

# Ethical Issues in Information Technology

There are a great variety of ethical issues in I.T.:

## 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 grey 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 that 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 can help to lead 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 can 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 needs 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 organisations protect themselves against other hackers. Hackers cannot just wander into a system, as they could into an unlocked door. Instead, it requires a lot of skill. With this skill hackers can demonstrate that a system is insecure and needs 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 organisations to cease operating for certain periods. One of the most concerning consequences of such actions is when viruses interrupt the smooth functioning of an organisation 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 required. Some organisations will give special advice to their employees on these matters. When I worked at Clifford Chance, an international law company, for example, they had specialised staff who would come round to each employee individually, and discuss their ergonomic needs, if the employee requested this. Having enough light and having plants in the room can also be important factors. Without such ethical/moral awareness and taking the necessary action, many workers will suffer health problems directly from I.T., 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 I.T. 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 can 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 I.T. 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 could affect the quality of the work that women produce. Men tend to obtain the better quality I.T. jobs, earn more money, and make far more of the important decisions in relation to I.T. Basically, men are driving the I.T. 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 should 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 could 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 nanomaterials have on living systems. There is a relatively low investment in environmental nanotechnology, which must surely give us cause for concern. These are all very serious ethical issues that need to be confronted sooner rather than later. If it appears to be the case that advanced aspects of I.T. are seriously threatening our way of life, then something surely needs 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 can 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 need 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 need 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 can 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 peoples' 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 denotes shouting (unless one does actually want to shout at someone through email!). Also, people that become too obnoxious can be banned or ignored. A 'kill file' can be set-up, which will automatically, erases 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, (such as violating copyright 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.

### **16 Issues of data collection, storage and access**

There are many moral issues that need to be considered in regard to the collection, storage and access of data in electronic form. Under what circumstances, for example, should one seek permission from or inform those whose records are on file? Furthermore, how accurate is the data and who has access to it?

### **17 Speed of computers**

The pure speed at which computers operate can cause ethical problems in themselves. It can allow people to perform unethical issues quickly, or perform operations that it was difficult or impossible to perform before, such as browsing through files that one is not authorised to. It can also mean that people do not give enough consideration before performing various actions.

### **18 Vendor-client issues**

Ethical issues also arise in regard to vendor-client relationships, the vendor being the computer supplier and the client being the person that is buying the computer system, whether this be the hardware or software or both. If the user continually changes the system specification, for example, to what extent should the vendor be prepared to adjust the system specification accordingly? Other unethical acts include, for example, consultants selling the program to the second client, after being paid to develop the program for the first client only. Also, the vendor might provide hardware maintenance according to a written contract and for hardware to be repaired in a 'timely manner', but the client might not believe that the repairs have been timely. Drawing up more precise contracts might help here, but in some instances the outcome can probably only depend on peoples' individual moral consciences.

### **19 Conclusions**

Thus, there are a vast range of ethical issues in I.T., and some of these have been discussed in this article. These can be broken down into a number of sub-headings, including computer crime, social implications, advanced I.T. issues, netiquette and intellectual property rights. Some of these can be solved quite easily, whilst others seem to be almost impossible to solve.