are not willing to accept personal accountability when placed under authority.

• There exist a lot of difference and separation between casual influence and moral accountability in all professions including engineering.

• Because of modern engineering practices, the complication in accepting one‘s moral accountability is further worsened. Some of these situations are explained below.

1. Modern engineering projects involve teamwork, in which each member contributes a small amount of personal accountability.

2. The modern organization are based on the principle of “division of work”. Due to this division of work, the personal accountability are also stretched within the hierarchies of authority.

3. A pre-occupation with legalities in a time of proliferating malpractice lawsuits.

Professional accountability

The management consultant Todd Herman defined personal accountability as "being willing to answer for the outcomes resulting from our choices, behaviors and actions."

When we are personally accountable, we take ownership of situations that we are involved in. We see them through and we take responsibility for what happens good or bad. We don’t blame others if things go wrong. Instead, we do our best to make things right.

In the workplace, accountability can go beyond he own tasks. For example, we may be held accountable for the actions of that team.

2.1.3 Professional risks

Effects of risk:

It includes dangers of bodily harm, economic loss and environmental degradation.

Causes of risk:

Risks or harms caused by delayed job completion, faulty products or systems and economically or environmentally injurious solution to technological problems.

Determination of risk:

1. Knowledge of risk.

2. Uncertainties in design.

3. Testing for safety.

Factors influencing risk:

1) Voluntary (Vs) Involuntary risk.

2) Short term (Vs) Long-term consequences.

3) Delayed (Vs) Immediate risk.

4) Expected probability.

5) Reversible effects.

6) Threshold levels for risk.

Types of risk:

1) Voluntarism and control

Voluntary risk:

If people take risk knowingly, then their involvement of risk is known as voluntary risk. Many people consider it safer if they knowingly take on the risks. Also people believe that they have 'full control' over their actions.

Examples for voluntary risks are,

1) Buying a flat/house near a chemical plant that emits low levels of a toxic waste into the air because the property values are very low.

2) Participating in a potentially adventurous sports such as motorcycle racing, skiing, boxing, hang-gliding, bungee jumping, etc, without much safety guards.

Controlled risk:

If the risk-taken is within the control limit, which can be controlled by any means, then the risk is known as controlled risk.

Examples for controlled risk:

In practice, all the dangerous sports such as motorcycle racing, skiing, hang-gliding, bungee jumping, horseback riding, boxing etc, are carried out under the assumed control of the participants. They use all safety guards to keep the risk under control.

2) Effect of information on risk assessments

The information about a harm/danger should be presented in a systematic and appropriate manner. Because, the manner in which the required information for decision making is presented has a great influence on how risks are perceived. Many case studies and experiments have proved that the manner in which information about a danger is presented can lead to undesirable and wrong perceptions about danger.

The threshold limit of individuals for information varies from person to person. Some would be comfortable only when they have information of deeper depth and quality, while others may be comfortable with minimal information.

Many experiments have drawn the following two conclusions.

1) Options perceived, as yielding company gains will tend to be preferred over those from which gains are perceived as risky or only probable.

2) People tend to be more willing to take risks in order to avoid perceived company losses than they are to win only possible gains.

3) Job-related risks

The exposure of risk depends on the person's job and his work place. The nature of the job and the working environment will determine the risk level of a person.

For example, people working in the coal mines, oil mines, shipyards, chemical plants, nuclear power plants, etc., have more probability of being exposed to the high risks. Because of high competition for survival, the employees don't have any options other than undertaking high-risk jobs.

Unions and occupational and safety regulations should regulate and enforce the employers to facilitate the standard working environment. Most importantly, engineer who design and equip workstations must take into account the various safety issues and the worker's suggestions/complaints regarding their workplace.

4) Magnitude and proximity

Our reaction to risk is affected by the magnification and the personal identification or relationship we have with the victims. For instance, we feel very bad if one of our close relatives or friends are subjected to some problems. Thus, the magnitude of risk and the proximity with the victims greatly influences the degree of reaction to the risk.

2.1.4 Profession and Craftsmanship

A core element and distinction between the common service provider and a service provider as a professional craftsman is in the individual service provider's state of mind. The professional craftsman lives and breaths their craft. They identify with the craft, they are their craft, they want to be their craft. They can't imagine being other than in that profession. A professional craftsman is not merely a set of professional skills and a sign on the door, it is a state of mind. Because of this, being a professional craftsman, a master craftsman, is self selecting.

A professional craftsman is like a master diamond cutter. Presented with the diamond, the master diamond cutter examines the uncut diamond from every angle to predict the best cut for that diamond. There are stories of diamond cutters spending weeks and months studying a diamond before deciding what shape it will become, how to make the first cut of many cuts, and how to polish it. They make decisions based on the nature of the rough diamond. A client is not unlike a rough diamond. A professional craftsman examines the client and crafts a service to fit that clients characteristics. The service is tailored, not merely an automated process or heavily leveraged from work done in other but similar services with little or limited alteration.

Being a master craftsman is a choice. It isn't for every professional. It takes time, it takes effort, and it takes desire. While a professional craftsman isn't necessarily in charge, and may not be in management, they are in charge of the products they make and the services they provide. A master craftsman will not relinquish authority over their product or service, regardless of what those in charge say.

Many professionals provide a solid service that is not at the level of a master craftsman. This service may be perfectly fine and meet the needs of a given client. But, this service is not necessarily a crafted service. Providing a crafted service is our choice. It cannot be provided for one client and not for others. We either provide crafted products and services or we don't. A business can be successful and provide basic goods and services. We see this everyday in fast food and low end retail consumer products. But these companies provide goods far from luxury and far from individualized services.

Being in business, whether we own and run our business or work for a company, is a matter of making professional choices. We are in charge of our professional output. If we're simply putting in hours and getting a paycheck, there is nothing wrong with that. But it's not the best that we can professionally decide what we want to be professionally and be that person.

There is a distinction between professional and craftsman.

Let us consider professional as being the outer shell of our mission. This is the suit, the office, and the manner in which we conduct business, which means many things to many people.

Craftsman (or craftswoman, or craftsperson), on the other hand, focuses on the job in hand, not the outer shell. If we have to get my suit dirty or use an inferior pen to sign our name, then so be it. It is the idea of using the tools we have to our advantage. This is nowhere more evident than in skilled manual trades such as electricians, plumbers, and joiners. This is because the tools are more obvious, they are integral to the job, and it is easier to see when the job itself is done well.

There is an intersection between these two where neither is it its extreme. Professionalism without tools or methods is an empty shell, though a pretty one, that can only deceive for a short while. Craftsmanship without professionalism leaves tools going blunt and rusty through lack of care, jobs finished untidily and in an untimely fashion, leaving the customer or client less willing to put up with the craftsman, no matter how good they are with their tools.

So a healthy blend of both sides must be observed to get the best out of a situation: the ideal of craftsmanship is the ideal of “best practice”. Look after our tools and take an interest in getting the best tools for the job, or at least the best out of the tools we do have for the job. To encompass the professionalism ideal is to wrap all our hard work in values that reflect everything positive about our industry and our real work and clearly demonstrating them.

In short, a professional share values with the community and demonstrate these values consistently, and a craftsman care about the tools and processes which are integral to the work.

2.1.5 Conflict of interest

Conflicts of interest means an individual has two or more desires, that all interests cannot be satisfied with the given circumstances.

Examples:

- An employee working in a company depositing a substantial investment in competitor’s company.
- An employee working in a company sourcing as a consultant for a competitor’s company.

2.2 Distinguishing features of a professional

1: Putting customer satisfaction first

Understanding and satisfying customer's needs are the cornerstones of a successful business. So It is important to do what is necessary to meet those needs. After all, without the customer, there is no professional. Professionals identify and satisfy their customer's needs.

2: Making expertise as specialty

The very word professional implies that we are expert. Technical competence is essential in IT.

It is essential to become an expert in the skills and tools necessary to do our job. Always performing to the best of our abilities is necessary. Keeping knowledge up to date is required. Professionals know their trade.

3: Do more than expected

Professionals aren't bound by a time clock. They are given wide latitude in their daily self-management. They are expected to manage their time and work habits. The privilege should not be abused. If we take an hour for personal needs, double the time must be given back.

The reality is that professionals are expected to exceed the standard 40-hour workweek. There are times when we may be asked to work weekends. We may have to forego a vacation or work 12-hour days to complete an important project. All are part of the job description of most professional positions.

Professionals are expected to produce results. Professionals strive to complete deliverables before their due dates and under budget. They meet or exceed expectations whenever possible.

4: Doing what we say and saying what we can do

We should "engage brain" before speaking — can we really do what we are about to say? If we can't, the wizard behind the curtain will eventually be revealed and hard-earned trust can be lost. Professionals deliver on promises made.

5: Communication effective

We should never urge to blame the customer when communication goes awry. Effective communication is ultimately our responsibility — not our customer's. Whether verbal or written, professionals communicate clearly, concisely, thoroughly, and accurately.

6: Following exceptional Guiding Principles

These include appreciating and supporting colleagues, practicing good manners and proper etiquette, having high ethical and moral standards, being honest and fair in all of our dealings with others and obeying the law. These may sound like the attributes of a Boy Scout, but they are basic values that all professionals must follow. Many companies have a document that outlines their operating principles. Professionals adhere to high values and principles.

7: Praising our peers not ourself

Respect and acknowledge the talents of our peers. There is nothing more unprofessional and self-serving than telling others how wonderful we are. Professionals are humble and generous in their praise of others.

8: Knowledge sharing

It is easy to find ourself in that comfortable place with "unique" knowledge. If we are a hoarder of information and are of the opinion that all of the nuts we have squirreled away grant us immutable job security. The harsh reality is that nobody is irreplaceable.

Information isn't a limited resource. Contrary to what some might think, our mind won't be emptied by giving away kernels of wisdom or experience. Knowledge is an ocean of facts and not a stream of data. It is possible to share what we know and still keep one step ahead of the competition. Professionals help their peers and are respected for doing so.

9: Greeting Thank you

Professionals thank others in a meaningful way that most benefits the recipient.

10: Having a smile on our face and the right Attitude in our heart

It's not dishonest to be pleasant when we are having one of those hard days. It is in fact thoughtful to care about how our attitude affects those we interact with. "Share the misery" is not the mark of a professional. Professionals are pleasant even during trying times.

2.3 Role and responsibilities of professionals

Professional roles

- Engineers as saviors
- Engineers as guardians
- Engineers as bureaucratic servants
- Engineers as social servants

- Engineers as social enablers and catalysts
- Engineers as game players

(a) Engineers as saviors

It is believed that engineers hold the key for any improvements in society through technological developments. Thus, people consider engineers as a savior, because they redeem society from poverty, inefficiency, waste and the hardship drudgery of manual labour.

(b) Engineers as guardians

Engineers know the direction in which technology should develop and the speed at which it should move. Thus, many people agree the role of engineers as guardians, as engineers guard the best interests of society.

(c) Engineers as bureaucratic servants

The engineers role in the management is to be the servant who receives and translates the directives of management into solid accomplishments. Thus, the engineers act as a bureaucratic servants. (i.e.,) loyal organization person, while solving problems assigned by the management, within his limitations set by the management.

(d) Engineer as social servants

As we know, engineers have to play the role of social servants to receive society's directives and to satisfy society's desires.

(e) Engineer as social enablers and catalyst

Besides merely practicing the management's directives, the engineers have to play a role of creating a better society. Also they should act as catalysts for making social changes.

(f) Engineer as game players

In actual practice, engineers are neither servant nor masters for anyone. In fact, they play the economic game rules, which may be effective at a given time.

2.4 Professionals duties towards the organization and vice-a-versa

Every professional has a role in the organization in achieving main goal and objective of the organization.

Technical Expert

Employees and business partners may have the role of technical expert. They should be able to perform the work properly. This implies that they play the role of individuals with all the required skills and competencies to undertake their various tasks. In the role of technical expert, both employees and business partners sustain several responsibilities, such as ensuring that they perform corresponding to mission, goals, objectives and organization's expectations.

Team Playing

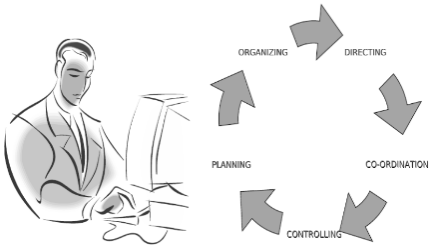
Employees and business partners work in a team. As such they have the responsibility of contributing to the success of the team. Employees and business partners fulfill this responsibility by attending meetings, contributing to decision making and problem solving and participating in organizational projects. Moreover, through task delegation, business partners and employees are able to accomplish more tasks effectively and within a shorter duration of time.

Managing Capability

Employees and business partners in their different levels are responsible for managing one or more business aspects. In their various roles, employees have the responsibility to manage those processes which they are assigned to. For example, employees working in the financial department are responsible for managing the finances of the company. Business partners are responsible for managing the process of decision making and overseeing business operations for the best interest of the business.

Development

Both employees and business partners have the role of business developers. This means that they have the responsibility of growing the organization, especially in terms of profitability. The main objective or bottom line of business is to make profits. In addition to that, employees and partners are the greatest assets that make a business profitable. When employees and partners neglect their roles and responsibility, the profitability of a business is substantially threatened. The following figure depicts the role of a professional in an organization.



2.5 Ethical theories: Various ethical theories and their application

The three most important uses are:

• Ethical theories are helpful in understanding and resolving moral dilemma.

• Ethical theories are useful in justifying professional obligation and ideals.

• It is useful in everyday moral experience and justifying the professional morality.

The ethical theories are useful in many respects.

1. In understanding moral dilemma. They provide clarity, consistency, systematic and

comprehensive understanding.

2. It provides helpful practical guidance in moral issues towards the solution.

3. Justifying professional obligations and decisions, and

4. In relating ordinary and professional morality.

2.5.1 Consequentialism

This is one sub class of teleological moral theory. According to consequentialist accounts of morality the moral value of an act, rule or policy is to be determined in its consequences, not in intentions or motives.

Utilitarianism is the most influential consequentialist theory. Jeremy Bentham in the late 18th century and John Stuart Mill in the 19th century formulated this way of thinking. Such 'hedonistic' utilitarians argue that the principle to judge our moral thinking is utility, that is, the maximization of happiness, in the sense of pleasure and the minimization of suffering, in the sense of pain. In any situation the morally right thing to do is the action that promotes the greatest happiness for the greatest number of people.

However pain and pleasure are not the only criteria that later utilitarians have used to evaluate the consequences of actions, rules or policies. Welfare-utilitarians consider the contribution to, or lessening of human welfare. Preference-utilitarians seek to establish and satisfy human preferences.

Some key issues:

• Calculate net benefit

The net benefit or dis-benefit is found by balancing the happiness and unhappiness resulting from an act or policy. If one seeks the greatest happiness of the greatest number that can be taken to justify overriding individual unhappiness in the interests of the happiness of the greatest number.

• Difficulty in calculating consequences

This theory requires that the consequences of acts or policies should be calculated. However in many situations one cannot predict consequences with any certainty and therefore consequentialism is probabilistic, one forecasts the consequences to the best of one's ability. Ethics committees using consequentialist criteria necessarily operate in an area of uncertainty.

2.5.1 Deontology

Deontological ethics, in philosophy, ethical theories that place special emphasis on the relationship between duty and the morality of human actions. The term deontology is derived from the Greek deon, "duty," and logos, "science."

In deontological ethics an action is considered morally good because of some characteristic of the action itself, not because the product of the action is good. Deontological ethics holds that at least some acts are morally obligatory regardless of their consequences for human welfare. Descriptive of such ethics are such expressions as "Duty for duty's sake," "Virtue is its own reward," and "Let justice be done though the heavens fall."

By contrast, teleological ethics (also called consequentialist ethics or consequentialism) holds that the basic standard of morality is precisely the value of what an action brings into being. Deontological theories have been termed formalistic, because their central principle lies in the conformity of an action to some rule or law.

In the 18th century, the Age of Enlightenment was in full swing. People were beginning to rely on the principles of natural law, which states that there is a right and a wrong and that we must use reason, or our personal sense of logic, to figure out the difference. During this time, a German philosopher named Immanuel Kant developed a branch of ethics that was solely based upon one's sense of duty to act in the way we see as right. Kant's deontology is guided by an individual's own personal sense of morality, or what is right and what is wrong to us. Kant was a scientist and scholar whose books included works about science, morality, and history.

Kant's deontology, sometimes called deontological ethics, starts by acknowledging that actions and their outcomes are independent things. Basically, there are things we have to do, even though we know they are wrong, such as shooting that intruder to protect our family. According to deontology, we need to focus on the act, such as protecting our family, and not the likely death it will mean for the intruder. Kant wrote several books about the topic, including The Groundwork of the Metaphysics of Morals in 1785, Critique of Practical Reason in 1788, and Metaphysics of Morals in 1797.

2.5.2 Virtue theory

Virtue theory is an approach to Ethics which emphasizes an individual's character as the key element of ethical thinking, rather than rules about the acts themselves their consequences.

There are three main strands of Virtue Ethics:

Eudaimonism is the classical formulation of Virtue Ethics. It holds that the proper goal of human life is happiness and that this goal may be achieved by a lifetime of practicing the virtues in one's everyday activities, subject to the exercise of practical wisdom to resolve any conflicts or dilemmas that might arise. Indeed, such as virtous life would in itself constitute eudaimonia, that must be seen as an objective and state, characterized by the well-lived life, irrespective of the emotional state of the person experiencing it.

The virtue is a habit or quality which allows individuals to succeed at their purpose. Hence Virtue Ethics is only intelligible if it is teleological a matter of some contention among philosophers as the beginning of time. Aristotle, with whom Virtue Ethics is largely identified, categorized the virtues as moral virtues and intellectual virtues. Aristotle further argued that each of the moral virtues was a golden mean or desirable middle ground, between two undesirable extremes.

Ethics of Care was developed mainly by Feminist writers (Ex. Annette Baier) in the second half of the 20th Century and was motivated by the idea that men think in masculine terms such as justice and autonomy, whereas woman think in feminine terms such as caring. It calls for a change in how we view morality and the virtues, shifting towards virtues exemplified by women, such as taking care of others, patience, the ability to nurture, self-sacrifice, etc, that have been marginalized because society has not adequately valued the contributions of women. It emphasizes the importance of solidarity, community and relationships rather than universal standards and impartiality. It argues that instead of doing the right thing even if it needs personal cost or sacrificing the interest of family or community members , we can and indeed must, put the interests of those who are close to us above the interests of complete strangers.

Agent-Based Theories, as developed recently by Michael Slote (1941 -), give an account of virtue based on our common-sense intuitions about which character traits are admirable (Ex: benevolence, kindness, compassion, etc), which we can identify by looking at the people we admire, our moral exemplars. The evaluation of actions is therefore dependent on ethical judgments about the inner life of the agents who perform those actions.

Virtue Ethics, essentially Eudaimonism, was the prevailing approach to ethical thinking in the Ancient and Medieval periods. It suffered something of an eclipse during the Early Modern period, although it is still one of the three dominant approaches to normative Ethics (the others being Deontology and Consequentialism).

The term "virtue ethics" is a relatively recent one, essentially coined during the 20th Century revival of the theory and it originally defined itself by calling for a change from the then dominant normative theories of Deontology and Consequentialism.

2.5.3 Rights Theory

Rights theories maintain that there are things we may not do against individuals, because they are holders of moral rights. Having a right refers to having a special protection. It means that an interest that the right defends should not be frustrated. If an interest is defended by a right, it must not be thwarted even if doing so may be good for other reasons.

Types of rights

In ethics, 'rights' is shorthand for 'moral rights', but in Law it's shorthand for something else. In the legal system, individuals enjoy legal rights. Legal rights also protect the interests of individuals, but legal rights and moral rights are different things.

Types of rights theories:

Theories of rights may be realist or constructivist. According to realist views, rights holders have rights as one of their intrinsic features. We have to recognize and respect those rights, or struggle for them to be respected. According to constructivist views, the best theory regarding how to behave towards beings who are morally considerable is to grant them rights and to respect those rights or to struggle for them to be respected. Constructivist theory does not accept that, rights holders have rights as something intrinsic. Rather, it claims that individuals choose to grant them to each other. However, it defends this as a good thing to do.

Rights theories are normally deontological theories, that is, they maintain that there are norms we must always obey irrespective of circumstance. In fact, they has to be obeyed whenever the opportunity of doing so appears, even when it means that this or other norms won't be obeyed by others or by ourselves in the future.

It is also possible to defend consequentialist theories of rights. These theories entail that we have to maximize the (number of) rights that are respected and minimize the (number of) rights violated, regardless of whether it is we or others who respect or violate them and whether the violation happens now or in the future.

In contrast, standard theories of rights, deontological ones, claim that we should respect a right now even if it means we won't be able to respect other rights later, or even if it means that other people won't be able to respect the rights of others. There are anthropocentric theories of rights according to which only humans can be considered rights holders. However, many theories contest this view and contend that nonhuman animals should also be considered rights holders.

Arguments against animals as rights holders

One argument against the possession of rights by nonhuman animals claims that only those who respect other's rights can enjoy rights themselves. There are basic responses against this argument. But more specifically, it is inconsistent to apply this only to nonhuman animals, because this is not applied in the real world in the case of humans. There are human beings who cannot recognize the rights of others, yet they are granted rights. And in fact, the theories of rights that are most commonly accepted nowadays do not use the above argument, but try to justify why someone must have rights based on the interests those human beings have.

Another argument against rights for non-humans tries to show that the rights of most non-human animals could not possibly be respected and claims that nonhuman animals therefore should not

have any rights. This argument is a response to a particular argument in support of rights for nonhuman animals which states that if someone is a rights holder, others should respect her rights. Hence, if we defend that respect for the rights of rights holders should be enforced, and we defend that nonhuman animals have rights, that means that respect for the rights of nonhuman animals must be enforced. The argument against this view is based on the issue that because nonhuman animals living in nature often harm each other, so enforcing one animal's rights would entail violating the rights of the other.

The argument is that this shows that nonhuman animals cannot be rights holders because their claims could not possibly be respected, which makes an absurdity of the idea that nonhuman animals have rights (this issue is examined in detail in the section on helping animals in nature). But that is not the case.

Rights in practice

Two or more individuals may have conflicting rights that may not all be satisfied. But this does not mean that they do not have rights. What it entails, though, is that the satisfaction of one right may take priority or override the satisfaction of another, or that we must just try to maximize the rights that are respected if that is possible. This means we should try to enforce the rights of animals living in the wild, at least when doing so does not entail that the rights of other wild animals are violated. And if this is not possible, we should look for solutions that would make it possible that more, and the most important, rights are safeguarded.

Apart from this, because exploiting nonhuman animals entails harming them in very significant ways, it is clear that this exploitation is incompatible with respecting their rights. But rights need not be only negative rights, that is, rights about things we should not do against others. They can also be positive rights, that is, rights that are about things we should do for their holders.

Theory of rights ethics

The rights ethicists emphasize that any action that violates any moral right is considered as ethically unacceptable. This theory holds that, those actions are good that respects the rights of the individual.

In other words, right ethics holds the people who have fundamental rights and that other people who have a duty to respect.

Two versions of rights ethics are,

i) Locke's version of rights ethics

ii) Meldon's version of right ethics

i) Locke's version of rights ethics

John Locke (1632-1704), a famous rights ethicists, argued that humans have human rights to life, liberty and the property generated by one's labor. His views of human rights ethics were considered as highly individualistic.

In Locke's view, rights are claims that prevents other people from interfering in one's life. These rights are referred as liberty rights or negative rights, that places duties on other people not to interfere with one's life.

ii) Meldon's version of rights ethics

A.I. Meldon (1910-1991) considered human rights as intimately related to communities of people. According to Meldon, moral rights requires the capacity to show concern for others and to be accountable within a moral community. Meldon also defined welfare rights as rights to community benefits, that is needed for living a minimum decent human life.

2.5.4 Casuist theory

Casuistry, or case based reasoning, do not focus on rules and theories but rather on practical decision making. So first the particular features of a case would be identified, and then a comparison would be made with other similar cases and prior experiences, attempting to find not only the similarities but also the differences. So if a clinical ethics committee were asked to consider whether it was ethical for a clinician to breach his /her duty of confidence, the committee would identify key factors, like the health risks to others if information was not disclosed. It would then make a comparison with other similar cases, identifying the relative risks of non-disclosure. Casuistry should not be divorced from consequentialism, deontology, or virtue ethics but complement them.

Casuistry is a specific method of doing ethics which relies on the analysis of individual cases, exploring them in relation to paradigm cases and broad principles. Casuistry has had a varied history of acceptance, ranging from broad and popular use during the fifteenth to the seventeenth centuries, to being scorned as sophistry and moral relativism from the eighteenth century until quite recently. A resurgence of interest in casuistry has been sparked by the similarity of method and usefulness to certain strongly rooted fields in contemporary society, primarily medicine and law.

The Four Principles

The Four Principles provide a general guide and leave considerable room for judgement in specific cases.

Respect for autonomy: Respecting the decision-making capacities of autonomous persons; enabling individuals to make reasoned informed choices.

Beneficence: Balancing benefits of treatment against the risks and costs; the healthcare professional must act in a way that benefits the patient.

Non maleficence: Avoiding causing harm; the healthcare professional must not harm the patient. Most treatment involves some harm, even if minimal, but the harm should not be disproportionate to the benefits of the treatment.

Justice: Respect for justice takes several forms:

• Distribution of a fair share of benefits

• Legal justice - doing what the law says

• Rights based justice, which deals in the language, and perhaps the rhetoric, of claimed human

rights, and hence goes beyond, though it includes, legal rights.

These principles are prima facie – that is, each to be followed unless it conflicts with one or more of the others - and non-hierarchical i.e. one is not ranked higher than another. In recent years however, respect for patient autonomy has assumed great significance in the context of patient choice, underpinned by the requirement to provide the patient with sufficient information to put him / her in a position to choose. The 'Four Principles' are intended as an aid to balance judgement, not a substitute for it.

2.6 Ethical terms: Moral absolutism

Here are facts about which actions are right and wrong, and these facts do not depend on the perspective, opinion, or anything about the person who happens to be describing those facts.

People make moral judgements about right and wrong all the time. Some organizations are quite vocal about what is right and wrong. Christian Churches preach the Commandments as a guide to know what one should not do: 'Do not murder', 'Do not steal', 'Do not bear false witness' and so on. Islamic law gives clear guidelines on morally good and bad behaviour. Politicians often make statements about right and wrong. In ethical terms, to maintain that some things are right and other things are wrong, and that these things are fixed for all time and all people, is known as absolutism.

An ethical absolute is a moral command or prohibition that's true for all time, in all places and in all situations. Absolutists hold that some things are wrong from an objective point of view, not just wrong from our own perspective. In the Middle Ages, the principle 'Follow the good and avoid the evil' expressed an absolutist perspective. It means that the moral way of living is to do things that are objectively good and avoid things which are objectively bad. In ethical absolutism, things that are right or wrong cannot be changed. They are not affected by mitigating circumstances. They do not depend on the situation. For example, absolutists may say that torturing children, rape and murder are always wrong. They don't change according to the culture in which we live. What is right and wrong is the same for us and for every other person in the world. Immoral acts are intrinsically wrong, that means wrong in themselves. The thing is not made wrong by the situation or the result it causes. It is wrong because the act in itself breaks a moral rule.

Three forms of Ethical Absolutism:

Unqualified absolutism believes that there are many absolute moral laws, and none of them should ever be broken. Truth is such a law as it flows from God's very core of character. So, one must always tell the truth, even if someone happens to die as a result of it. Truth is absolute,and absolutes cannot be broken. Results are never used as a rationale to break rules, even if the results are desirable.

Conflicting absolutism recognizes that we live in an evil world where absolute moral laws sometimes run into un avoidable conflict. In such cases it is our moral duty to do the lesser evil. We should break the lesser law and claim mercy. For instance, we should lie to save a life and then ask for forgiveness for breaking God's absolute moral law. Our moral dilemmas are sometimes unavoidable, but we are culpable anyway. God cannot change his absolute moral prescriptions because of our moral difficulties.

Graded absolutism holds that there are many moral absolutes and they sometimes conflict. However, some laws are higher than others, so when there is an unavoidable conflict, it is our duty to follow the higher moral law. God does not blame us for what we could not avoid. Thus he frees

us from responsibility to follow the lower law in view of the overriding commitment to obey the higher law. Many graded absolutists believe that mercy to the innocent is a greater moral duty than telling truth to the guilty. Hence, they are convinced that it is right to lie in order to save a life.

2.6.2 Moral Relativism

Actions are not right or wrong “in themselves”, but only relative to a person or group. An action is right relative to a person or group if and only if the action is right according to the standards adopted by that person or group.

Moral Relativism or Ethical Relativism is the position that moral or ethical propositions do not reflect objective and/or universal moral truths, but instead make claims relative to social, cultural, historical or personal circumstances. It does not deny outright the truth-value or justification of moral statements, but affirms relative forms of them. It can be described by the common aphorism: “When you are in Rome, be a Roman”.

Moral Relativists point out that humans are not omniscient, and history is full of examples with individuals and societies acting in the name of an infallible truth later demonstrated to be more than fallible, so we should be very cautious of basing important ethical decisions on a supposed absolute claim. Absolutes also tend to inhibit experimentation and possess possible fields of inquiry which might lead to progress in many fields, as well as constraining the human spirit and quest for meaning. In addition, the short term proves itself widely superior in the ethical decision-making process than the relatively unknown long-term.

Relativistic positions may specifically see moral values as applicable only within certain cultural boundaries or in the context of individual preferences. A related but slightly different concept is that of Moral Pluralism, the idea that there are several values which can be equally correct and fundamental, and yet in conflict with each other.

An extreme relativist position may suggest that judging the moral or ethical judgments or acts of another person or group has no meaning at all, though most relativists propound a more limited version of the theory. Some philosophers maintain that Moral Relativism dissolves into Emotivism or Moral Nihilism. Emotivism is defined as the non-cognitivist theory espoused by many Logical Positivists, that holds that ethical sentences serve merely to express emotions and personal attitudes. Moral Nihilism is defined as the theory that, although ethical sentences do represent objective values, they are in fact false.

Moral Relativism basically stands in contrast to Moral Absolutism, Moral Universalism and to all types of Moral Realism, which maintain the existence of invariant moral facts which can be known and judged, whether through some process of verification or through intuition.

History of Moral Relativism

The early Sophist Greek philosopher Protagoras provides an early philosophical precursor to modern Moral Relativism in his assertion that "man is the measure of all things". The Greek historian Herodotus (c. 484 - 420 B.C.) observed that each society typically regards its own belief

system and way of doing things as better than all others. Plato also pointed out that much of what is believed to be “fact” is actually “opinion”. Even earlier, Indian Jainism adopted as one of its basic principles the Anekantavada principle that truth and reality are perceived differently from different points of view, and that no single point of view is the complete truth.

In the early Modern era, Baruch Spinoza notably held that nothing is inherently good or evil. The 18th Century Enlightenment philosopher David Hume is often considered the father both of modern Emotivism and of Moral Relativism, although he himself did not claim to be a relativist. He distinguished between matters of fact and matters of value, and suggested that moral judgments consist of the latter because they do not deal with verifiable facts obtained in the world, but only with our sentiments and passions. He famously opposed that morality has any objective standard, and suggested that the universe remains indifferent to our preferences and our troubles.

However, Moral Relativism is essentially a 20th Century creation, and the main impetus came from cultural anthropologists such as Franz Boas (1858 - 1942), Ruth Benedict (1887 - 1948) and Margaret Mead (1901 - 1978). The Finnish Philosopher and Anthropologist Edward Westermarck (1862 - 1939) was one of the first to formulate a detailed theory of Moral Relativism. He portrayed all moral ideas as subjective judgments that reflect one's upbringing. He pointed to the obvious differences in beliefs among societies, which he said provided evidence of the lack of any innate, intuitive power and of any universal or absolute beliefs.

Criticisms of Moral Relativism

Some Moral Absolutists criticize Moral Relativism on the grounds that it can lead to immorality, because it abandons an absolute standard of right and wrong. Moral Relativists counter that the inflexibility of Moral Absolutism is just as likely to lead to immoral acts (For example, the absolute beliefs of medieval Christianity which led to what we now consider atrocities).

Others argue that anyone who claims that no moral absolutes exist undermines their ability to justify their own existence, being unable to argue against the discontinuation of their own lives at the hands of another individual who adheres to a different set of values. However, the Moral Relativist claims just as much moral justification to defend himself as the attacker does to attack.

Similarly, it has been argued that Moral Relativists cannot justify intervening in other culture’s practices, since that would be to impose their own morality, and thereby they can be guiltily unwilling to resist evil in some cases.

It is difficult for a Moral Relativist to explain what happens when a society has a collective change of heart (For example, the rejection of slavery as a morally permissible policy), or when an individual undergoes a personal moral improvement or admits that an attitude they used to hold was wrong. For them, there is no external standard to judge against so, while their attitudes change, they cannot really be said to improve or decline. Thus, there is a circularity in the process of judging one's values according to one's values.

There are also difficulties in putting a boundary on a "society" or "culture", especially as what people feel to be their social or cultural groupings may well not align with legal and national

groupings, and a person holding "minority" moral views within their society or culture may consider their "culture" more aligned with that minority (For example, religious communities, homosexual cultures) than with the larger state or national society that determines what is lawfully acceptable. Therefore, it is argued, Moral Relativism is meaningless since one could probably find a society that condones whatever one wishes to do (and similarly an individual can adopt different principles at different times), and ultimately any belief is equally as valid as any other.

Some commentators have argued that Moral Relativism is not a positive ethical theory at all, because it is not normative, and because it effectively reduces to mere societal law or custom, or to mere personal taste and preference.

Moral Relativism inevitably conflicts with the tenets of absolute morality as taught by almost all world religions. Some Catholics and Buddhists, for example, have attributed the perceived post-war decadence and permissiveness of Europe to the displacement of absolute values by Moral Relativism.

A rather thoughtless criticism is often leveled at Moral Relativism, that it is logically impossible, because, by saying "all things are relative", one is stating an absolute and therefore a logical contradiction.

Types of Moral Relativism

There are two main variants of Moral Relativism:

Descriptive Moral Relativism is based on the empirically proven, deep and widespread moral disagreements across different societies. However, it accepts the existence of fundamental disagreements about the right course of action, even when the same facts obtain and the same consequences seem likely to arise. Several leading Existentialists could be called Descriptive Moral Relativists.

Meta-Ethical Moral Relativism holds that the truth or falsity of moral judgements is not absolute or universal, but is relative to the traditions, convictions or practices of a particular group or society. It also holds that many fundamental moral disagreements cannot be rationally resolved (it differs in this way from Descriptive Moral Relativism), and so moral judgments lack the authority or normative force often claimed for them.

2.6.3 Moral Pluralism

The term “Moral Pluralism” also known as “ethical pluralism” is used in designating a general framework about how to arrive at sound ethical judgments. As such, it is meant as an example of a step-by-step procedure that has been developed in the field of Applied Ethics. The moral pluralist argues that because ethical issues, problems and dilemmas may be highly complicated, we likewise need a complicated set of tools with which to manage hard moral choices. The pluralist urges that, when confronted with the need for a reasoned ethical decision, one should consider and apply as many ethical concepts, principles and theories as are appropriate in order to resolve the ethical

matter. A failure to engage in such considerations and applications likely will result in an inadequate and incomplete analysis.

Because of its emphasis on multiple moral perspectives, this pluralist approach seems to go against the contemporary mainstream where the desire is for a less complicated framework for ethical decision-making. The call from practitioners and professionals is that they may like to see a ready-made formula for ethical decision-making, a kind of heuristic device that will provide a reliable answer straightaway to the various moral quandaries of the workplace. But, the moral pluralist refuse such quick fixes. This is the case because the pluralist understands that the realities of work are such that no single formula may embrace all of the complex ethical issues, problems and dilemmas. So, the pluralist in moral matters holds that a more comprehensive application of the concepts, principles and theories which comprise the history of ethics is a necessary ingredient in solid ethical decision-making.

Within the moral domain, there are conflicting theories even with regard to goodness and rightness, and each theory contains important truths about moral life. And yet, none of them contain the whole truth per se. We all inhabit a common world, with judgments and interpretations playing a part in the process.

The challenge as a society is finding the common ground, and acknowledging the legitimacy of the conflicting insights, and establishing a minimal area of agreement so we can live together with our differences.

For some, if the action gives a positive result, they consider the action a morally good thing to do. In other words, because it produced good consequences, it was the right thing to do. Others look at how the consequence affects us, and they believe each person is the best judge of his or her own self-interest and thus chooses to be selfish, but morality encourages compassion, love, and a sense of others.

And then there's a group who thinks we have to do what produces the greatest good for everyone, not just for me.

They believe moral disputes may be resolved by objectively computing the outcome, or the consequences of actions.

Moral Pluralism and Traditional Ethics

This view of moral reasoning also seems to run counter to the usual Western philosophical tradition where the design of a single ethical theory – “ethical monism” -- characterizes the thinking of the predominant traditional philosophers and ethicists. Among the monistic theories that Moral Pluralism include are as follows :

- **The Virtue Ethics of Aristotle**

Virtue ethics emphasizes the role of character and how one’s character might or might not dispose one to act well. Aristotle thought that one’s moral education shapes how one acts and those who

develop habits toward behaving well would act ethically or virtuously, while those who developed poor habits of vice would not.

• Kant's Categorical Imperative

Immanuel Kant holds that a "categorical imperative" has to guide actions so that we may ask whether our action could be universalized or not. He also advised us to engage in respecting others and never use them as a mere means to an end, but only as an end.

• Utilitarianism

The utilitarian approach is an ethical theory upon which capitalism and the workings of business organizations are obtained. It holds that actions must be measured and judged according to how well they promote the greatest good for the greatest numbers.

But according to the moral pluralist, since these are singular approaches, they are inadequate, stand-alone remedies. However, if they are taken together along with various other key concepts, principles and ethical theories, they do form part of a more concerted effort to think and thereby act ethically.

Typically Moral Pluralism includes these better-known theories. And in addition, a complete analysis requires that such items as values, individual and group rights and the notion of responsibility be included along with adequate considerations of justice, the risks and costs of benefits and harms and any role that public scrutiny might play in how one's action is perceived

The Growth of Moral Pluralism

The practice of a pluralistic approach to moral or ethical reasoning is mostly a contemporary historical matter. It is offered recently by ethicists who wish to counter the use of ethical monism and by those who search some alternatives to both absolutism and relativism in ethics. Monists hold that there may be a single ethical principle which can be used to guide one in ethical decision-making. Relativists hold that all ethical truths are merely relative to and depend upon individuals, situations or cultures, and that what is true for one may not be so for another. Moral pluralists resist these claims of monists and relativists alike.

Moral pluralism is the assumption there are moral truths, but that they do not form a body of coherent and consistent truths as those found in the sciences or mathematic approach.

2.7 Resolving Ethical Dilemma.

An ethical dilemma is a complex situation that often involves an apparent mental conflict between moral imperatives, in which to obey one would result in disobeying another.

Employees make decisions at all levels of a company, whether at the top, on the front line or anywhere in between. Every employee in an organization is exposed to the risk of facing an ethical dilemma at some point of time, and some ethical decisions can be more challenging to fully understand than others. Knowing how to resolve ethical dilemmas in the workplace can increase our decision-making effectiveness while keeping us and our company on the right side of the law and public sentiment.

There are two major approaches that philosophers use in handling ethical dilemmas. One approach focuses on the practical consequences of what we do;the other concentrates on the actions themselves.The first school of thought basically argues "no harm, no foul";the second claims that some actions are simply wrong. Thinkers have debated the relative merits of these approaches for centuries, but for the purpose of getting help with handling ethical dilemmas, think of them as complementary strategies for analyzing and resolving problems.

Steps in Resolving Ethical Dilemma:

Step 1

Consulting company's code of ethics for formal guidance. This simple act can be able to resolve our dilemma immediately, depending on how comprehensive and specific our company's ethics statements are. Our code of ethics may provide a backdrop on which to weigh the pros and cons of business decisions, giving us a clearer picture of which decision is more in line with the company's ethical commitments.

Step 2

Sharing our dilemma with the supervisor to take advantage of their experience. Front-line employees face a number of ethical dilemmas in their jobs, such as deciding whether to give out a refund which does not specifically adhere to company policies or whether to report suspicions of internal theft that cannot be proven. Taking ethical questions to supervisors may keep employees out of trouble in addition to resolving conflicts.

Step 3

Discussing dilemma with other executives if we are at the top of the organization. Executives and company owners make some of the farthest-reaching decisions in any organization, adding weight and additional challenges to the ethical dilemmas. As an executive, it is important to show our competence at solving problems on our own, but there is nothing wrong with asking for help from time to time. Other executive team members has to appreciate our commitment to make the right decision and should be able to provide unique insights into our problem.

Step 4

Speaking with peers and colleagues from other companies if we can do so without revealing company secrets. If we are a sole proprietor, we may not have any other top-level managers to consult with. Seeking out someone we trust from a business networking group, a previous employer

or our college peers in order to gain insight from others. We can speak with friends from diverse cultural backgrounds to gain an even wider range of insights.

Step 5

Reading past news articles about other companies facing the similar dilemma as ours. Find how others have dealt with our challenge before and take note of the outcome of their decisions. News outlets like to cover certain large company decisions, such as laying off workers, endorsing political candidates and bending accounting rules, that may have ethical impacts in the society. Reading what happened to others after making their decisions may give us a glimpse into what to expect if we make a similar decision.

Important measures in Ethical Problem-Solving:

DETERMINING whether there is an ethical issue or/and dilemma. Is there a conflict of values, or rights, or professional responsibilities? For example, there may be an issue of self-determination of an adolescent versus the well-being of the family.

IDENTIFYING the key values and principles involved. What meanings and limitations are typically attached to these competing values? For example, rarely is confidential information held in absolute confidentiality ; however, typical decisions about access by third parties to sensitive content must be contracted with clients.

RANKING the values or ethical principles ,which in our professional judgement are most relevant to the issue or dilemma. What reasons can we provide for prioritizing one competing value/principle over another? For example, our client's right to choose a beneficial course of action could bring hardship or harm to others who would be affected.

DEVELOPING an action plan that is consistent with the ethical priorities that have been determined as central to the dilemma. Have we conferred with clients and colleagues, as appropriate, about the potential risks and consequences of alternative courses of action? Can we support or justify our action plan with the values/principles on which the plan is based? For example, have we conferred with all the necessary persons regarding the ethical dimensions of planning for a battered wife's quest to secure secret shelter and the implications for her teen-aged children?

IMPLEMENTING our plan, utilizing the most appropriate practice skills and competencies. How will we make use of core social work skills such as sensitive communication, skillful negotiation, and cultural competence?For example, skillful colleague or supervisory communication and negotiation may enable an impaired colleague to see her/his impact on clients and to take appropriate action.

REFLECTING on the outcome of this ethical decision making process. How would we evaluate the consequences of this process for those involved: Clients, professionals, and agencies? Increasingly, professionals have begun to seek support, further professional training, and consultation through the development of Ethics review Committees or Ethics Consultation processes.

3

ETHICS IN ENGINEERING AND ENGINEER'S RESPONSIBILITY AND SAFETY

Ethics in Engineering: Purpose and concept of Engineering Ethics. Engineering as social experimentation. Types of inquiry. Issues in engineering ethics.

Engineers' Responsibility and Safety: Safety, Risk, Underestimating the risk, Over estimating the risk, Risk-benefit analysis. Causes of an accident and identification of the preventive measures to be taken. Case Studies

3.1 Purpose and concept of Engineering Ethics.

Concept of Engineering ethics

The rules and standards that govern the conduct of engineers in their role as professionals. Engineering ethics are similar to general ethics, but apply to the specific issues which affect engineering professionals.Engineering ethics is the study of moral issues and decisions confronting individuals and organizations engaged in engineering. The study of related questions about moral ideals,character, policies and relationship of people and corporations involved in technological activity.

Engineering ethics may be defined as the identification, study and resolution of ethical problems occurring in the practice of the engineering profession.

Need of Engineering ethics

Engineering ethics course is not about preaching virtue rather, its objective is to increase your ability as engineers to responsibly confront moral issues raised by technological activity.Increased awareness of importance due to publicity surrounding high profile engineering failures.Engineering decisions can impact public health, safety,business practices and politics. Engineers must be aware of moral implications as they make decisions in the workplace.

Senses of engineering ethics:

• Engineering ethics is the activity and disciplines which is aimed at understanding the moral values that ought to guide engineering practice and resolving moral issues in engineering and justifying moral judgments that concerns engineering.

• Engineering ethics refers to the set of specific moral problems and issues related to engineering.

Approaches to engineering ethics:

Work Ethics

Work ethics is the discipline aimed at understanding the moral values that ought to guide all professional practices including engineering, medicine, law and other practices. But the engineering ethics refers to the set of specific moral problems and issues related to engineering profession only.

Various disciplines of work ethics are,

(1) Personal ethics:

• Personal ethics is concerned with the rules by which an individual lives his or her personal life.

• It also clearly explains how we treat others in our day-to-day life.

(2) Business ethics:

• Business ethics is concerned with truth and justice and has a variety of aspects such as the expectations of society, fair competition, advertising, public relations, social responsibilities, consumer autonomy and corporate behavior.

• It involves choices on an organization level rather than a personal level.

(3) Engineering ethics:

• Engineering ethics is concerned with the rules and standards governing the conduct of engineers in their role as professionals.

• It is a body of philosophy, guiding the ways that engineers should conduct themselves in their professional capacity.

(4) Medical ethics:

• Medical ethics is concerned with the rules and standards governing the conduct of doctors and other medical practitioners in their role as professionals.

(5) Legal ethics:

• Legal ethics is concerned with the codes that guide the professional conduct of lawyers, judges, etc.

(6) Accounting ethics:

• Accounting ethics is concerned with the codes that guide the professional conduct of accountants.

3.2 Engineering as social experimentation.

Experimentation plays an important role in the process of designing the product. When it is decided to change a new engineering concept into its first rough design, preliminary tests or simulation has to be conducted. Using formal experimental methods, the materials and methods of designing are tried out. These tests can be based on more detailed designs. The test for designing has to be evolved till the final product produced. With the help of feedback of several tests, further modification can be made if necessary. Beyond these tests and experiments, each engineering project has to be viewed as an experiment.

Similarities to Standard Experiments

There are so many aspects, that are of virtual for combining every type of engineering works to make it suitable to look at engineering projects as experiments. The main three important aspects are:

A. Any engineering project or plan is put into practice with partial ignorance because while designing a model there are various un-certainities occurred. The reason to the fact that engineers don't have all the needed facts available well in advance before starting the project. At some point, both the theoretical examining and the laboratory testing should be by-passed for the sake of completing the project. Really, the success of an engineer is based on the his talent which is exactly being the ability to succeed in achieving jobs with only a partial knowledge of scientific laws about the nature and society.

B. The final outcomes of engineering projects are basically uncertain like that of experiments what we do.

In engineering, in most of the cases, the possible outcomes may not be known and even small and mild projects itself involve greater risks.

The following uncertainities occur in the model designs:

1. Model used for the design calculations

2. Exact characteristics of the material purchased.

3. Constancies of materials used for processing and fabrication.

4. About the nature of the pressure the finished product will encounter.

For instance, a reservoir can cause damage to the surroundings and affect the eco-system. If it leaks or breaks, the purpose will not be served. A special purpose fingerprint reader may find its application in the identification and close observation on the disagreeing persons with the government. A nuclear reactor may cause unexpected problems to the surrounding population

leading to a great loss to the owners. A hair dryer can give damage to the unknowing or wrong users from asbestos insulation from its barrel.

C. Good and effective engineering depends upon the knowledge possessed about the products at the initial and end stages.

This knowledge is very useful for increasing the effectiveness of the current products as well as for producing better products in future. This is achieved by keenly observing on the engineering jobs by the way of experimentation. This monitoring is done by making periodic observations and tests by looking at the successful performance and the side effects of the jobs. The tests of the product's efficiency, safety, cost-effectiveness, environmental impact and its value that depends upon the utility to the society should also be monitored. It extends to the stage of client use.

Learning from the past

It has been expected that the engineers have to learn not only form their own design and the production system but also the results of others. Due to lack of communication, prejudiced in not asking for clarification, fear of law and also mere negligence, these things can happen to the continuation of past mistakes. The following are some of the examples:

1. The tragedy of 'Titanic' happened because of the insufficient number of life boats. The same disaster took place in the steamship "the Arctic" some years before, because of the same problem.

2. The fall down of "the Sunshine Skyline Bridge" in the bay of Thamba at Sweden in 1980, on a moving ship due to improper matching of horizontal impact forces in mind. This could have been avoided of the engineers had known about the striking of the ships with the Maracaibo Bridge at Venezuela in 1964 and the Tasman Bridge of Australia in 1975.

3. The nuclear reactor accident at Three Mile Island on March 1979, was due to malfunctioning of the valves. Valves though minute items, are being among the least reliable components of hydraulic systems. It was a pressure relief valve and lack of information about its opening or closing state contributed to a nuclear reactor accident at Three Mile Island. This malfunction was already happened because of the same reasons at other locations.

4. The disaster of Tettron Dam in Los Angles was due to rapid flow of water and sudden break down. The builder didn't consider the case of the Fontenelle Dam, which was also collapsed due to the same problem.

So, to say that engineers should not fully depend on handbooks and they should have some review of the past cases relating to their current task.

Comparisons with standard Experiments

Engineering is entirely different from standard experiments in few aspects. Those differences are very much helpful to find out the special responsibilities of engineers and also help them in knowing about the moral irresponsibilities which are involved in engineering.

1. Experimental Control

Members for two groups should be selected in a standard experimental control, i.e Group A and Group B. The members of the group A should be given the special experimental treatment. The group B do not receive the same though they are in the same environment. This group is known as the 'control group'.

Though it is not possible in engineering but for the projects which are confirmed to laboratory experiments. Because, in engineering the experimental subjects are human beings who are out of the control of the experimenters. In engineering, the consumers have more control as they are the selecting authority of a project. So in engineering it is impossible to follow a random selection. An engineer has to work only with the past data available with various groups who use the products.

So engineering may be viewed as a natural experiment that uses human subjects. But today, most of the engineers do not care for the above said Experimental Control.

2. Informed Consent

Engineering is closely related to the medical testing of new drugs and techniques on human beings as it also concerned with human beings.

When new medicines have been tested, it must be informed to the persons who undergo the test. They have moral and legal rights to know about the fact which is based on "informed consent" before take part in the experiment. Engineering should also recognize these rights. When a producer sells a new product to a firm which has its own engineering staff, generally there will be an agreement regarding the risks and benefits form that testing.

Informed consent has two main principles such as knowledge and voluntariness.

First, the persons who are put under the experiment has to be given all the required information to make an appropriate decision. Second, they should enter into the experiment without any force, fraud and deception. The experimenter has also to consider the fundamental rights of the minorities and the compensation for the harmful effects of that experiment.

In both medicine and engineering there may be a large gap between the experimenter and his knowledge on the difficulties of an experiment. This gap can be filled only when it is possible to give all the relevant information required for drawing a responsible decision on whether to participate in the experiment or not.

In medicine, before prescribing a medicine to the patient, a responsible physician should search for relevant information on the side effects of the drug. The hospital management should allow him to undergo different treatments to different patients and finally the patient must be ready to receive that information from the physician. Similarly it is possible for an engineer to give relevant information about a product only when there is a better co-operation by the management and quick acceptance from the customers. The following conditions are essential for a valid informed consent.

a. The consent should be given voluntarily and not by any force.

b. The consent should be based on the relevant information required by a rational person and should be presented in a clear and easily understandable form.

c. The consenter should be capable of processing the information and to make rational decisions in a quick manner.

d. The needed information by a rational person should be stated in a form to understand without any difficulty and has to be spread widely.

e. The experimenter"s consent has to be offered in absentia of the experimenter by a group that represents many experiments.

Knowledge Gained

Scientific experiments have been conducted to acquire new knowledge. Whereas engineering projects are conducted as experiments not for getting new knowledge. Suppose the outcomes of the experiment is best, it tells us nothing new, but merely affirms that we are right about something. Mean while, the unexpected outcomes put us to search for new knowledge.

3.3 Types of inquiry

The three types of inquiries are,

1. Normative inquiries

2. Conceptual inquiries

3. Factual inquiries

Normative inquiries

• Normative inquiries are useful to identify the values that guide the individuals and groups in taking a decision.

• Normative inquiries are meant for identifying and establishing the morally described norms or standards that are used as guide to assess something as good or bad.

• Generally, normative questions are about what ought to be? And what is good?

Some examples are:

• When and why the engineers have obligations to their employers, their clients and the general public?

• When should the engineers attempt for whistle blowing ?

• Why must some engineering information kept confidential?

• What are the moral rights an engineer should possess in order to fulfill their professional obligations?

• How an engineer can protect the public safety in a given situation?

From the above questions, it is clear that the goal of normative inquiries is justifying many moral judgments.

Conceptual inquiries

•These inquiries are useful in clarifying the meaning of concepts, principles and issues in engineering ethics.

•In other words, the aim of conceptual inquiries is to clarify the meaning of key ideas and issues, possibly expressed by single word or by statements.

Examples of conceptual inquiries:

• What is safety?

• What is meant by risk?

• How safety is related to risk?

• What is a bribe? When a gift becomes as a bribe?

• What is a profession?

Factual inquiries

Factual inquiries are also known as 'descriptive or exploratory' inquiries. These inquiries are helpful to provide facts required for understanding and resolving value issues.

Researchers and engineers use these inquiries to get various information such as the history of engineering profession, the effectiveness of professional societies in promoting moral conduct, the procedures used in risk-benefit analysis and psychological profiles of engineers.

The above-obtained information through factual inquiries provides an understanding of the background conditions that generate moral problems. And these factual inquiries are helpful in solving moral problems by using alternative ways of solutions. Thus factual inquiries are helpful in understanding the business, social and political realities in which the company operates.

Examples of factual inquiries:

• What are the laws enforced in the intellectual property rights law recently?

• What are the procedures used in making risk assessments?

• In what way, the 'code of ethics' of engineering societies inspires and guided the engineer's obligations?

• What is the validity period of a patented product?

3.4 Issues in engineering ethics

If an engineering decision is said to be a good one, it has to meet out all the specifications. These specifications must cover both the technical and the moral specifications such as safety of the product, reliability, easy maintenance and the product should be user-friendly with environment.

Variety of Moral Issues:

There are so many engineering disasters which are greater / heavier than the level of acceptable or tolerable risk. Therefore, for finding and avoiding cases such as nuclear plant accident at Chernobyl (Russia), Chemical plant at Bhopal (India) where a big disaster of gas leakage, occurred in 1980, which caused many fatal accidents. In the same way, oil spills from some oil extraction plants (the Exxon Valdez plant), hazardous waste, pollution and other related services, natural disasters such as floods, earthquake and danger from using asbestos and plastics are some more cases for engineering disasters. These fields should be given awareness of engineering ethics. Hence, it is essential for engineers to get awareness on the above said disasters. They must also know the importance of the system of engineering.

When malfunction of the system is a rapid one, the disaster will be in greater extent and may be noticed immediately. When they are slow and unobserved, the impact is delayed. So, the engineers should not ignore about the functions of these systems.

These cases also describe and make the engineers to be familiar with the outline of the case in future and also about their related ethical issues.

Any product or project has to undergo various stages such as planning, idea, design, and manufacturing which is followed by testing, sales and services. This has to be done by engineers of various branches such as Civil, Mechanical, Electrical, Chemical, etc. These engineers may be grouped together as a team or they can be separated from each other with an interconnection or co-ordination.

Inspite of the engineer's full attention and care, sometimes the product or project might be unsafe or less useful. This may be due to some reasons :

1) The product or project may be designed for early obsolescence.

2) Due to under pressure because of running out of time, budgetary, etc .

3) By ignorance on the size of the project.

4) Large number of a products sold on the mass market as a result of which people may be affected.

Some cases with which different areas covered by engineering ethics:

1. An inspector determines a faulty part in the manufacture of a machine, that prevents the use of that machine for a longer period. But his superior, takes this as a minor mistake and orders that the faulty part to be adjusted so that the delay in the process has to be avoided. But the inspector does not want this and so he is threatened by the supervisor.

2.An electronic company applies for a permit to start a Nuclear Power Plant. When the licensing authority comes for visit, they enquire the company authorities on the emergency measures which have been established for safety of the surroundings. The engineers inform them about the alarm system and arrangements have been made in local hospitals for the treatment of their employees and they have no plan for the surrounding people. They also inform that it is the responsibility of the people.

3.A Yarn Dyeing company that dumps its wastes in the nearby river. It causes heavy damage to the people those who use the river. The plant engineer are aware of this, but they do not change the disposal method because their competitors also doing similarly as it happens to be a cheaper. They also say that it is the responsibility of the local government.

The above given examples clearly explain how the ethical problems arise most often because of wrong judgments and expectations of engineers. These necessitate for establishing some codes of conduct that has to be imposed on engineers'decisions on the basis of ethical view.

3.5 Engineers' Responsibility and Safety: Safety, Risk

Safety And Risk

Safety is defined as "A thing is safe with respect to a given person or group at a given time if, were they totally aware of its risks and expressing their most settled values, they would judge those risks to be acceptable".

The relative safety expresses the safety of a thing in comparison with safety of similar things.

Concept of Safety:

A thing is safe if its risks are judged to be acceptable. Safety are tactically value judgments about what is acceptable risk to a given person or group.

Types of Risks:

- Voluntary and Involuntary Risks
- Short term and Long Term Consequences
- Expected Portability

• Reversible Effects

• Threshold levels for Risk

• Delayed and Immediate Risk

Risk is one of the most elaborate and extensive studies. The site is visited and exhaustive discussions with site personnel are undertaken. The study usually covers risk identification, risk analysis, risk assessment, risk rating, suggestions on risk control and risk mitigation.

Interestingly, risk analysis can be expanded to full-fill edge risk management study. The risk management study also includes residual risk transfer, risk financing etc.

Stepwise, Risk Analysis will include:

• Hazards identification

• Failure modes and frequencies evaluation from established sources and best practices.

• Selection of credible scenarios and risks.

• Fault and event trees for various scenarios.

• Consequences-effect calculations with work out from models.

• Individual and societal risks.

•ISO risk contours superimposed on layouts for various scenarios.

• Probability and frequency analysis.

• Established risk criteria of countries, bodies, standards.

• Comparison of risk against defined risk criteria.

• Identification of risk beyond the location boundary, if any.

• Risk mitigation measures.

The steps followed are requirement based and all or some of these may be required from the above depending upon the nature of site/plant.

Risk Analysis is undertaken after detailed site study and will reflect Chil worth exposure to various situations. It may also include study on frequency analysis, consequences analysis, risk acceptability analysis etc., if required. Probability and frequency analysis covers failure modes and frequencies from established sources and best practices for various scenarios and probability estimation.

Consequences analysis deals with selection of credible scenarios and consequences effect calculation including worked out scenarios and using software package.

RISK BENEFIT ANALYSIS AND REDUCING RISK

Risk-benefit analysis is the comparison of the risk of a situation to its related benefits.

For research that involves more than minimal risk of harm to the subjects, the investigator must assure that the amount of benefit clearly outweighs the amount of risk. Only if there is favorable risk benefit ratio, a study may be considered ethical.

Risk Benefit Analysis Example

Exposure to personal risk is recognized as a normal aspect of everyday life. We accept a certain level of risk in our lives as necessary to achieve certain benefits. In most of these risks we feel as though we have some sort of control over the situation. For example, driving an automobile is a risk most people take daily. "The controlling factor appears to be their perception of their individual ability to manage the risk-creating situation." Analyzing the risk of a situation is, however, very dependent on the individual doing the analysis. When individuals are exposed to involuntary risk, risk that they have no control, they make risk aversion their primary goal. Under these circumstances individuals need the probability of risk to be as much as one thousand times smaller then for the same situation under their perceived control.

Evaluations of future risk:

• Real future risk as disclosed by the fully matured future circumstances when they develop.

• Statistical risk, as found by currently available data, as measured actuarially for insurance premiums.

• Projected risk, as analytically based on system models structured from historical studies.

• Perceived risk, as intuitively seen by individuals.

Air transportation as an example:

• Flight insurance company -statistical risk.

•Passenger -perceived risk.

• Federal Aviation Administration(FAA) -projected risks.

How to Reduce Risk?

1. Define the Problem

2. Generate Several Solutions

3. Analyze each solution to determine the pros and cons of each

4. Test the solutions

5. Select the best solution

6. Implement the chosen solution

7. Analyze the risk in the chosen solution

8. Try to solve it. Or move to next solution.

Risk-Benefit Analysis and Risk Management

Informative risk-benefit analysis and effective risk management are essential to the ultimate commercial success of your product. We are a leader in developing statistically rigorous, scientifically valid risk-benefit assessment studies that can be used to demonstrate the level of risk patients and other decision makers are willing to accept to achieve the benefits provided by your product.

Risk-Benefit Modeling	Systematically quantify the relative importance of risks and benefits in order to demonstrate the net benefits of treatment
Risk-Benefit Trade offs	Quantify patients' maximum acceptable risk for specific therapeutic benefits

Determination of Risk:

1. Knowledge of risk.

2. Uncertainties in design.

3. Testing for safety.

1) Voluntarism and control

Voluntary risk:

If people take risk knowingly, then their involvement of risk is known as voluntary risk. Many people consider it safer if they knowingly take on the risks. Also people believe that they have 'full control' over their actions.

Examples for voluntary risks are,

1) Buying a flat/house near a chemical plant that emits low levels of a toxic waste into the air because the property values are very low.

2) Participating in a potentially adventurous sports such as motorcycle racing, skiing, boxing, hang-gliding, bungee jumping, etc, without much safety guards.

Controlled risk:

If the risk-taken is within the control limit, which can be controlled by any means, then the risk is known as controlled risk.

Examples for controlled risk:

In practice, all the dangerous sports such as motorcycle racing, skiing, hang-gliding, bungee jumping, horseback riding, boxing etc, are carried out under the assumed control of the participants. They use all safety guards to keep the risk under control.

2) Effect of information on risk assessments

The information about a harm/danger should be presented in a systematic and appropriate manner. Because, the manner in which the required information for decision making is presented has a great influence on how risks are perceived. Many case studies and experiments have proved that the manner in which information about a danger is presented can lead to undesirable and wrong perceptions about danger.

The threshold limit of individuals for information varies from person to person. Some would be comfortable only when they have information of deeper depth and quality, while others may be comfortable with minimal information.

Many experiments have drawn the following two conclusions.

1) Options perceived, as yielding company gains will tend to be preferred over those from which gains are perceived as risky or only probable.

2) People tend to be more willing to take risks in order to avoid perceived company losses than they are to win only possible gains.

3) Job-related risks

The exposure of risk depends on the person's job and his work place. The nature of the job and the working environment will determine the risk level of a person.

For example, people working in the coal mines, oil mines, shipyards, chemical plants, nuclear power plants, etc., have more probability of being exposed to the high risks. Because of high competition for survival, the employees don't have any options other than undertaking high-risk jobs.

Unions and occupational and safety regulations should regulate and enforce the employers to facilitate the standard working environment. Most importantly, engineer who design and equip workstations must take into account the various safety issues and the worker's suggestions/complaints regarding their workplace.

4) Magnitude and proximity

Our reaction to risk is affected by the magnification and the personal identification or relationship we have with the victims. For instance, we feel very bad if one of our close relatives or friends are subjected to some problems. Thus, the magnitude of risk and the proximity with the victims greatly influences the degree of reaction to the risk.

3.5.1 Under estimating the risk,Over estimating the risk-Risk benefit analysis.

Under estimating the risk

• For example, we buy an electric iron by judging that it is very safe. But while using it we get hospitalized on getting a serious electric shock. Then we realize that we were wrong in our earlier judgement.

Over estimating the risk

• For example, we unnecessary think that fluoride in drinking water will kill us. As per Lawrance definition the fluoride water is unsafe hence judge its risks to be unacceptable. But our ordinary concept of safety allows us to consume water inspite of such irrational judgements.

Risk benefit analysis:

Risk benefit analysis is a technique, similar to cost-benefit analysis, which is used to analyze the risk in a project and to determine whether the project should be carried out or not.

Risk-benefit analysis answers the following questions,

• What are the benefits of the project/product?

• Is the project/product worth the risks connected with its use?

• Do benefits outweigh the risks?

It is understood that everyone is ready to accept certain levels of risk as long as the project/product/activity promises sufficient benefit or gain.

The risks and benefits of a project/product are assigned by money values and the most favourable ratio between risks and benefits is determined.

In risk-benefit analysis, both risk and benefits are very difficult to quantify. Because both lie in the future. That is, both risk and benefits are associated with uncertainties.

It should be noticed that who takes the risks and who enjoys the benefits? Therefore, it is important to ensure that those who have taken the risks are the beneficiaries of it.

It is mostly difficult to express both risk and benefits in a common set of units. In this case, risk-benefit analysis is used to judge the relative merits of different designs.

The ethical implications on risk-benefit analysis:

(a) Under what conditions, someone in the society is entitled to impose a risk on someone else on behalf of a supposed benefit to others?

(b) How can we consider the worst-case scenarios of the persons who are exposed to maximum risks while they are also obtaining only minimum benefits? Are they provided safer alternatives? Are their rights violated?

Here we will see about the Bhopal disaster.

The Bhopal plant was tuned and operated by Union Carbide India, an Indian company in which Union Carbide corporation held just over half the stock. UCC technical team reports that a large volume of water was introduced into the MIC tank and triggered a reaction that ended up with the gas release.

On December 3, 1984, Union Carbide's pesticide-manufacturing plant in Bhopal, India leaked 40 tons of the deadly gas, Methyl isocyanate into the sleeping, impoverished community which was killing 2,500 within a few days, 10,000 people were permanently disabled and it also injured 100,000 people. Ten years later, it increased to 4000 to 7000 deaths and injuries to 600,000.

Risks taken:

Storage tank of Methyl Isocyanate gas was filled to more than 75% capacity as against Union Carbide‘s spec, that it should never be more than that of 60% full. The company‘s West Virginia plant was controlling the safety systems and detected the leakages through the computers but the Bhopal plant only used manual labour to detect and control the leakage.

The Methyl Isocyanate gas which was being highly concentrated, burns parts of body when it comes into contact, even blinding eyes and destroying lungs.

Causal factors:

• Plant was understaffed due to its costs.

• Three protective systems was out of service.

• The accident occurred early in the morning.

• Most of the people killed lived in a shanty town located very close to the plant fence.

• Very high inventory of MIC, which is an extremely toxic material.

Workers made the following attempts to save the plant:

• They tried to turn on the plant refrigeration system to cool down the environment and slow the reaction.

• They tried to route the expanding gases to the neighboring tank. The tank's pressure gauge was broken and it indicated that the tank was full when it was really empty.

• They tried to purge the gases through the scrubber. (The scrubber was designed for flow rates, temperatures and pressures that were a fraction of what was by this time escaping from the tank. The scrubber was ineffective).

• They tried to route the gases through the flare tower to burn them away. (The supply line to the flare tower was broken and it hadn't been replaced.)

• They tried to spray the water on the gases and have them settle to the ground, by this time the chemical reaction was nearly completed. (The gases were escaping at a point 120 feet above the ground. The hoses were designed to shoot the water up to 100 feet into the air).

In just 2 hours, the chemicals escaped to form the deadly cloud and killing over hundreds of thousands of people including the poor migrant labourers who stayed close to the plant.

Responsibility of engineers in the design of product:

- Eliminate
- Reduce
- Inform
- Control

Eliminate:

The identified hazard in the product can be eliminated. Need to go through mandatory requirements, so far as it is reasonably practicable.

Reduce:

The designer or engineer must reduce the remaining risk associated with the hazard. There must be professional judgment but guided by relevant good practice. In reducing risk a hierarchy is to be observed.

Inform:

Provide information on the risks to the consumer so that the product can be used as informed consent. Proposed access should be discussed with the client.

Control:

It provides that the design does not change and no other influence comes to bear, then the control of the risks on site during construction or maintenance are the responsibilities of those undertaking the work. The designer is not involved.

3.6 Causes of an accident and identification of the preventive measures to be taken.

Accidents are caused by the negligence of the worker, faulty instrument and readings.

Types

The three type of accidents are procedural, engineered and systematic accidents.

Procedural accidents are the most common accidents caused by not following the procedures such as laws and rules.

Engineered accidents are caused by the wrong design, failure of materials and devices which are not functioning, etc.

Systematic accidents are caused by many systems which work in the co-ordination. If one fails, it leads to the accumulated problems resulting in the accidents.

The industrial accidents causes can be divided into three categories:

1. Employee error

2. Equipment insufficiency

3. Procedure insufficiency

Examples of causes falling within each category are listed here:

Employee error—misjudged situations; distractions by others; neuromuscular malfunctions; inappropriate working positions; and knowingly using defective equipment;

Equipment insufficiency—use of inappropriate equipment; safety devices being removed or inoperative; and the lack of such things as engineering controls, respiratory protection and protective clothing;

Procedure insufficiency—failure of procedure for eliciting warning of hazard; inappropriate procedure for handling materials; failure to lock out or tag out; and a lack of written work procedures.

Accident Causation Theories

The Domino theory

According to W.H. Heinrich (1931), who developed the so-called domino theory, 88% of all accidents are caused by unsafe acts of people, 10% by unsafe actions and 2% by “acts of God”. He proposed a “five-factor accident sequence” in which each factor would actuate the next step in the manner of toppling dominoes lined up in a row. The sequence of accident factors is as follows:

1. Ancestry and social environment

2. Worker fault

3. Unsafe act together with mechanical and physical hazard

4. Accident

5. Damage or injury.

In the same way that the removal of a single domino in the row would interrupt the sequence of toppling, Heinrich suggested that removal of one of the factors would prevent the accident and resultant injury; with the key domino to be removed from the sequence being number 3. Although Heinrich provided no data for his theory, it nonetheless represents a useful point to start discussion and a foundation for future research.

Multiple causation theory

Multiple causation theory is an outgrowth of the domino theory, but it postulates that for a single accident there may be many contributory factors, causes and sub-causes and that certain combinations of these give rise to accidents. According to this theory, the contributory factors can be grouped into the following two categories:

Behavioural: This category includes factors pertaining to the worker, such as improper attitude, lack of knowledge, lack of skills and inadequate physical and mental condition.

Environmental: This category includes improper guarding of other hazardous work elements and degradation of equipment through use and unsafe procedures.

The major contribution of this theory is to bring out the fact that rarely, if ever, is an accident the result of a single cause or act.

The Pure chance theory

According to the pure chance theory, every one of any given set of workers has an equal chance of being involved in an accident. It further implies that there is no single discernible pattern of events that leads to an accident. In this theory, all accidents are treated as corresponding to Heinrich’s acts of God and it is held that there exist no interventions to prevent them.

Biased liability theory

Biased liability theory is based on the view that once a worker is involved in an accident, the chances of the same worker becoming involved in future accidents are either increased or decreased as compared to the rest of workers. This theory contributes very little, if anything at all, towards developing preventive actions for avoiding accidents.

Accident proneness theory

Accident proneness theory maintains that within a given set of workers, there exists a subset of workers who are more liable to be involved in accidents. Researchers have not been able to prove this theory conclusively because most of the research work has been poorly conducted and most of the findings are contradictory and inconclusive. This theory is not generally accepted. It is felt that if indeed this theory is supported by any empirical evidence at all, it probably accounts for only a very low proportion of accidents without any statistical significance.

The Energy Transfer Theory

Those who accept the energy transfer theory put forward the claim that a worker incurs injury or equipment suffers damage through a change of energy and that for every change of energy there is a source, a path and a receiver. This theory is useful for determining injury causation and evaluating energy hazards and control methodology. Strategies may be developed which are either preventive, limiting or ameliorating with respect to the energy transfer.

Control of energy transfer at the source can be achieved by the following means:

• Elimination of the source

• Changes made to the design or specification of elements of the work station

• Preventive maintenance.

The path of energy transfer may be modified by:

• Enclosure of the path

• Installation of barriers

• Installation of absorbers

• Positioning of isolators.

The receiver of energy transfer may be assisted by adopting the following measures:

• Limitation of exposure

• Use of personal protective equipment.

The “symptoms versus causes” theory

The “symptoms versus causes” theory is not so much a theory as an admonition to be heeded if accident causation is to be understood. Usually, when investigating accidents, we tend to fasten upon the obvious causes of the accident to the neglect of the root causes. Unsafe acts and unsafe conditions are the symptoms—the proximate causes—and not the root causes of the accident.

3.6.1 Case Studies.

Here we will see about the Bhopal disaster.

The Bhopal plant was tuned and operated by Union Carbide India, an Indian company in which Union Carbide corporation held just over half the stock. UCC technical team reports that a large volume of water was introduced into the MIC tank and triggered a reaction that ended up with the gas release.

Bhopal Gas Tragedy

The Union Carbide had 51% and the Indian subsidiary UC India Ltd. had 49% of stock. In 1983, there were 14 plants in India manufacturing chemicals, pesticides, and other hazardous products. The Bhopal plant had a license to make Methyl isocyanate-based pesticides. In November 1984, they had decided to close down the plant. For quite some years before the production rate was going down.

In the history of chemical plants disasters, three other wake-up calls were reported. Flixborough accident in 1974 in U.K. when certain modifications carried out in the plant led to the leakage and explosion of cyclohexane, which killed 28 people. The Piper Alpha offshore oil platform disaster in 1988, near Scotland, killed 167 people and resulted in $ 2 billion losses. The third occurred in Toulouse, France in 2001, killing 29 people, and injuring thousands. A warehouse holding 300 tonnes of ammonium nitrate fertilizer exploded and damaged 10000 buildings, including schools, a university, and a hospital. But we have not learned from the past.

The cumulative effects of the following factors caused the tragedy in Bhopal on December 3,

1. Maintenance was neglected and the trained maintenance personnel were reduced as economy measure. Need for quick diagnosis aggravates the situation by causing considerable psychological stress on the plant personnel.

2. Training activities for the supervisory personnel were stopped. This led to inadequate training of the personnel to handle emergencies.

3. Periodical Safety Inspection teams from U.S. which visited previously were also stopped. From the initial U.S. Standards, the safety procedures were reduced to low level Indian standards. The procedures had been deteriorating at these sites for weeks or months, prior to the accident. There was clear lack of management systems and procedures to ensure safety.

4. Vital spares for equipments and machineries were not available

5. Absence of capital replacement led to the stagnant economy of the plant.

6. The high turnover of the experienced engineers and technicians, who were demoralized by the lack of development.

7. Lack of experienced personnel to operate and control the vital installations.

8. They have not conducted a thorough process hazards analysis that would have exposed the serious hazards which resulted in disaster later.

9. No emergency plan was put in practice, during the shut down and maintenance.

10. Above all, the commitment of top-level management to safety was lacking. They have been paying only lip service to safety of people of the host country.

Technologically, the tragedy was caused by a series of events listed:

1. The safety manual of Union Carbide prescribed that the MIC tanks were to be filled only up to 60% of the capacity. But the tanks were reported to have been filled up to 75%.

2. The safety policy prescribed that an empty tank should be available as a stand-bye in case of emergency. But the emergency tank was also filled with to its full capacity. These facts confirmed that the MNC had not followed and implemented appropriate safety standards of the home country in the host country. Can this be called as an example of 'misappropriate technology'?

3. The storage tanks should be refrigerated to make the chemical less reactive. But here the refrigeration system was shut down as an economy measure. This raised the temperature of the gas stored.

4. The plant was shut down for maintenance two months earlier. The worker who cleaned the pipes and filters connected to the tanks and closed the valves, was not trained properly. He did not insert the safety disks to prevent any possible leakage of the gas. This led to the build up of temperature and pressure in the storage tanks.

5. When the gas started leaking out, the operators tried to use the vent gas-scrubber that was designed to reduce the exhausting gas. But that scrubber was also shut down.

6. There was a flare tower that was designed to burn-off the gas escaping from the scrubber. That was not also in working condition.

7. The workers finally tried to spray water up to 100 feet to quench the gas (which is water soluble). But the gas was escaping from the chimney of 120-feet high.

8. The workers were not trained on safety drills or emergency drills or any evacuation plans.

4

GLOBAL ETHICAL ISSUES AND ETHICAL CODES

Global Ethical Issues: Different ethical issues in business, environment, IT, Bioethics, Intellectual Property Rights (IPR), Research, Media, CSR etc.

Ethical Codes: Meaning and the significance of ethical codes. The limitations of ethical codes.

4.1 Different ethical issues in business-Environment

Environmental Ethics: It is the study to explore the ethical roots of the environmental movement and to understand ethics about one responsibility to the environment.

Example: Acid rains, Nuclear leaks accidents.

Engineers are creation of technology that contributes to environmental degradation as well as environmental improvement. Therefore they should have a professional obligation to protect the environment.

Environmental issues in the ethical point of view to engineers

•Literally environmental ethics means conscious efforts to protect an environment and to maintain its stability from the hazardous pollutants.

•Environmental ethics is the study to explore the ethical roots of the environmental movement and to understand what ethics tells us about our responsibility to the environment.

•Whatever ethics can do for us when applied to non-environmental concerns, environmental ethics can do for us when applied to environmental concerns.

Engineers and the Environment:

It is evident that engineers are usually creators of technology that contributes to environmental degradation as well as environmental improvement, therefore they should have a professional obligation to protect the environment. Also as agents of change and experimenters, engineers have a until role to play in protecting the environment.

(a)Types of Concern for Environment

There are two types of concern for the environment.

i)Health-related concern: Engineers can be concerned for the environment when environmental pollution posses a direct and clear threat to human health. This is called as a health-related concern for the environment.

ii)Non-health related concern: Engineers can also be concerned for the environment even when human wealth is not directly affected. This concern is termed as non-health-related concern for the environment.

(b)Engineers Concern for Environment

While choosing a career or when taking up a new assignment/job, every engineers should ask himself the following ethical questions associated with the environment.

•How does and to what extent a particular industry affect the environment?

•How far such ill effects can be controlled physically and/or politically?

•What is the reasonable protective measures available for immediate implementation?

•In what way, I can be effective as an engineer, in ensuring safe and clean environment?

•What are my responsibilities in this regard?

•Should preserving the environment and its non-human inhabitants be regarded as of value for its own sake?

•Do I have obligations for the future?

•How are my obligations to the future to be balanced against my obligation to the present.

•Do I belong to nature, or does nature belong to me?

•If animals can suffer and feel pain like humans, should I have moral standing?

(c)What does Professional Codes of Ethics say about the Environment.?

Some of the professional codes of ethics regarding the environment are given below:

Engineers (ASCE) states:

i. “Engineers must be committed to improving the environment development so as to enhance the quality of life of the general public”.

ii. The codes of the Institute of Electrical and Electronics Engineers (EEE) states: “Engineers have to accept responsibility in making engineering decisions consistent with the safety, health and welfare of the public and to disclose promptly factors that might endangers the public or the engineers.

iii. The codes of the American Society of Mechanical Engineer (ASME) States: “Engineer shall consider environmental impact in the performance of their professional duties.

Business Ethics:

*Business Ethics is concerned with truth and justice and has a variety of aspects such as the expectation of society, fair competition, adverting, public relations, social responsibilities, commerce autonomy, and corporate behavior. It involves choices on an organization level rather than a personal level.

ii.Ethical Climate:A favorable working atmosphere needed to achieve a morally responsible conduct is called an ethical climate. Several factors such as nature of organization, informal traditions and practice, and personal attitude directly contribute to the ethical climate.

Definite features of an ethical corporate climate:

*The use of proper ethical language.

*The top management should accomplish a moral voice in both words and policies.

*There should be some procedures for confronting and resolving conflicts.

4.1.1 IT

1. Ethical dilemmas

There are various ethical dilemmas in relation to I.T. that need to be addressed. What are and are not ethical issues in I.T.? In regard to hackers, for example, are they testing the system or performing an immoral action? Will genetic engineering improve the quality of peoples’ lives or start to destroy it? How do we recognise when an ethical dilemma exists? There are, indeed, many gray ethical areas.

2. Plagiarism

Plagiarism is where the work of others is copied, but the author presents it as his or her own work. This is a highly unethical practice, but happens quite frequently and with all the information which is now available on the Internet. It is much easier to do and is happening more often.

3. Piracy

Piracy, the illegal copying of software, is a very serious problem and it is estimated that approximately 50% of all programs on PCs are pirated copies. Programmers spend hours and hours designing programs, using elaborate code and surely need to be protected. Although some might argue that some pirating at least should be permitted as it may help in leading to a more computer literate population. But, for corporations, in particular, this is a very serious issue and can significantly damage profit margins.

4. Hacking

Hackers break into or 'hack' into a system. Hacking may be undertaken for a variety of reasons, such as the wish to damage a system or the wish to understand how a system works, so that money can be made out of it. Alternatively, there might be a desire to alert people to the fact that a system is insecure and requires improving. Due to this some argue that there are 'hacker ethics'. Hacking can present a moral dilemma. This is because 'reformed hackers' sometimes offer their expertise to help organizations protect themselves against other hackers. Hackers cannot just wander into a system, as they could into an unlocked door. Instead, it needs a lot of skill. With this skill hackers may demonstrate that a system is insecure and requires improving. In this way, it could be argued that hackers play a valuable role. Many argue that hacking might lead to some improvements, but that it causes such a lot of disruption that it is not worth it in the long-run.

5. Computer crime

Many different computer crimes are committed, which clearly poses ethical questions for society. Various illegal acts are performed on computers, such as fraud and embezzlement. This includes, for example, using imaging and desktop publishing to create, copy or alter official documents and graphic images. There are also various ethical dilemmas, such as whether copying such files is as bad as stealing something.

6. Viruses

Clearly writing and spreading virus programs are unethical acts; they have very serious consequences and cause systems to crash and organizations to cease operating for certain periods. One of the most concerning consequences of such actions is when viruses interrupt the smooth functioning of an organization such as a hospital, which could in extreme cases even cause people to die. Logic bombs are also sometimes planted. There is obviously a lot of anti-virus software on the market now though that helps to deal with this ever-growing problem.

7. Ergonomics/health issues

There are many ergonomic/health issues related to I.T. Responsible/ethically-minded employers will, hopefully, give due consideration to this, as indeed should all employers. This includes issues such as the importance of taking adequate breaks from using the computer and ensuring that the screens comply with the regulations. Also, ensuring that the positioning of the chair and the computer is appropriate for the user and providing foot rests, when needed. Some organizations will give special advice to their employees on these matters. When I worked at Clifford Chance, an international law company, for example, they had specialized staff who would come round to each employee individually and discuss their ergonomic wants, if the employee requested. Having enough light and having plants in the room may also be important factors. Without such ethical/moral awareness and taking the necessary action, many workers will suffer health problems directly from IT such as back problems, eyestrain and eye infections and repetitive strain injury (RSI).

8. Job displacement/work pressures imposed on computer professionals

Computers are changing the face of the work scene. For some people, their jobs are becoming redundant or they have to play quite different roles and others are suffering increasing levels of stress from work pressures. Others are, obviously, reaping the benefits of having more rewarding jobs and there is certainly more emphasis on knowledge, information and IT skills than ever before. However, this all clearly poses various ethical issues. Should those that lose their jobs be compensated? How can the pressure be eased on those that are suffering stress? Is it acceptable for computer programmers to be made redundant 'on the spot' etc? There are many ethical issues that need to be addressed here.

9. Digital divide

The digital divide poses a serious problem today. A new breed of haves' and 'have nots' are being created, between those that have access and may use a computer and the Internet and those that do not have such access. There are clearly serious ethical implications here. Those that do not have such access may well be discriminated against, feel 'socially excluded' and miss out on many life opportunities.

10. Gender

There are also ethical issues in regard to gender and computers, given the fact that females are often discriminated against in various ways in this new IT age. The number of females in computing academia is low. Furthermore, when females do work closely with computers, it is often in the lower level of work. Also, computer screens and layouts are frequently designed and programmed by men and they might not be ideally suited to women, which will affect the quality of the work that women produce. Men tend to get the better quality IT jobs, earn more money and make far more of the important decisions in relation to IT. Basically, men are driving the IT age forward, whereas females are playing more passive roles, confined to working with the systems that men have already created, but which might not be ideally suited to them. These are all ethical issues that people must be made more aware of and efforts need to be made to try to remedy the situation.

11. Nanotechnology

Nanotechnology presents a new set of ethical dilemmas. Nanotechnology may help humankind and help to provide adequate food and shelter. On the other hand, it could be very dangerous. There are also various environmental issues to consider, such as the effect that nano materials have on living systems. There is a relatively low investment in environmental nanotechnology, that must surely give us cause for concern. These are all very serious ethical issues that are to be confronted sooner rather than later. If it appears to be the case that advanced aspects of IT are seriously threatening our way of life, then something surely has to be done about it as soon as possible.

12. Expert systems

Expert systems are a body of information in a specific field that is held in an electronic format, such as a 'doctor expert system', that houses detailed medical information on a database. Various questions may be posed in regard to expert systems, such as what is the basis of ownership? Is it the different elements that comprise the total system or the total package? These issues are related

to intellectual property rights and the moral aspects in regard to this. There are also wider ethical issues in regard to expert systems that are to be explored. In regard to a 'doctor expert system', for example, such a system can provide accurate information, but the face-to-face contact is missing. Such face-to-face contact might prove to be essential in order to ensure that the right diagnosis is made and it is possible that some individuals could even die as a result of a wrong diagnosis given through this lack of face-to-face contact. In other ways expert systems could help to save lives. The patient might, for example, be given a speedier response. All these ethical issues has to be considered further.

13. Genetic engineering and the patenting of life- forms

Many ethical issues are raised in regard to genetic engineering and the patenting of life forms. Is such behaviour morally acceptable? Such debates may sit alongside debates on subjects such as euthanasia and abortion.

14. Netiquette

There are also ethical/moral codes that should be adhered to, in the use of networks and email correspondence. As already indicated, the setting up of such codes has become necessary as people have not always addressed each other in an appropriate manner through this means of communication and in this way they have behaved unethically. For example, not wasting people's time and not taking up network storage with large files. Furthermore, not looking at other peoples' files or using other systems without permission and not using capital letters, as this represents shouting. Also, people that become too obnoxious can be banned or ignored. A 'kill file' can be set-up, that will automatically, erase messages from that person.

15. Intellectual property rights: The moral Rights

There are moral rights embedded within much intellectual property rights legislation, agreements and directives, for the benefit of creators of works and copyright holders. Furthermore, there are penalties for those that violate such legislation, although this can sometimes be difficult to enforce in practice. The legislation, though, is often complex and difficult to understand, which means that some creators of works do not obtain the moral rights that they are entitled to. However, sometimes, moral rights are actually excluded from agreements.

4.1.2 Bioethics

"Bioethics" has been used in the last twenty years to describe the investigation and a study of ways in which decisions in medicine and science touch upon our health and lives and upon our society and environment.

Bioethics is concerned with questions about basic human values such as the rights to life and health and the rightness or wrongness of certain developments in healthcare institutions, life technology, medicine, the health professions and about society's responsibility for the life and health of its members.

Bioethics involves issues relating to the beginning and end of human life, all the way from issues relating to in-vitro fertilization and abortion to euthanasia and palliative care.

Bioethics has an impact on every level of human community from the local nursing home to the huge international conferences on issues like the Human Genome.

Bioethics is a branch of "applied ethics" and needs the expertise of people working in a wide range disciplines including: law, philosophy, theology, medicine, the life sciences, nursing and social science.

Bioethics is full of difficult ethical questions for everybody: families, hospitals, governments and civilization.

Fundamental values are at stake: human life, the dignity of the frail and elderly, just healthcare, bodily integrity and the ability to make reasonable decisions.

4.1.3 Intellectual Property Rights (IPR)

The legal rights build up on the intellectual property created are known as Intellectual Property Rights (IPR).

Types of intellectual property rights

a. Patents

b.Industrial designs

c.Trade marks

d.Copy rights

e.Trade secrets

f.Design of integrated circuits

g.Geographical indications

Elements of Intellectual Property Rights (IPR's)

The World Trade Organization (WTO) has established seven elements of IPRs, that were agreed by TRIPs. They are:

(Trade Related Intellectual Property Rights System).

I.Patents:

Patents are the legal rights approved for new inventions involving scientific and technical knowledge.

Patent means an official document giving the holder the sole right to make, use or sell an invention and preventing others from copying it.

II.Industrial Designs:

It is the right to safeguard one's industrial designs.

A design is an idea or conception as to the features of shape, configuration pattern, ornament of composition of lines or colors applied to any article, two or three dimensional or both by any industrial process or means which in the finished article appeals to and is judged solely by the eye or product.

III.Trademarks:

It means a registered design or name used to identify a company's goods and to indicate the public the origin of manufacture of the goods affixed with that mark.

Examples: Pepsi is a registered trademark in soft drinks and Nestle in food products.

IV.Copy Rights:

It means the legal right, held for a certain number of years, to print, publish, sell, broadcast, perform, film or record an original work or any part of it.

It protects the expression of the idea, not the idea themselves.

Examples: Poems, Paintings, and Computer programs.

V.Trade Secrets:

Trade secret means a device or technique used by a company in manufacturing its products etc. and kept secretly from other companies or the general public.

Trade secrets such as formulas, patterns, methods and data compilations are kept secret in order to gain a competitive advantage over competitors.

Examples: The formula of Fanta soft drink, and the formulas for making drugs.

VI.Design of Integrated Circuits:

It is the right granted to the inventor to prevent anybody making use of the design of integrated circuits, semiconductor devices and other electronic devices.

Example: Invention of a new microprocessor chip.

VII.Geographical Indications:

It identify goods as originating in the territory of a country, an origin or a locality in that territory, where a specific quality, reputations or other characteristics of the goods is essentially attributed to their geographical origin.

Examples: Tirunelveli Halwa, Dindugal Locks, Sivakasi Crackers, Kancheepuram Sarees.

Examples of Discrimination

Discrimination is a morally unjustified treatment of people on arbitrary or irrelevant grounds.

i.Unequal treatment among employee based on religion.

ii.Communal classifications.

Benefits of IPRs:

•The IPRs promote technological, industrial and economical development of a country.

•IPRs provide incentives for the inventions and ensure adequate returns on commercialization of the invention.

•IPRs prevent the competitors from using one's invention.

•IPRs are useful in identifying unprotected areas to avoid violation.

•IPRs grant exclusive rights to the inventors.

•IPRs provide use the invention for the public purpose.

•IPRs are useful in identifying an explored areas for identifying and undertaking research so as to become a leader in that area.

4.1.4 Research

Ethics when applied to social research is concerned with the creation of a trusting relationship between those who researched and the researcher. To ensure that trust is established it is essential that communication is carefully planned and managed, that risks are minimized and benefits are maximized. In developing a trusting relationship, researchers adhere to a number of ethical principles which they apply to their work-namely beneficence; autonomy; non-maleficence; justice; veracity; and privacy.

Beneficence (doing good)

Research must only be carried out if some sort of benefit or good can be derived from it, (i.e. contribution to knowledge or improved service/treatment). Therefore the question of whether or not a research project is worth undertaking must always be uppermost in the mind of the researcher. If no benefit may be derived then the project is unethical.

Autonomy (self-rule)

Researchers have an obligation to disclose information at a level that participants can understand so that they can either refuse or agree to participate. In essence, autonomy is concerned with the concept of informed consent whereby people who agree to take part in a study know what they are agreeing to and authorize the researcher to collect information without any form of compulsion.

Non-maleficence (do no harm)

The principle of non-maleficence places an obligation on researchers not to harm others or expose people to unnecessary risks. Harm comes in many forms, from blows to self-esteem to 'looking bad' to others, to loss of funding or earnings, to boredom, frustration or time wasting. It is good practice to assume that every research project will involve some form of harm and to consider in advance how best to deal with it.

Justice (Fairness)

This principle means that everyone has to be treated fairly and equally.

Veracity (truth telling)

This principle concerns truth telling whereby the researcher is needed in order to provide comprehensive and accurate information in a manner that enhances understanding. For example, if the researcher says that a questionnaire will take 10 minutes to complete then the questionnaire should take 10 minutes and not 15 minutes. Researchers must always be honest with participants and keep any promises made.

Privacy

Privacy concerns the respect for limited access to another person, be it physically, emotionally or cognitively. For example, although participants grant access to their thoughts and feelings when they agree to participate, they do not agree to unlimited access. Therefore they have always got the right to decline to talk about certain issues or to answer specific questions.

Confidentiality is an extension of privacy but relates specifically to the agreements made between the researcher and participants about what can and cannot be done with information collected over a course of a project. In most cases this will be found and subjected to the legal constraints outlined in the Data Protection Act 1998.

4.1.5 Media

Legal Issues In The Media Industry

Copyright is a big issue the media industry faces. Legal protection is advised so that their original material cant be used in somebody else name. However copyright can only be applied on the application of the idea, not the idea itself. It is also illegal to discriminate anyone on grades of race, sex, disability when recruiting in the workplace. National security is another legal issue filmmakers face. Filmmakers and producers must be aware of certain laws such as the official secrets act 1911 and the prevention of terrorism act.

Health and Safety

Health and Safety Advisers in the TV and film industry give help give advice on health and safety management systems within each film or production, reviewing each company's Health and Safety policy and ensuring that health and safety arrangements and the appropriate personnel are in place. Before filming can begin a number of risk assessments have to be carried out in order to ensure everybody's health and safety. These help highlight the different kinds of risks in the workplace or on location.

Employers Liability

Most employers are required by the law to insure against liability for injury or disease to their employees arising out of their employment. Employer liability insurance is compulsory, as set out by the employer liability act 1969.

Employers Rights

All employees in the workplace automatically have employers rights which must be taken into account by the employer.

These rights can include;

- A safe clean workplace
- Pay during sick leave

• The right to request flexible working

• Request breaks

• Training time

• Changes to employment conditions and many more

Trademarks

Trademarks is a certain indication used by a business or company that defines that company and makes it stand out from all the other company's also making it unique.

Equal Opportunities

Equal opportunities is an act where people has be treated as an equal and not be looked down upon because of their age, disability, sex, religion or ethnic origin. The Equal Opportunities act took effect in August 2011. This new act replaced the 1995 equal opportunity act, with some changes to discrimination laws and changed key definitions.

Confidentiality

In the production of a film or TV program there are certain things that has to be kept secret so that other companies cant copy their idea and so it doesn't ruin the plot of the story to the audience. Employers will often require to sign a confidentiality agreement form when working on a project. The confidentiality act was put into place during 1991.

Exclusivity

The exclusivity act stops people from working with more than one party on a project. This means that no matter what happens you can only deal with the one party you signed up to first. For example a person working on one TV show can not appear on any other show for at least 6 months after broadcast.

Ethics

Ethics are the moral principles that define how a group or person acts. However there are some issues in the ethical side of the media industry such as:

• Privacy

• Truth

• Mostly trust

Ethical issues in the media industry

Morality issues such as right and wrong have to be taken into account. Exploitation and sensationalism also have to be considered and taken into account. Offensive material such as privacy and copyright. These are not generally enforced by law. Regulatory bodies and codes of practice exist often within the industry.

Representation & ethics

Representation refers to the construction in any medium of aspects of reality such as people, places, objects, events, cultural identities and other abstract concepts. Such representations can be in speech or writing as well as still or moving pictures.

Ethics issue

A reporter when working on a certain story will have to make sure that he/she is not bias or one sided towards that story. They should also gather both sides or the argument, for and against that story in order to gain a fair sided report.

For example religion. A reporter cannot be one sided they should approach it with an open mind and not take sides.

Accuracy

The film industry must make sure that they don't mislead their audience's. They should also make sure that they don't alter or change any facts as this will undermine the audiences trust in their content.

Harm and offense

TV producers have a responsibility to protect children and young people from unsuitable content as well as their rights of freedom of expression and freedom to receive information.

Fairness, Contributors and Consent

Groups and individuals must usually be appropriately informed about the planned nature of context of their contributors when they are asked to take part in certain content and give their consent, unless there is an editorial justification for proceeding without their consent.

Privacy

Privacy is an important part in the media industry. Producers must make sure that they do not interfere with peoples personal lives and not to broadcast any material that the persons do not approve of.

4.1.6 CSR

Corporate social responsibility (CSR, also called corporate conscience, corporate citizenship or sustainable responsible business/ Responsible Business) is a form of corporate self-regulation integrated into a business model.

CSR policy functions as a self-regulatory mechanism whereby a business monitors and ensures its active compliance with the spirit of the law, ethical standards and international norms.

With some models, a firm's implementation of CSR goes beyond compliance and engages in "actions that appear to further some social good, beyond the interests of the firm and that which is required by law".

CSR aims to embrace responsibility for corporate actions and to encourage a positive impact on the environment and stakeholders including consumers, employees, investors, communities, and others.

The term "corporate social responsibility" became popular in the 1960s and has remained a term used indiscriminately by many to cover legal and moral responsibility more narrowly construed.

Proponents argue that corporations increase long term profits by operating with a CSR perspective, while critics argue that CSR distracts from business' economic role.

A 2000 study compared existing econometric studies of the relationship between social and financial performance, concluding that the contradictory results of previous studies reporting positive, negative, and neutral financial impact, were due to flawed empirical analysis and claimed when the study is properly specified, CSR has a neutral impact on financial outcomes.

4.2 Ethical Codes: Meaning and the significance of ethical codes

Roles of code of ethics:

• The primary aspect of codes of ethics is to provide the basic frame work for ethical judgment.

• They are referred as codes of conduct agreed upon standards for professional conduct.

• The codes of ethics express the ethical principles and standards in a coherent, comprehensive and accessible manner.

• It defines the roles and responsibilities of the profession.

• It helps the professional to apply moral and ethical principles to specific situations.

These code are based on fine canons. They are,

1. Principle of ethics-integrity

2. Competence

3. Individual responsibilities

4. Professional responsibilities

5. Human concerns

Positive roles of code of ethics:

The code of ethics propagated by professional societies play a vital role. They are,

•Inspiration

•Guidance

•Support for responsible conduct

•Deterring and disciplining unethical professional conduct

•Education and promotion of mutual understanding

•Protecting the status quo suppressing dissent within the profession

•Promoting business interests through restraint of trade

1. Inspiration

Ethical codes provides a positive inspiration for the professionals to exercise their obligations effectively. These codes inspires the engineers to apply moral principles under the various conflicting situations.

2. Guidance

The ethical codes provide guidelines for achieving the obligations of the professionals. These codes also provide specific guidelines, which tell how to apply the code to the unique situations.

3. Support

The ethical codes offer positive and potential support to engineers to perform their duties in ethical manner.

At times, the codes can serve as legal support for those engineers who are tangled in professional obligations and conflicts.

4. Deterrence and discipline

The ethical codes can be used for deterring and disciplining unethical professional conduct. These codes are also considered as the formal basis for investigating unethical conduct.

5. Education and mutual understanding

The ethical codes can be used in educational institutions and other places for emphasizing the importance of moral issues and values. They are also useful to encourage a shared understanding among the public, an governmental organizations and professionals, concerning the moral responsibilities of engineers.

6. Contributing to the profession's public image

The ethical codes can confer a positive image to the public of an ethically committed profession. The codes enables the engineers to serve the public more effectively.

7. Protecting the status quo

The codes constitute of ethical conventions. These ethical conventions can promote a minimum acceptable level of ethical conduct. The codes can also suppress the dispute within the profession.

8. Promoting business interests

The codes of ethics promotes business interests through restraint of trade. They help in facilitating morally feasible business dealings to the professionals. The codes should be applied with caution, keeping in view their limitations.

The codes of ethics of engineers:

• The perspective of engineering as social experimentation provides some useful clues in prioritizing and ranking the various functions of the ethical codes.

• The supportive function of engineering codes is viewed as the primary important function. Because the supportive function of engineering codes enable the engineers to express their views freely, especially about safety to those affected by engineering projects.

• The disciplinary function of engineering codes is recognized as the secondary important function. Because, this function is essential in engineering as it ensures all clear and enforceable laws and rules.

• The guidance, inspirational, and educational functions of engineering codes are also important. Because they promote mutual understanding among those affected by them.

• The functions of protecting the status quo and promoting only business interests in violation of free competitions should be avoided altogether.

Thus it should be kept in mind that codes are only a small part of engineering ethics. Also codes are not sacred write and should always be open to critical examination. The codes should be applied with caution, keeping in view their limitations

4.3 The limitations of ethical codes.

The codes have few major limitation. Sometimes codes instead of solving the moral problems, it becomes an essential exercise of personal moral responsibility. Few important limitations are listed below

1. Codes are restricted to general and vague wording. Hence sometimes the codes are not directly applicable to all situations. Engineering is a complex profession, so all the moral problems may not be judged. Due to technological development and changing social structures new and unpredictable conditions are developed. Even in a predetermined condition it is not possible to word a code which is suitable for that instance. Sometimes codes are used to serve the personal gain of specific individuals.

2. Sometimes code created moral dilemmas, as code provides no guidance as to which entry should have priority among different entries For example consider two entries from NSPE code.

Section 1 : "The engineer will be guided in all his professional relation by the highest standards of integrity and will act in professional matters for each client or employer as a faithful agent."

Section 2 : "The engineer will have proper regard for the safety, health and welfare of the public in the performance of his professional duties." The second entry is more applicable when an engineer is told to ignore a situation that believes threatening to the public safety on the basis of a business decision.

Newly revised code states the Engineer shall hold paramount the safety health and welfare of the public in the performance of their professional duties, the meaning of paramount is most important.

3. The code can not serve as the final moral authority for professional conduct. The code cannot be used as last moral word. Usually, it is referred as ethical conventionalism. Ethical conventionalism is a view that a particular set of conventions, customs is self-certifying and not to be questioned as long as it is the set in force at a given time or place. Such a view does not support moral frame work.

For examples consider an old entry from NSPE code.

The engineer shall not submit engineering proposal on the basis if competitive bidding. It is to protect the public safety by discouraging cheap engineering proposals that may costs safety in order to get the contract. The critics contended what it is for the self-interest of established engineering firms and prevents the power pricing due to the greater competition.

4. Separate codes for different engineering societies gives the feeding that ethical code is more relative right and none of the code is really right.

Inequality

Codes of conduct are often drafted, in part, to ensure that all members of an organization are treated equally. However, often those in upper-level management and creative positions are given a "bye" on certain codes, like those restricting how the worker talks about the company or to what degree employees are allowed to have personal relationships outside of work. According to CNN Money contributor Eleanor Bloxham, if companies are going to have codes of conduct they must reconsider any code that cannot be applied equally.

Un-enforceability

Some codes of conduct, perhaps because of employee misconduct in the past, take a micromanagement approach, dictating detailed minutia like the kinds of material that may be worn in the office or the exact length of personal phone calls. According to Leadership Skills for Life, it is important for codes of conduct to be detailed because some questions, like whether or not taking a company pen home is ethical, will render many answers. However, Eleanor Bloxham notes that such codes can be cumbersome, contradictory and ultimately ineffective when people, including supervisors who cannot enforce the codes and still have a productive workplace, abandon them in favor of "common sense." On the other hand, a company where the value of honesty is embedded and appreciated may result in a culture where no one would consider taking a pen.

Unethical Corporate Behavior

In some cases, codes of conduct may facilitate unethical corporate behavior. Codes of conduct that limit employees' ability to speak out against the corporation can keep them quiet for fear of job loss or legal retribution even if the company is engaging in an unethical practice. Further, codes of conduct can be used to set ethical-looking rules that managers are instructed not to follow so if any misconduct occurs it is the individual employee, not the corporation that will be blamed.

Lack of Stability

Although many codes of conduct are developed out of corporate values, mission statements and even past incidents of company impropriety, there is rarely anything holding corporations to their own codes of conduct. In other words, they are not stable and owners or boards of directors may revise them to include the company's current needs and desires be they ethical or not at any time.