

Deborah G. Johnson

Sorting Out the Uniqueness of Computer-Ethical Issues

[Excerpt from the 3rd Edition of *Computer Ethics*, Prentice Hall, forthcoming in 2001]

Introduction

What is it about computer and information technology, as opposed to bicycles or toasters or light bulbs, that creates ethical issues and uncertainty about right and wrong, good and bad? This question and a set of related issues have been a matter of debate among computer ethicists. The controversy has focused especially on whether the ethical issues surrounding computer technology are unique. Are the issues really different in the sense that they require development of a "new ethics"? Or are computer-ethical issues simply old ethical issues in a new guise?

The uniqueness issue is intertwined with several other important and persistent questions. A single account of computer ethics might, for example, explain both why/how computer technology gives rise to ethical issues as well as show how the issues are unique. An answer to the uniqueness question might also answer the question whether a new field of study is needed to deal with computer-ethical issues. If the issues are unique, then a new field needs to be developed and new courses offered; if the issues are not unique, then, perhaps, they are better dealt with as part of philosophical ethics and in standard ethics courses. Moreover, the uniqueness issue seems tied to the question of methodology. What does the field of computer ethics involve in the sense of an activity or methodology? That is, what does one "do" when one does computer ethics? The answer to this question would be clearer if we understood what is special or unique about computer-ethical issues.

New Possibilities and a Vacuum of Policies

While it is true that bicycles, toasters, and light bulbs do not seem to pose ethical issues, computer technology is not the first (nor will it be

the last) technology to raise moral concerns. Think of the ethical questions now raised in science about the Human Genome Project and about cloning. Or think of the atom bomb and nuclear power. New technologies seem to pose ethical issues when they create new possibilities for human action, both individual action and collective or institutional behavior. Should I donate my organs for transplantation? Should employers be allowed to use urine or blood tests to determine if employees are using drugs? Should we build intelligent highways (recording automobile license plates to document when cars enter and leave the highway, calculate speed, and charge tolls)? Should we use or ban biological weapons?

As these examples suggest, the new possibilities created by technology are not always good. Often they have a mixed value. There are social and individual benefits but there are also new risks and costs.

Because new technological possibilities are not always good or purely good, they need to be evaluated – morally as well as in other ways, e.g. economically or environmentally. Evaluation is not just a matter of determining whether to accept and use or reject a technology. Evaluation can and should take place at each stage of a technology's development, and can and should result in shaping the technology so that its potential for good is better realized whilst negative effects are eliminated or minimized. Of course, technical possibilities are sometimes rejected after evaluation, as in the case of biological weapons, nuclear power (no new nuclear power plant has been built in the U.S. for several decades, for example), and various chemicals that deplete the ozone or cause other types of environmental degradation.

Computer and information technology is not unusual in this respect. It has created amazing possibilities for individual and institutional behavior. We could not have reached the moon without computers, nor could we have the kind of global communication systems we now have. Information technology used in medicine has enormously enhanced our ability to detect, diagnose, and treat illness. Information technology has created thriving new industries and facilitated a growing global economy. Nevertheless, computer and information technology creates potentially undesirable as well as desirable

possibilities. We now have a greater capacity to track and monitor individuals (without their knowledge), to develop more heinous weapon systems, and to eliminate the need for human contact in many activities. The possibilities created by information technology, like other technologies, need to be evaluated morally and in other ways.

Extending the idea that computer technology creates new possibilities, in a seminal article, Moor [1985] suggested that we think of the ethical questions surrounding computer and information technology as policy vacuums. Computer and information technology creates innumerable opportunities. This means that we are confronted with choices about whether and how to pursue these opportunities, and we find a vacuum of policies on how to make these choices. The central task of computer ethics, Moor argues, is to determine what we should do and what the policies should be. This includes consideration of "both personal and social policies".

The sense in which there is a vacuum of policies surrounding computer technology can be illustrated, first, with examples from the early days of the technology. Consider the lack of rules regarding access to electronically stored data when computers were first developed. Initially, there were no formal policies or laws prohibiting access to information stored on a mainframe computer. From our perspective today, it may seem obvious that computer files should be treated as private; however, since most early computing took place in business, government, or educational institutions, the privacy of files was not so obvious. Or, consider the lack of policies about the ownership of software when the first software was being written. It was not clear whether software should be un-ownable or considered private property. These vacuums have now been filled: laws have been created; personal and institutional policies have been developed; and conventional practices have taken hold, specifying how individuals and organizations should behave when it comes to the privacy of computer files and ownership of software.

Nevertheless, computer technology has been far from stagnant since those early days, and with each new innovation or application, new policy vacuums have arisen. Is it ethical for a company with a website to place a cookie on the hard drive of those who visit their site? Is data mining morally acceptable? Are Internet domain names being

distributed in a fair way? Should surgery be performed remotely with medical imaging technology? Should computer graphical recreations of incidents, such as automobile accidents, be allowed to be used in courtrooms? Is it right for an individual to reproduce and alter an artistic image electronically that was originally created by someone else? New innovations, and the ethical questions surrounding them, continue to arise with a pace with which it is difficult to keep up. Policy vacuums continue to arise and they are not always so easy to fill.

The Traditionalist Account

How policy vacuums are filled is, at least partly, a matter of methodology. How can or should computer-ethical issues be resolved? On one account – call this the *traditional account* – all that is necessary is to take traditional moral norms and the principles on which they are based, and apply them to the new situations created by computer and information technology. For example, when it came to filling the policy vacuum with regard to ownership of computer software, lawyers, judges and policy makers essentially extended existent property law to the new "thing", computer software. Or, to use a more current example, when it comes to on-line communication, we should look at the conventions that are followed in face-to-face, telephone, and written communication and "map" these conventions onto computer mediated communication. Certain words and questions are considered impolite; certain kinds of conversations are considered confidential; etc. According to the traditionalist account, we should take these conventions and simply create similar, parallel conventions regarding computer-mediated communication.

The traditionalist account is important both as a descriptive and as a normative account. That is, it both describes how policy decisions are often made, and, normatively, recommends that this is how policy vacuums ought to be filled. Descriptively, the account captures what people often do when they are getting used to computer and information technology. For example, we may approach computer-mediated communication or ownership of software with certain preconceptions and then use these to decide what to do. As I compose e-mail, I imagine myself writing a letter and use the format and language of letter writing, or I imagine myself having a phone conversation and compose appropriately. When I hear of someone

accessing my computer files, I think of the parallel with someone breaking into my house or office, and it seems clear that they have violated my property rights. Thus, the traditionalist account captures the idea that when we develop policies with regard to computer and information technology, we tend to draw on familiar social and moral ideas, extending them to fit whatever new features we encounter in the new technology.

Normatively, the traditionalist account appropriately recommends that we should do this for it involves making use of past experience. We already know, for example, a lot about property rights and what sorts of issues are likely to arise; we already know that certain words will offend others and that individuals have an interest in some conversations being kept confidential. It makes good sense to draw on these experiences when it comes to a new situation, be it one created by computer technology or something else. So, the traditionalist account seems to capture much of what is involved in filling policy vacuums surrounding computer and information technology.

However, the traditionalist account over-simplifies the task of computer ethics. It suggests a somewhat mechanical process of extending what is already known and accepted to what is unknown. It hides many of the important decision points in resolving computer-ethical issues. The process is much more fluid and synthetic. For one thing, conceptual muddles have to be cleared up and different conceptualizations compete for use. Moor [1985] pointed to the problems of conceptual muddles early in the field's development. If we do not know what we are dealing with, we do not know which rules or principles should be applied (Moor [1985]). Is sending an email message more like sending a postcard than having a phone conversation or sending a letter? The privacy conditions we come to think appropriate for email depend on which way we categorize and conceptualize it.

The best illustration of this is the case of computer software programs. A complex body of law regarding ownership of new inventions already existed long before computers, including patent law, copyright, and trade secrecy. Applying this law to computer software turned out to be enormously difficult because nothing with the characteristics of

software programs had ever existed before, and so it was unclear how software programs should be conceptualized or categorized. Is a program the kind of thing that should be treated as property? Is a program the expression of an idea? If so, it would be a form of intellectual property for which copyright law is appropriate? Or, is it (should it be seen as) a process for changing the internal structure of a computer? Or perhaps, a program should be seen as a series of "mental steps", capable, in principle, of being thought through by a human, and not, thereby, appropriate for ownership?

This is not to say that traditional legal or moral norms were irrelevant to the policy vacuum surrounding computer programs. On the contrary, there was a need to clear up the conceptual muddle in part so that the new entity could be seen in relation to familiar legal and moral norms. The important thing to recognize is that deciding whether computer programs are expressions of ideas or mental steps or machine designs was not an issue with a predetermined right answer. Policy makers, in a sense, *made* computer software what it is by deciding how to treat it legally. Deciding that copyright applied, defined software. Later deciding that patent law applied to certain types of software also defined it.

The Internet also illustrates how conceptual muddles prevent the mechanical application of traditional norms. Writers have had a good deal of fun trying to conceptualize the Internet. Some (including Al Gore) have conceptualized it as a network of highways, the superhighways of the future. Others have thought of it as a huge shopping mall with an almost infinite number of possible stores and one navigates one's way through the mall finding some places one does not want to go. Yet others have likened the Internet to Disneyland, suggesting that what one finds on the Internet should always be treated as a fantasy. These analogical renderings of the Internet are attempts to conceptualize it in a way that will help to fill in a wide range of policy vacuums. For example, when a website puts a cookie on your hard drive, how should this activity be understood? Is it intrusive surveillance? Or routine business? Are cookies comparable to a store (in a shopping mall) asking for your zip code when you buy something, so that it can do marketing analysis and determine in what neighborhoods to advertise? (Of course, with cookies, you do not

have a choice to tell or not to tell.) Or is it more like installing a camera in a store to watch and see every customer that enters? (Of course, the website cannot actually tell who you are the way a camera can.) Or is going from one website to the next more like traveling on a highway, in which case cookies seem more like a surveillance technology? We have to clarify what is involved in the activity in order to know what norms are appropriate. Needless to say, how we understand the activity makes all the difference in our evaluation of it.

Conceptual muddles partly explain why policy vacuums cannot mechanically be filled with already known moral and legal rules or principles. Another problem is normative. If we always map the way we currently do things onto the new technology, we risk missing opportunities to create better policies and a better world. If we were always to treat new situations as if they were comparable to known and familiar situations, then we would never allow for the new features of technology to have an effect. To treat computer-ethical situations (policy vacuums) as if they can always be resolved by traditional moral norms is, in a sense, to presume that there is never anything new. It is also to presume that we currently have an ideal moral world.

The new features and new possibilities of computer and information technology create opportunities for new and better arrangements (relationships, institutions, capabilities). Policy decisions are opportunities to make the world better and if we only map old patterns and arrangements onto the new technology, then we fail to learn from past mistakes or take advantage of new possibilities. So, for example, when it comes to universal access to the Internet, instead of following practices and policies that were used in moving towards universal access in telephone service, we should consider what worked as well as what did not work, before moving policies from one domain to the other. In the early days of computing, many in the computing community saw the potential of software to be readily available to everyone, since multiple copies can be made without loss to the holder of the original. They saw in software a potential that had never quite existed in other forms of property. The debate about ownership was, in a sense, a debate about taking advantage of the special features of software to create something different than ever before.

So, while the traditionalist account captures part of what is and should be done in resolving computer-ethical issues (filling policy vacuums), it does not capture all that is involved and has the danger of hiding many of the important aspects of the process. Filling policy vacuums is not a matter of simply and mechanically applying traditional legal and moral principles. Conceptual muddles have to be cleared up and clearing up the conceptual muddles is often where normative decisions are invisibly made. Policy vacuums should be filled in a way that takes advantage of the new features of the technology.

Are Computer Ethical Issues Unique? A Deeper Analysis

New Species of Traditional Moral Issues

I propose that we think of the ethical issues surrounding computer and information technology as *new species of traditional moral issues*. On this account the idea is that computer-ethical issues can be classified into traditional ethical categories. They always involve familiar moral ideas such as personal privacy, harm, taking responsibility for the consequences of one's action, putting people at risk, and so on. On the other hand, the presence of computer technology often means that the issues arises with a new twist, a new feature, a new possibility. The new feature makes it difficult to draw on traditional moral concepts and norms.

Once again the ownership of computer programs in the early days of computing illustrates the point. Issues of ownership and property had, of course, been around for centuries, long before the advent of computer technology. But never before computer technology had a property rights issue arisen with the cluster of characteristics (especially the reproducibility) of computer software. More to the point, before computers, it was inconceivable that a sequence of steps translated into ones and zeros could have value. So, the issues of ownership surrounding computer software are unique in the sense that they involve ownership of something that had never been a candidate for ownership before. And insofar as software has unique power and unique features, the ownership issues are unique. The issues of ownership surrounding computer software are, in this sense, an unusual species of familiar ethical and legal problems. Human beings want (in a capitalist economy) to own and control that which

has value, that from which they can profit. Computer programs have such value. The only mystery, the only thing new is that software has some features that are distinct from other things that have been defined as property. Software has features which make it difficult (as discussed earlier) to apply current law mechanically. Whether and how various aspects of computer software should be owned are new species of familiar moral issues.

The genus-species account emphasizes the idea that the ethical issues surrounding computer technology are first and foremost ethical. This is the best way to understand computer-ethical issues because ethical issues are always about human beings. Ethical issues are always about human interactions, human interests, human harm and well-being, and conflicts between human beings. An ethical issue arises when something that humans value is at stake. It may be something as profound as a right to life or a right to be treated fairly. Or it may be something as complicated as assigning liability in a way that will have good consequences. Or it may be a matter of deciding what the rules should be when it does not make a great difference whether it is rule A or B as long as there is a rule, e.g. which side of the road automobiles go.

The fact that computer-ethical issues can be thought of as ethical issues in the traditional sense should not surprise us, for we would not be able to recognize them as ethical issues unless they connected in some way or another to our traditional moral notions. Imagine creatures from outer space looking somewhat similar to human beings suddenly appearing; they walk and talk like us, but every once in awhile they behave in strange ways. How would we think about this behavior? We would have no basis for claiming that it was immoral except if the behavior had characteristics that violated or conformed to our moral norms. If, for example, the behavior resulted in the death of a human or if the behavior could be described as lying, then we would be inclined to call it immoral or bad. This may seem a far-fetched idea but it becomes more plausible when one remembers (as discussed earlier) that computer and information technology give human beings the capacity to do things they could not do before: visiting a Web site, launching a virus, anonymously engaging in role playing games with people thousands of miles away.

Instrumentation of Human Action

Computer and information technology changes the instrumentation of human action. The physical events that occur when an action takes place in a computerized environment are different from those that occur when the same type of action takes place without a computer. When I write a paper by hand, pencil moves over paper. When I use a typewriter, levers and gears move. When I use a computer, electronic impulses change configurations in microchips. Now, in this example, the changes in physical events that take place when I write seem morally *insignificant*. In all three cases, I create words and a text. However, there are many cases in which the switch from no technology to technology or from one technology to another changes not just the physical events constituting an act, but the moral character of the situation.

As explained earlier, often what changes is the possibilities for action. A good example here is the act of launching a computer virus. Computer technology and the Internet have made it possible for an individual sitting alone in a room, to move their fingers over a keyboard, pressing various keys, and with these simple movements, launch a virus that wreaks havoc in the lives of thousands of people. The technology has instrumented an action not possible (indeed, not even comprehensible) without it.

A world instrumented with computer technology has very different possibilities for human action than a world without computer technology. Consider other illustrations. When a business automates its workplace, it acquires the ability to create and manipulate data in a way that would have been (practically) impossible before. In the new environment, employees who perform routine tasks also create records of their activities. When customers make purchases from an automated business, they no longer simply give money in exchange for a product; they simultaneously create an enduring record of their transaction, a record that can be combined with other records to create a profile of the customer. Hence, the act of purchasing something is a very different act in a computerized environment as compared to a non-computerized environment. Similarly, when speaking face to face, the default situation is that spoken words disappear after they are spoken (except insofar as they remain in the

memory of those who have heard them). On the other hand, in saying precisely the same thing to the same person in an e-mail exchange, the default position is that the words endure. Effort has to be made to remove the words from the system. So, actions or action-types are instrumented very differently in computerized and non-computerized environments and the difference in instrumentation often has moral significance.

In some cases, computerization adds features to the situation; in others cases, it seems more accurate to say that certain features of action are enhanced or constrained. For example, in the business transactions mentioned earlier, even without computer technology, a company could have created and retained records of all their sales or they could set up cameras that record every movement their employees make. To do so would have been difficult and costly but would, nevertheless, have been possible. Computerization facilitates the capacity for recording and maintaining the records of transactions and activities; it makes the recording instantaneous and effortless. So, in this case, it may be more accurate to say that a possibility has been facilitated or enhanced rather than created. Similarly, we have always had the ability to communicate with colleagues in other countries, via mail or expensive telephone calls. The Internet did not create a new possibility; rather, it enhanced and facilitated the possibility of international communication by making it easier, quicker, and cheaper.

So, computer technology creates a new instrumentation for human action, both for individual action and for institutional arrangements. The new instrumentation changes the composition of action and it creates the possibility of actions and arrangements that were not possible before. It also facilitates and constrains actions or arrangements that were possible before.

Ethical analysis has *not* traditionally or explicitly focused on the instrumentation of action. Rather, ethicists have emphasized ethical theory, assuming that theories can do the job of explaining what individuals ought to do in a wide range of (if not all) situations. Nevertheless, ethical analysis always *presupposes* an instrumentation of action. That is, ethical analysis always presupposes a physical world of a particular kind and human bodies with particular features.

Computer-ethical issues draw attention to this, largely ignored aspect of ethics.

The character of the physical world in which humans act has continuously changed over time, largely due to technological change. One could argue, then, that computer and information technology is just another step in a series of ongoing changes that have altered the instrumentation of human action. Electricity, airplanes, guns, and bombs have all changed what human beings can do with movements of their bodies. These technologies have all changed the configuration of the physical world in which human beings act and live. They have all made it possible for human beings to perform actions not possible before (without) a given technology—firing guns, flying, giving and receiving organs, dropping bombs, cloning. And they have all facilitated and burdened various aspects of human action.

The new possibilities and/or newly favored and disfavored features give rise to ethical issues because traditional moral concepts and norms presupposed a world instrumented in a different way. The new instrumentation gives rise to new species of generic moral issues.

This account of computer-ethical issues as new species of generic moral problems is meta-ethical. It is about how ethical issues are identified, classified, and then addressed. On this model, new issues can arise and do arise when new circumstances of human action arise. Of course, it is important to point out that to say that computer-ethical issues are new species of generic moral problems does not mean that new species always fit neatly into old categories or that our categories never change. New species do sometimes challenge the traditional categories or straddle several categories. Computer and information technology does sometimes instrument human action in ways that seem to challenge our ordinary categories.

So, the ethical issues surrounding computers are not new in the sense that we have to create new ethical theories or systems. Instead, computer-ethical issues call upon us to come to grips with new species. This is entirely consistent with resolving computer-ethical issues both by drawing on experience with non-computerized environments and making allowances for the special or new features of the technology. New species have special features, but we can and

should draw on our traditional moral principles and theories.

References

James H. Moor, What is Computer Ethics? Metaphilosophy 16, 4, October 1985, pp. 266-275.