

# **CHAPTER THREE**

## **Understand Ethical Problems**

## **3-3-3 COST-BENEFIT ANALYSIS**

One tool often used in engineering analysis, especially when trying to determine whether a project makes sense, is cost-benefit analysis. Fundamentally, this type of analysis is just an application of utilitarianism. In cost-benefit analysis, the costs of a project are assessed, as are the benefits. Only those projects with the highest ratio of benefits to costs will be implemented. This principle is similar to the utilitarian goal of maximizing the overall good.

## 3-3-3 COST-BENEFIT ANALYSIS

As with utilitarianism, there are pitfalls in the use of cost-benefit analysis. While it is often easy to predict the costs for most projects, the benefits that are derived from them are often harder to predict and to assign a dollar value to. Once dollar amounts for the costs and benefits are determined, calculating a mathematical ratio may seem very objective and therefore may appear to be the best way to make a decision. However, this ratio can't take into account many of the more subjective aspects of a decision. For example, from a pure cost-benefit discussion, it might seem that the building of a dam is an excellent idea. But this analysis won't include other issues such as whether the benefits outweigh the loss of a scenic wilderness area or the loss of an endangered species with no current economic value. Finally, it is also important to determine whether those who stand to reap the benefits are also those who will pay the costs. It is unfair to place all of the costs on one group while another reaps the benefits.

## 3-3-3 COST-BENEFIT ANALYSIS

It should be noted that although cost–benefit analysis shares many similarities with utilitarianism, cost–benefit analysis isn't really an ethical analysis tool.

*The goal of an ethical analysis* is to determine what the ethical path is. *The goal of a cost–benefit analysis* is to determine the feasibility of a project based on costs. When looking at an ethical problem, the first step should be to determine what the right course of action is and then factor in the financial costs in choosing between ethical alternatives.

## 3.3.4 DUTY ETHICS AND RIGHTS ETHICS

Two other ethical theories—duty ethics and rights ethics—are similar to each other and will be considered together. These theories hold that those actions are good that respect the rights of the individual. Here, good consequences for society as a whole are not the only moral consideration.

A major proponent of duty ethics was Immanuel Kant (1724–1804), who held that moral duties are fundamental. Ethical actions are those actions that could be written down on a list of duties: be honest, don't cause suffering to other people, be fair to others, etc. These actions are our duties because they express respect for persons, express an unqualified regard for autonomous moral agents, and are universal principles [ Schinzinger and Martin, 2000 ]. Once one's duties are recognized, the ethically correct moral actions are obvious. In this formulation, ethical acts are a result of proper performance of one's duties.

## 3.3.4 DUTY ETHICS AND RIGHTS ETHICS

Rights ethics holds that people have fundamental rights that other people have a duty to respect.

Duty ethics and rights ethics are really just two different sides of the same coin. Both of these theories achieve the same end: Individual persons must be respected, and actions are ethical that maintain this respect for the individual. In duty ethics, people have duties, an important one of which is to protect the rights of others. And in rights ethics, people have fundamental rights that others have duties to protect.

## 3.3.4 DUTY ETHICS AND RIGHTS ETHICS

As with utilitarianism, there are problems with the duty and rights ethics theories that must be considered. First the basic rights of one person (or group) may conflict with the basic rights of another group. **How do we decide whose rights have priority?** Using our previous example of the building of a dam, people have the right to use their property. If their land happens to be in the way of a proposed dam, then rights ethics would hold that this property right is paramount and is sufficient to stop the dam project. A single property holder's objection would require that the project be terminated. However, there is a need for others living in nearby communities to have a reliable water supply and to be safe from continual flooding. Whose rights are paramount here? Rights and duty ethics don't resolve this conflict very well; hence, the utilitarian approach of trying to determine the most good is more useful in this case.

### 3.3.4 DUTY ETHICS AND RIGHTS ETHICS

The second problem with duty and rights ethics is that these theories don't always account for the overall good of society very well. Since the emphasis is on the individual, the good of a single individual can be paramount compared to what is good for society as a whole. The WIPP case discussed before illustrates this problem. Certainly, people who live along the route where the radioactive wastes will be transported have the right to live without fear of harm due to accidental spills of hazardous waste. But the nation as a whole will benefit from the safe disposal of these wastes. Rights ethics would come down clearly on the side of the individuals living along the route despite the overall advantage to society.



## 3.3.5 VIRTUE ETHICS

Another important ethical theory that we will consider is virtue ethics. Fundamentally, virtue ethics is interested in determining what kind of people we should be. Virtue is often defined as moral distinction and goodness. A virtuous person exhibits good and beneficial qualities. In virtue ethics, actions are considered right if they support good character traits (virtues) and wrong if they support bad character traits (vices) [ Schinzinger and Martin, 2000 ]. Virtue ethics focuses on words such as responsibility, honesty, competence, and loyalty, which are virtues. Other virtues might include trustworthiness, fairness, caring, citizenship, and respect. Vices could include dishonesty, disloyalty, irresponsibility, or incompetence. As you can see, virtue ethics is closely tied to personal character. We do good things because we are virtuous people and seek to enhance these character traits in ourselves and in others.

### **3.3.5 VIRTUE ETHICS**

In many ways, this theory may seem to be mostly personal ethics and not particularly applicable to engineering or professional ethics. However, personal morality cannot, or at any rate should not, be separated from professional morality. If a behavior is virtuous in the individual's personal life, the behavior is virtuous in his or her professional life as well.

## 3.3.5 VIRTUE ETHICS

How can virtue ethics be applied to business and engineering situations? This type of ethical theory is somewhat trickier to apply to the types of problems that we will consider, perhaps because virtue ethics seems less concrete and less susceptible to rigorous analysis and because it is harder to describe nonhuman entities such as a corporation or government in terms of virtue. However, we can use virtue ethics in our engineering career by answering questions such as: Is this action honest? Will this action demonstrate loyalty to my community and/or my employer? Have I acted in a responsible fashion? Often, the answer to these questions makes the proper course of action obvious. To use virtue ethics in an analysis of an ethical problem, you should first identify the virtues or vices that are applicable to the situation. Then, determine what course of action each of these suggests.

## **3.3.6 PERSONAL VS. CORPORATE MORALITY**