

Glossary for Engineers

This resource explains key terms, concepts and issues in engineering ethics

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Agency: See **Moral Agent**

Culpable Ignorance: See **Negligence**

Duty

A moral requirement to perform a particular kind of action, a type of action which is morally mandatory. A thing one must do. There are various ways of distinguishing between different duties.

- **Positive vs. Negative duties:** A positive duty is a duty to act in a particular way; a negative duty is a duty to refrain from acting in a particular way.
- **Prima facie vs. 'all things considered' duties:** A prima facie duty is one that can be outweighed or overridden by other moral considerations; an 'all things considered' duty is a duty that we have once we have factored in what the circumstances are and what prima facie duties are already in existence.
- **Special vs. Natural duties:** Special duties are duties that we have to particular individuals or sets of individuals in virtue of some special relationships that we have in relation to them. Natural duties are duties that we have to all people simply because they are people.

Duty of Care

A duty of care is an obligation to adhere to a reasonable standard of care while performing any acts that could foreseeably harm others. Individuals and groups can have duties of care, although the term is usually used to refer to the legal obligation that employers have to look after their employees and the public.

Duty to the Environment

There are two main kinds of duty that engineers may have which extend towards the environment:

- **Non-maleficence:** The duty not to harm the environment
- **Beneficence:** The duty to improve the natural environment

The duty of non-maleficence is a negative duty– a duty to refrain from acting in a particular way. This duty can be argued to stem from the fact that there exists a basic human right to a pleasant environment. This right places a corresponding duty upon everyone not to infringe this right by harming the environment. It can also be argued that engineers have a special duty not to harm the environment because they are often causal agents in environmental degradation and have a responsibility because of this.

The duty of benevolence on the other hand is a positive duty– a duty to act in a particular way. Negative duties are usually derived from the existence of the rights of others; negative duties are placed upon us without our acting in a particular way, or accepting that duty. Positive duties however, are usually derived from an action (such as making a promise) or voluntarily accepting a particular role (parent, doctor). It needs to be argued, therefore, that the role of the engineer involves such a duty. It is not clear, however, that engineers promise to promote the wellbeing of the environment in the same way that doctors promise to promote the wellbeing of their patients. However, it could be argued that as professionals, engineers should be 'moral pioneers'; that if large engineering firms engaged in projects to improve the environment then others would follow. Whilst this might be a morally laudable thing to do, it does seem that saying that engineers are required to do this goes a bit too far.

There is a second issue that, even if engineers do have both a duty to not harm the environment, and to improve the environment, there are things to be said about the extent of these duties. This is connected to the issue of whether the natural environment has intrinsic or instrumental value. If we think that the environment has intrinsic value then the duty of engineers extends to *all* environments. If we think that the environment has only instrumental value then the duties extend only to those environments which have a direct impact on human interest or concerns.

Duty to Obey the Law

It is obvious that we have a legal duty to obey the law but not so obvious that we have a moral duty to obey the law. There are a number of reasons that a moral duty to obey the law might exist:

- **Social Contract:** By living in this country we implicitly promise to obey the law.
- **Fair play:** We happily accept the positive benefits of our society and so have a duty to respect the institution of the law that makes these benefits possible.
- **Special Duty:** The duty to obey the law is derived from a special relationship that we have as citizens. Just as we stand in a special relationship to family members and family duties arise from this relationship, so we stand in a special relationship to other members of our society and social institutions and have similar duties to members of our society, and social institutions like the legal system.

There are, however, some reasons for thinking that we do not have a moral duty to obey the law:

- Laws can be immoral (apartheid in South Africa). It cannot be our moral duty to obey immoral laws.
- Many laws have no connection with morality at all (parking laws) it seems absurd to say that breaking such laws is an immoral act.
- We only have a moral duty to obey those laws which *happen* to legislate against immoral acts or in favour of moral acts. So being against the law does not make an act immoral, rather that act is against the law *because* it is immoral. Laws do not impose extra moral restrictions but in some cases reflect the moral restrictions that are already in place. Therefore, we do not have a moral duty to obey the law just because it is the law.

Duty to Preserve Heritage

We can be said to have a duty to preserve cultural heritage for a number of reasons:

- **Custodianship:** Cultural heritage has been passed on to us from past generations. Given that we, as a generation, are no more important than any other, we have a duty to preserve buildings etc. for future generations to appreciate.
- **Human rights:** There exists a basic human right for adequate environmental conditions. We ought to preserve buildings etc to protect this right.
- **Protection of Life:** We have a duty to protect human life and this includes producing the right kinds of environments in which humans can flourish.

However, all these reasons seem equally applicable to the preservation of both natural and built environments. This doesn't help in this case where the conflict is between preserving the natural environment and preserving the built environment. However, it could be argued that even considering the three conditions given above, preservation of the built environment should, at least sometimes, take precedence over preservation of the natural environment.

- **Custodianship:** The built environment has literally been passed on to us by previous generations- they built it. We have a duty to our ancestors to preserve these buildings. No one built the natural environment so while it may sometimes be a good thing to preserve, we do not have a duty to anyone directly.

- **Human rights:** ‘Adequate environmental conditions’ largely refer to the built environment– we all need the safety and shelter from the elements provided by buildings, as well as other benefits such as those derived from hospitals, schools, churches, art galleries, libraries.
- **Protection of Life:** It can be argued that the right kind of environment for human flourishing is largely a built environment.

Employer-Employee Relations

There will be certain **duties** or **obligations** that employers owe to their employees, or that employees owe to their employers. These are special duties that arise from the relation in which employer and employee stand to one another and so different conceptions of the employer-employee relation lead to different ideas about what these particular duties are:

- **Lord-serf/ Master-servant:** Some view the relation between employer and employee as analogous to the feudal relation between lord and serf, or the more modern variant, the relation between master and servant. According to this view, the employee owes allegiance or loyalty to the employer. The employer also has a right to benefit from the fruits of his or her employees’ labours but in return has a duty to ensure the safety of the employee.
- **Contractual relation:** The lord-serf relation is essentially an unequal and outmoded one (Marx thought that the relation between employer and employee under capitalism resembled that of the lord-serf relation and that this inequality should be rejected in favour of communism) and so it is often rejected in favour of the contractual view. This views the employer and the employee on an equal footing as involved in a mutually beneficial contract. According to this view, the employee has a right to expect a fair wage from the employer, and the employer has a right to the fruits of his employees’ labours. There is no expectation of employee (or employer) loyalty under this view.
- **Stakeholder view:** This view says that businesses have a duty to take into account the interests of anyone who has a stake in the business. Stakeholders will be employees, customers and suppliers but will also include groups such as local and central governments, local communities and pressure groups who, while not directly involved in the day to day dealings of the business, will nevertheless be affected by it. Employees of a company will therefore be one of many stakeholders whose interests the employers must take into account. It is not clear what particular duties will exist between employer and employee under this view because the interests of all the stakeholders must be balanced against each other when coming to any decision.

Specific rights that employees might have (depending on your view of the employer-employee relationship) are listed below:

- **Safe working environment:** The right to a safe working environment is enshrined in law and employers therefore have a legal obligation to uphold this right.
- **Equal treatment:** Again, the right to equal treatment in the workplace is enshrined in anti-discrimination laws so employers have an obligation to respect this right.
- **Privacy:** Employees are entitled to some privacy; for example, while employers are entitled to monitor the health of their employees these health records are confidential. Other aspects of an employee’s life should also remain private; employers are not entitled to know about employee’s sexual preferences or religious practices, for example. Some argue, however, that it is legitimate to override the right to privacy in some cases; when these private practices threaten to harm others. For example, some employers assert the right to submit their employees to random drug tests by arguing that their right to privacy is overridden by the right of all employees to a safe working environment; an environment which may be threatened if drug-taking occurs amongst its staff.

- **A fair wage:** The law specifies a minimum wage but there is no legal obligation for employers to go beyond this. However, there may be good economic reasons for offering better than the minimum wage, and ethical reasons too; that people deserve wages that are appropriate for the level of skill that a job requires and so it is only fair that they are awarded such wages.

Health & Safety: See Safety

Honesty

Honesty is a virtue closely connected with being truthful. Whilst telling the truth is necessary for honesty it is not sufficient (all honest people tell the truth but telling the truth is not enough in itself to constitute honesty.) It is therefore debateable whether the term is synonymous with 'truthfulness'. Being honest includes the following behaviour:

- Telling the truth
- Avoiding lies and intentional deception
- Not misleading
- Not cheating or being duplicitous in other ways
- Being trustworthy
- Having integrity

Independent & Dependent Moral Status

Something is said to have independent moral status if we take this thing into account when making our moral decisions, because of the kind of thing that it is; because of its very nature. Something has dependent moral status only if we take this thing into account when making moral decisions in virtue of its relation to something else. To take a paradigm example, human beings have independent moral status because people matter just in their own right. Harming people is bad and helping people is good, not because it promotes some further goal or contributes to something else, but because of the people themselves; I refrain from killing my accountant not because he is really useful but because of his status as a human being. Property, on the other hand only has dependent moral status; its status depends upon its relation to human beings which themselves have independent moral status. I refrain from stealing property not because I value it in and of itself, but because I realise its value to others. So while I factor things like money, clothes and other things into my moral decisions (I should not steal my friend's money, I should not set people's trousers on fire) this is only because of their connection to human beings– things with independent moral status. Another way of thinking about the distinction is that only things with independent moral status can be *wronged*. I do not wrong a plant by tearing it up, but if it is my friend's beloved prize orchid then the plant's destruction certainly wrongs her.

The concepts of dependent and independent moral status are closely connected with the concepts of **instrumental and non-instrumental value**. All beings with independent moral status (e.g. people) have non-instrumental value; and all things with dependent moral status (e.g. property) have instrumental value only. Similarly, all things with non-instrumental value have independent moral status; if we decide, for example, that the environment has non-instrumental value then this provides us with a reason to factor the interests of the environment into our moral decisions. However, not all things or beings with dependent moral status have purely instrumental value and this is where the concepts diverge. A treasured possession such as a wedding ring only has dependent moral status; it is only important in virtue of its connection to a human being. The wedding ring does not have simply instrumental value however; its value is not derived from its being a means to something else of value.

Instrumental & Non-Instrumental Value

Non-instrumental value (often termed 'intrinsic value') is value that some thing or being possesses 'in and of itself'; instrumental value is value that some thing or being possesses in virtue of being a means to something else of value. For example, money is only valuable in virtue of that fact that it can be used to as a means to getting other things; it only has instrumental value. If money was unable to function as a means to other things (as is the case with out of date currencies like the French franc) then it ceases to have value. Wasting money is wrong not because money is itself good to have, but because money enables you to get and do other things that are valuable (buy food, go on holiday, build the next hospital, restore another art treasure etc.)

There is often disagreement about whether something has instrumental or non-instrumental value. For example, some argue that the natural environment (animals, plants, habitats, ecosystems) has non-instrumental value and this entails that we have a duty to protect this environment. Others argue that the environment has only instrumental value and so our duty to protect it extends only to those aspects of the environment that impact on human well-being in some way. If ecosystems etc. are non-instrumentally valuable, then there would be something bad about losing them even if no humans or animals were harmed in the process or as a result. The disappearance of the red squirrel is bad because of something bad about the absence of red squirrels from our ecosystem not because of the reduced pleasure that it gives to humans.

The notions of instrumental and non-instrumental value are closely connected with the notions of **independent and dependent moral status**.

Integrity

Integrity is a difficult concept to pin down and can mean a number of different things:

- **Coherence of word and deed:** Integrity is often contrasted with hypocrisy so someone has integrity when they 'practice what they preach'.
- **Standing for something:** Someone is often said to have integrity if they are loyal to a particular cause or fight for a particular issue.
- **Being moral or ethical:** It is arguably not enough to fight for a particular cause or practice what you preach to count as a person of integrity; the causes you support or the actions you perform must be ethical ones too. Otherwise, those who steadfastly support unethical causes (e.g. the BNP) or both practice and preach in favour of unethical actions (racism or sexism) would count as people of integrity.
- **A collection of qualities:** Perhaps integrity is better described as a set of qualities which including honesty and trustworthiness.

Intellectual Property

'Intellectual property' generally refers to any output of intellectual activity which legitimately belongs to some individual, group of individuals or organisation. However, the term is sometimes used to refer only to those outputs of intellectual activity that are protected by law. (Legal) Intellectual property is divided into four main types, based on the kind of material covered: Copyright, Trade Marks, Designs & Patents. Some of these kinds of intellectual property are automatically protected under by the law whereas others need to be registered to acquire protection. Those which need to be registered will have to satisfy some kind of registration requirement; usually that the intellectual property in question is 'new' or 'original' in some way.

Intrinsic Value: See Instrumental & Non-Instrumental Value

Malpractice

An instance of **negligence** where the individual in question has breached a professional code in being negligent.

Moral Agent

Those whose actions, character and motivations can be morally evaluated. This is usually confined to mentally competent adult humans, but the boundaries of moral agency are fuzzy- children, mentally damaged humans may lack moral agency where some higher primates are arguably moral agents. All moral agents have moral standing but things lacking agency can nevertheless possess moral standing.

Moral Relativism

The thesis that truth of a moral statement is relative to the context (usually cultural context) in which that statement is made. This view holds that there is no such thing as absolute truth when considering moral claims.

Negligence

Also known as culpable ignorance. Negligence is a case where ignorance of the facts surrounding a situation does not diminish the responsibility of the **moral agent** for unwanted or immoral outcomes of an action. This is usually because some degree of 'reasonable care' has not been taken by the agent in question. 'Reasonable care' is a slippery term so it is difficult to classify cases of culpable ignorance. However, the idea is captured by the thought that the agent in question failed to do something that they could be reasonably expected to do and this led to the performance of the immoral act. E.g. A doctor kills a patient by administering penicillin to a patient that is allergic. The doctor was unaware of the allergy because they had failed to take the patient's history.

Obligations

Moral requirements or **duties** which arise from the rights of others. For example, we have an obligation not to take the life of another person stemming from that person's right to life. On the other hand, we have a duty but not an obligation to protect the environment, as the environment does not have a right to protection. More controversially, some people argue that we have duties to prevent cruelty to animals but no obligations, because animals are not the kinds of beings which can have rights.

Profession

A form of work which fulfils the following criteria:

- Work requires sophisticated skills, judgement and discretion of a kind which cannot be mechanized; a high degree of expertise
- Large amount of formal education required
- Standards of conduct, and organisations which set these standards; self-regulation and governing bodies.
- Concerted service to the public good. Or public goods result from the practice of the profession.

Professionalism

Fulfilling the duties that come with being a member of a **profession**. The criteria given for being a profession place responsibilities upon members of the profession to behave in a particular way: To keep their knowledge and expertise

up to date, to work for the public good and to adhere to their code of conduct. To act 'unprofessionally' therefore usually means to fail to fulfil one of these responsibilities.

Professional Duty: See **Professionalism**

Responsibility

Four main uses of this term:

- Responsible **agency**: Having the general capacity for **moral agency**, understanding and acting on moral reasons, being responsible for our actions.
- **Retrospective** responsibility: Being judged by our actions and blamed or praised for them.
- **Prospective** responsibility: the responsibilities that one has that, say, attach to a certain job. Synonymous with 'duty' or 'obligation' in this sense.
- Responsibility as a **virtue** (like 'conscientiousness'): Diligently trying to do the right thing, being a responsible adult.

Rights

A justified claim, assertion or entitlement; things one can do. There must be a basis for these rights; something which justifies their existence. Rights need not be exercised and may be waived (given up voluntarily). Rights can be infringed, either by being overridden or not met. Rights can be also be violated– unjustifiably infringed.

Rights can be categorised in various different ways: According to their bases, or who possesses them:

- Special rights- only possessed by some people in virtue of agreements, contracts or special relationships.
- Legal rights- bestowed by law
- Civil rights- in virtue of being a citizen
- Human/Natural rights- In virtue of personhood.

According to their nature:

- Alienable/Inalienable rights- rights which can/cannot be taken away by others, traded, or forfeited.
- Negative rights/ liberties- rights to non-intervention.
- Positive/affirmative rights- rights of receipt.
- Absolute/*Prima facie* rights- rights which cannot/can be outweighed by other concerns.

Rights can have many of the above features at once e.g. the right to life is a human right, a negative right and an inalienable right.

Risk

The term is ambiguous with two main meanings:

- The probability of harm occurring multiplied by the degree of that harm. Thus, a highly unlikely event that would produce a great deal of harm and a quite likely event that would produce a very small amount of harm would be equally 'risky'
- Just the probability of a harm occurring. Thus a highly likely event poses more risk than an event that is very

unlikely, even if the unlikely event would cause a greater degree of harm.

Technically speaking 'risk' usually denotes the former meaning, but common usage of the term switches freely between the two.

There are a number of factors that are relevant when assessing the acceptability of a risk:

- How likely the event is to occur
- The groups of people at risk: e.g. Children, the elderly, people in a particular geographical region
- The severity of the harm the risk threatens to cause
- Whether the risk is accepted voluntarily or imposed involuntarily
- Distribution of risks and benefits

People are willing to accept risks under certain circumstances if associated benefits are worth taking the risk for. For example, the long-term effects of mobile phones on our health are unknown and therefore the technology poses some risk. However, most of us accept this risk in exchange for the benefits that mobile phones offer. There are some factors which make people less likely to accept a risk; one of these is if this risk is imposed involuntarily. For example, emissions from a local factory may pose a small risk to health, a level of risk that we would be willing to accept in another circumstance (say, the same level of risk as travelling on an aeroplane). However, the fact that this risk is imposed upon us, rather than accepted by us makes people more unwilling to deem it an acceptable level of risk.

Safety

Freedom from **risk**. However, there is no such thing as total safety, as no activity, however innocuous, is entirely risk-free.

Sustainable Development

This was defined by a UN commission as development "which meets the needs of the present, without compromising the ability of future generations to meet their own needs". (Brundtland Commission report, United Nations, 1987)

Value Judgements

Judgements that something is good/bad, worthy/worthless/ desirable/undesirable. Value judgements are distinguished from facts which are statements about what is the case. They are also distinguished from preferences which are statements about the person uttering the sentence rather than about the subject of the sentence ("I like cheese"). Aesthetic, religious, and ethical statements are examples of value judgements.

Whistleblowing

The deliberate exposure of wrongdoing motivated from a desire to prevent certain harms occurring. For example, leaking unsafe working practices to the press. Whistleblowing can be justified or unjustified and this depends upon how severe the harm is and how likely it is to occur. For example, blowing the whistle on practices that pose very little risk to safety seems unjustified. The justification of an act of whistleblowing is also dependent upon whether or not the company in which the harm (or potential harm) is occurring has an obligation to avoid such harms. For example, it would be unjustified to leak to the press the fact that a company was doing nothing to protect workers against the potential risks of mobile phone use, say, if the use of mobile phones was an entirely voluntary practice.

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