

# Moral Issues In D&T

The Collins Concise Dictionary describes “moral” as being “concerned with or relating to human behaviour, especially the distinction between good and bad or right and wrong behaviour .... based on a sense of right and wrong according to conscience”.

So what do moral factors and morality have to do with people who design and make things?

The answer is clear. The way that we design and make things affects the safety, comfort and well being of people who come into contact with our designs and who will be affected by them. So, the morality of our thinking and decision making has an impact on every aspect of our design and technology work and on the people who will use our products.

## Morality: The Design Opportunity

The identification of a problem or design opportunity offers us a chance to do something about it. Our moral choices are that:

- we could do something that would be considered by others to be good for people, our environment and living things such as birds, fish and animals;
- we could do something that would be considered by others to be bad for people, our environment and living things such as birds, fish and animals, or;
- we could decide to do nothing at all.

The moral dilemma is whether to act when we know that action should be taken and whether to do what is right and good for others particularly when it is difficult or not so good for us.

## Morality: The Design Specification

The design specification lists the specific things that a design should include and the specific attributes that a design should have. The morality with which the design specification is compiled helps determine the quality, safety and suitability of the design. So the specification should be compiled with the aim of creating a product that is right and good for people and the environment.

## Morality: The Design

A design is a detailed plan of a product, system or environment that takes into account how the product, system or environment should be manufactured and how it should be used. A design may be judged as being a very good design because the finished product does precisely what it was intended to do, however, the way that the product is intended to be used may be judged as being morally good or bad, or right or wrong.

Take for example, the design of land mines. A land mine is intended to be hidden just below the surface of the earth and to explode when a light pressure is applied to the top of it. The fact that hidden land mines indiscriminately blow the legs off unsuspecting adults,

children and animals, questions the morality of all the people involved with commissioning, designing, manufacturing, advertising, distributing, selling and using the product.

So the way that a design is intended to be used is a factor in determining whether the designer's actions are morally good or bad, or morally right or wrong. The morality of the designer's decision making, together with the designer's practical skills determines how much the world will benefit from the design. Morally, designs intended for the general public, should be inclusive, i.e. designed in a way that everyone can use the finished product, system or environment comfortably and safely. New designs for public facilities such as public telephones, public parks and public buildings are generally inclusive designs aimed at giving everyone equal access to them, around them and exit from them.

However, even inclusive designs cannot cater for every conceivable need that individuals who make up "the general public" can have, so designs have to be modified, customised and redesigned to meet the specific and special needs of individuals. Ideally, a design should be a good solution to a problem or a design opportunity and should benefit humans, plants, animals or the environment, with minimal or no detrimental affects. All designs should take into account the health, safety and well being of the makers and users of the design.

## Morality: The Choice of Manufacturing Materials

At this time of dwindling natural resources, it might be argued that people have a moral duty to use the world's remaining resources carefully and wisely. The choices we make about manufacturing materials have implications for the world's remaining resources, and the energy and materials that are needed to convert raw materials into the processed materials that we use to make things.

Not all resistant materials come from the earth. Some materials used for making products come from animals. Animals such as sheep and cattle are killed for food and their skins are used to make leather products. Some wild animals are bred in captivity simply to be killed for their skins. The skins of mink, foxes and countless other wild animals are used to make coats, bags and trophies. Their bones are sometimes used for carved products, knife handles and "medicinal" potions. Many ordinary people as well as groups concerned with the welfare of animals consider this sort of behaviour by humans to be immoral.

## Morality: Recycling Materials

We are using (or destroying) some resources faster than they can be replaced.

In some cases, they cannot be replaced. Finite resources such as coal and oil may run out if they are depleted at the present levels. In an effort to conserve resources and to reduce the environmental impact of the primary conversion of the raw materials that are used to make resistant materials such as metals, wood, plastics and glass, there is a move towards recycling materials from redundant products. That means that products that are no longer used are taken apart and their parts are melted or processed in some other way to make new materials that can be used to make products. The energy used in recycling processes is usually far less than that used in the primary conversion of materials. It could be argued that morally, the recycling of materials is better than the depletion of finite resources.

## Morality: The Use Of Energy

Energy is essential for industry, for development and for a comfortable human existence.

The world's use of fossil fuels, i.e. coal, oil and natural gas has contributed to higher levels of greenhouse gases, global warming and a depletion of these natural fossil fuel resources. Our use of nuclear energy poses the possibility of catastrophic environmental disaster through accidental radioactive spillages, leaks, explosions, terrorist attacks and through inappropriate storage and dumping of nuclear waste. The effects of energy use have global consequences. One of the fears is that global warming will trigger occurrences that will add more greenhouse gases to our atmosphere and will exacerbate the problem of global warming. Some people believe that the consequences of our energy use are a greater threat to the safety of the human race than the threat of nuclear war.

Many countries of the world are debating how to reduce our dependency on fossil fuels and how to produce clean, safe energy in the future. Researchers are trying to identify new, clean and renewable sources of energy whilst designers are trying to design products that use less energy. The dilemma, as always, is how to minimise the environmental impact of our efforts to harness energy from the available sources.

The moral thing for all of us to do is to reduce our own consumption of energy.

Three easy ways that we can do this are to:

- insulate our homes and places of work so that less energy is needed to heat them;
- switch off electrical devices such as computers and lamps when they are not being used;
- separate waste materials for recycling, (far less energy is used in recycling processes than in the primary conversion of raw materials).

## Morality: The Manufacturing Processes

The moral issues relating to manufacturing process are to do with:

- how the polluting effects of the manufacturing process are prevented, or at least limited;
- the safety of the manufacturing processes for the people operating the tools and machinery;
- the conditions of work of the people operating the tools and machinery;
- the age of the workers, (particularly relating to the use of child labour);
- how materials are used so as to minimise waste;
- how well the product components are made and assembled;
- how waste materials are disposed of.

## Morality: Choice of Manufacturer

These days, many large businesses either move from place to place, country to country, wherever the labour force and premises costs are cheapest or they "out-source" the work

to manufacturers anywhere in the world where the costs are the lowest. As two of the most significant costs for any business are labour costs and premises costs, the out-sourcing of work to industrially developing countries makes economic sense to businesses. However the consequences of factory closures and people being made redundant on the grounds that products can be produced cheaper in another part of the world, is morally questionable.

## Morality: Quality

The quality of products must be suitable for their intended purpose.

For example, a manufacturer of alloy wheels for high performance cars (incidentally, production of the wheels was out-sourced to a Central European country) found tiny faults in some of its wheels that could result in the wheels breaking up at high speeds. The moral dilemma that the manufacturer faced was whether to admit to the fault and to recall all the wheels, to inspect them and to replace all the faulty ones.

The quality of products is fundamental to the safety of the people using the product and to those who may be affected by the use of the product. Imagine the consequences of a car's wheels breaking up at high speed on a busy motorway, or the consequences of poor quality smoke alarms, poor quality climbing ropes and poor quality electrical goods.

The BSI kite mark and other standards symbols indicate that the product conforms to the standards set by the organisation represented by the symbol.

## Morality: Health and Safety

Safety is fundamental to the design of products, systems and environments. A designer's decisions will greatly affect the risks faced by the manufacturers and users of products, systems and environments. The competent designer will know what the potential hazards will be during construction, use, maintenance, cleaning and dismantling of a design and how to eliminate them. Designers need to consider the conditions where a design will be used and the people who will use it. The designer's duties are to eliminate hazards where feasible and where hazards cannot be eliminated, to reduce the risks as far as is reasonably practicable and to provide information about remaining risks to health and safety.

During all phases of design, production, storage, marketing, distribution and use of products, the hazards should be identified, risk assessments should be recorded and action should be taken to reduce or eliminate the risks to people's health and safety. Systems for maintaining the health and safety of people carrying out D&T activities include:

- safety rules and defined procedures;
- hazard warnings and instructions;
- safe storage of materials;
- ensuring that tools are safe to use;
- safe working practices;
- safe working area.

## Morality: Transport

Products should be transported safely and in a way that ensures that they will not be damaged in transit and that people, wildlife and the environment will not be damaged by the transportation process.

## Morality: Sales

In the world of business and industry, products are made to be sold for a profit. The sale of products is an essential part of commercial designing and manufacturing. For the sales process to be moral, it must be a process that informs potential buyers of the true nature of the product being described.

## Morality: After Sales

The guarantees given by the product manufacturer and the after sales care and support given to the customer affects the customer's well being and trust in the manufacturer.