SCENARIO

A fter a year on the job with Pace Electronics, you are pleased to be assigned to work with Dr. Sean Barry on a proposal for a large research project. Dr. Barry is new to Pace, but he has a huge reputation in the field. You've worked well together on the rationale for the project, and you are both pleased with the section describing why the proposed research needs to be done.

When it is time to write the section of the proposal that describes the research methodology to be used, Dr. Barry hands you a thick manual and says, "We'll be using the same methodology that's described in there on pages 12 through 18; just copy it as is." Thumbing through the manual, you notice that it has been copyrighted by the company Dr. Barry worked for before he came to Pace.

You draw the copyright information to Dr. Barry's attention.

"Don't sweat it," he says. "Actually, I wrote that section myself."

"Yes," you say, "but it's the company that holds the copyright."

Dr. Barry is annoyed. "Look," he says, "it's all boilerplate. Just copy it and get the job done."

You do as you are told. But you worry about whether the short-cut was ethical. Maybe Dr. Barry is right and it's ethical to copy boilerplate, even when another company holds the copyright. After all, he wrote the material.

You realize you don't know enough to decide the ethics of the situation. You decide to talk your problem over with a few of your colleagues, some of whom have been at Pace for several years.

As you'll see when you read this chapter, this was a wise decision. You will also find in this chapter ways of recognizing and dealing with unethical behavior.

chapter 6

Writing Ethically

▶ Understanding Ethical Behavior
  What Makes an Act Unethical?
  Why Should We Act Ethically?

▶ Recognizing Unethical Communication
  Plagiarism

Deliberately Using Imprecise or Ambiguous Language
　　　　Making False Implications
　　　　Manipulating the Data
　　　　Using Misleading Visuals

▶　Behaving Ethically

▶　Dealing with Unethical Behavior in Others

Because technical writing often has consequences for large numbers of people, ethical considerations frequently play a role in the writing process.[1] For example, it is sometimes a temptation in a feasibility report to soft-pedal results that do not support the recommendation the writer wishes to make. It may seem advantageous in a proposal to exaggerate an organization's ability to do a certain kind of research. A scientist may be too willing to ignore results that do not fit his theory and report those that do. Each of these acts would be unethical.

UNDERSTANDING ETHICAL BEHAVIOR

What makes an act unethical? Why should we be ethical? Let us briefly answer those two questions and then offer a few suggestions about how to behave ethically.

What Makes an Act Unethical?

Most of us carry around ethical rules in our head. Most of us, no doubt, would agree that it is unethical to lie, cheat, and steal. Further extended, we would likely agree that it is wrong to make promises we don't intend to keep or to plagiarize a paper. Where do such ethical rules come from? In part, they are rules learned at home or through religious training or simply in the rough-and-tumble of growing up. The loss of friends who catch one in a lie can be a lasting ethical lesson. Philosophers have long attempted to develop theories to support ethical behavior. Most embrace either logic, consequences, or some combination of the two.

　　　　Logically, as the eighteenth-century German philosopher Immanuel Kant proposed, we should not act in a way that we cannot will to be universal behavior. For example, you might make a promise that you have no intention of keeping, but you cannot will that to be universal behavior. For, if you did, all promises would be worthless, and it would be pointless to make a promise, false or otherwise.

　　　　Another group of philosophers, the utilitarians, make consequences their test for ethical behavior. An act should do the greatest good for the greatest number of people or, conversely, create the least amount of evil for the fewest people. For example, causing an industrial plant to clean up its smokestack emissions may be an economic evil for the company and its stockholders, but be the greatest good for the large general population that must breathe those emissions. Medical scientists who fudge their data to

produce impressive conclusions may become famous, but unsuspecting people may be injured as a result of the deception.

No matter how philosophers explain ethical behavior, one thing seems clear: Acting ethically often involves putting selfish interests aside for the sake of others. George F. R. Ellis, a modern-day student of ethics, stated this as a universal principle of ethical behavior:

> The foundational line of true ethical behavior, its main guiding principle valid across all times and cultures, is the degree of freedom from self-centeredness of thought and behavior, and willingness freely to give up one's own self-interest on behalf of others.[2]

Why Should We Act Ethically?

We, after all, don't have to act ethically. We don't have to will that our acts become universal behavior, as Kant would have us do. Nor, despite the utilitarians, must we constantly seek the greatest good for the greatest number. We don't have to set self-interest aside for the sake of others. Ethical behavior is inner-directed; we can ignore the dictates of our conscience when we choose to do so. If acting ethically is a voluntary act, why bother?

It's possible to list some pragmatic, nonaltruistic reasons for acting ethically. For one thing, some unethical acts are also illegal. You can end up in prison for stealing or otherwise bilking people of money. For another reason, organizations that intend to prosper over the long term need to have a reputation for ethical behavior. Unethical acts can help a organization or an individual temporarily, but in the long run, they usually do more harm than good.

Professionals, such as engineers and scientists, must act with integrity to survive in their work environments. For that reason most professional groups have a professional code that calls for ethical behavior. Most such codes draw upon the utilitarian philosophy of ethics.

The code for the Society for Technical Communication (STC) reproduced in Figure 6-1 is an example of such a code. Notice that beyond legality, the code calls for promoting "the public good." Further, under *Fairness*, the code makes clear that technical communicators may serve the interests of their clients only so long "as they are consistent with the public good."

The first principle of the Code of Ethics of the Institute of Electrical and Electronics Engineers (IEEE) also puts public welfare above all else. It agrees that members of IEEE will "accept responsibility in making engineering decisions consistent with the safety, health, and welfare of the public" and will "disclose promptly factors that might endanger the public or the environment." Such codes will help guide professionals through many ethical dilemmas, but like all such codes really don't answer the question we began with: Why should we act ethically?

Perhaps the real justification for acting ethically is less obvious than these individual and professional reasons. Acting ethically is a price we pay for living in a free,

civilized society. A nonethical society would either be barbaric or totalitarian. That is, a world without ethics would be a world in which anything goes: murder, theft, rape, pillage, lying, and cheating in all their forms. It would be a society unfit to live in. Conversely, when ethics are lacking, the state, in order to maintain a civilization, would have to have laws restricting all kinds of unethical behavior.

In part, because we have unethical people, we live in such a society right now. We do have laws, for example, condemning theft, murder, and insider trading. We would not need environmental laws if every company voluntarily acted in the best interests of the general population. But a state that attempted to control everything covered by ethical behavior would be a totalitarian state, in its own way almost as bad as a barbaric one.

You can easily name nations in which the rule of law has broken down and corruption and unethical behavior are commonplace, with unfortunate consequences for the citizens of those nations. So, perhaps the best motivation for acting ethically is that it allows us to live in a civilized society without the heavy hand of government constantly on us.

RECOGNIZING UNETHICAL COMMUNICATION

Perhaps the first step to communicating ethically is to recognize the ways in which people can be unethical when they communicate. Chief among the ways are plagiarism, deliberately using imprecise or ambiguous language, making false implications, manipulating data, and using misleading visuals.

Plagiarism

Ethical writers acknowledge the sources of the words, ideas, and findings they use. In some forms of writing, journalism for example, the acknowledgment may be in the text in a statement like, "As Dr. Ken Olson discovered, it's possible to vaccinate mosquitoes to prevent their developing and passing dengue on to human beings."

In more formal and scholarly writing, some system of documentation—notes and citations—is used to show the source of the information and to give full credit to Dr. Olson (see Documentation in Appendix B). To present the words and work of others as your own is plagiarism. It's a form of lying and highly unethical. Take every precaution to avoid even the appearance of plagiarism. For example, make sure that even your acknowledged paraphrases and summaries do not track the original so closely that they border on stealing another person's words.

Deliberately Using Imprecise or Ambiguous Language

In Chapter 5, Achieving a Readable Style, we discuss ways in which you can write clearly and help your readers to understand you. We urge you to write with precision and to avoid ambiguous language. Most often, an unclear style results from a faulty style, but, unfortunately, not always. It can result from a deliberate attempt to mislead or manipulate the reader by hiding unfavorable information.

Imagine the writer of a feasibility report who wishes to convey the impression that a certain change in company policy is desirable. He takes a survey of all the workers in the company and finds that 50.1 percent of the 20 percent who returned his survey favor the change. In his report he writes "A majority of those who returned the survey favored the change." By using *majority*, he makes a stronger case for change than if he reported the actual precise figure of 50.1 percent. In addition, by not revealing that this "majority" represents only 10 percent of the company's workers, he further strengthens what is actually rather weak support for his case. He has not lied, but through imprecision he has certainly misled his audience.

Making False Implications

Writers can imply that things are better than they are by manipulating their language. For example, a writer answering an inquiry about her company's voltage generator could reply, "Our voltage generator is designed to operate from the heat of Saudi Arabian deserts to the frozen tundra of Greenland." It may be true that the generator was *designed* that way, but if it *operates* well only between Atlanta and Toronto, the writer has made a false implication without telling an outright lie.

For another example, imagine a mutual fund that led its market in returns for ten years. In the eleventh year, the original fund manager retires and a new manager takes over. In that year and the next, the fund drops to the bottom tenth of its market in returns. The writer of an advertising brochure for the fund writes the following: "Our fund has led the market for ten of the last twelve years." Again the writer avoids an outright lie, but clearly has made an unethical statement.

Manipulating the Data

In the book, *Honor in Science*. Sigma Xi, the Scientific Research Society, lists three ways scientists can present their results unethically:

- *Trimming*: the smoothing of irregularities to make the data look extremely accurate and precise.

- *Cooking*: retaining only results that fit the theory and discarding others.
- *Forging*: inventing some or all of the research data that are reported, and even reporting "data" from experiments that were never performed.

Only the last of these three manipulations is clearly a lie, but all misrepresent the data, and all are unethical.

Using Misleading Visuals

Like words, visuals can misrepresent data and mislead unwary readers. The fundamental principle in constructing an ethical visual is to represent the data accurately and proportionally.[3]

Pictographs are particularly prone to misrepresentation. For example, Figure 6-2 is a line graph that shows the per capita health care expenditures in the United States from 1976 to 1996. The graph shows an increase from $671 in 1976 to $3,521 in 1996, an increase of 525 percent.

Suppose now, as in Figure 6-3, we represent three of those years (1976, 1986, 1996) as human figures. Because the figures grow in two dimensions, while the data grow in only one dimension, the pictograph greatly exaggerates the increase in expenditures. Even when the actual figures are shown on the graph, as they are in Figure 6-3, naive or careless reader may be misled. Experienced graph readers may not be misled, but they will distrust the motives of the graph maker.

Actually, there is significant distortion even in the graph in Figure 6-2. When reporting dollar amounts in graphs and tables, you must be aware of the inflation of the dollar over time. To show true change in cost, you must use a device called the *constant dollar*. The government publishes tables that show the true value of the dollar compared to a base year. The table in Figure 6-4 shows 1982 as the base year and gives percentage figures for other years that factor in inflation.

Applying constant-dollar percentages in Figure 6-2, we can produce the graph in Figure 6-5, which shows a much smaller growth in expenditures than does the graph in Figure 6-2. The growth in constant dollars is actually from $1,179 in 1976 to $2,323 in 1996—a 202 percent increase rather than the 525 percent increase shown in Figure 6-2.

Unfortunately, many ways exist to distort graphic material beyond the ones illustrated here. Too narrow graphs can exaggerate the steepness of a curve, too wide the shallowness of the curve. Comparing data for six months on one bar to data for a year on another bar can mislead. Neglecting to show clearly that a graph does not begin at zero can seriously affect the reading of the graph.

Ethical graphs of the kind we show in Chapter 12, Using Illustrations, avoid the distortions and ambiguity we have demonstrated here. They do not lie or misrepresent the data.

BEHAVING ETHICALLY

We are probably most tempted to behave unethically when either our own interests or the interests of our organization are at stake. For example, you may be writing a proposal for your research laboratory to do a significant and costly piece of research for a large government agency. It's sensible practice to cast your laboratory in its best light—a proposal is a sales document, after all. But the temptation to go too far is ever present. You may be tempted to exaggerate the expertise of your scientists who will carry out the job. Through imprecise language, you may hide the deficiencies of your laboratory or overstate its attributes.

On the other hand, you may write unethically simply by not recognizing the consequences of what you have written. A way to bring the consequences of your writing to the foreground is to construct a fault tree diagram at the point in your planning

or writing where you recognize that there are various options open to you. As you construct your fault tree, you would draw each of your possible options as a branch, and list the consequences for each branch. If any of the listed consequences leads to another consequence, draw another branch showing that consequence, and so on, until you have exhausted all reasonable options. Let us illustrate.

Imagine yourself to be a newly graduated civil engineer. You are hired by a land developer to develop plans for streets and sewage disposal for a large parcel of land on which your client plans to build 45 houses. In walking the parcel, you discover that about half of it is a waste dump filled with trees and other vegetation covered over with several feet of soil. When you draw this to the developer's attention, he tells you that he has used the parcel of land as a dump for debris from other development project. Upon further questioning, he reveals that he has never sought a county permit for these activities, which means that the dump is an unauthorized land use. You realize that a dump filled with vegetation could become a source of substantial amounts of highly explosive methane gas. You recognize three possible options you can recommend to the developer:

1. Proceed with the development as planned.
2. Delay building until the contents of the dump have been removed.
3. Cancel the development plans.

To help yourself sort out the consequences of the actions, you develop the fault tree shown in Figure 6-6.

Your fault tree makes it clear that you cannot ethically recommend option 1. Option 2 is ethically acceptable, despite some costly negative consequences. You realize you'll need some further work to determine the cost of removing the dump. Option 3 is ethical but probably not cost-effective. If the developer chooses either option 2 or 3, you have fulfilled your ethical duty. Should the developer decide to go ahead with the development, you have another ethical choice. Should you remain quiet, but keep a copy of your report to protect yourself, or should you "blow the whistle" on the developer?

Here, the professional codes are helpful. Almost all place responsibility to public welfare above that of responsibility to the client. Given the possible cost in human misery if the developer goes ahead, there seems to be little choice; you'll have to blow the whistle.

DEALING WITH UNETHICAL BEHAVIOR IN OTHERS

In most workplaces, most the time, people act ethically. But the temptation not to do so is often present, and sometimes the line is crossed. Sometimes you will perceive that others are acting unethically, or you may be asked or ordered to act unethically. For example, a supervisor may order you to shade the truth when writing a proposal or a feasibility report. Such a request or order is, in itself, unethical. Some of the cases reported on the Online Ethics Center for Engineering and Science are instructive in arriving at a definition of unethical conduct:[4]

- Writing instructions that risk an environmental health hazard.

- Allowing unsafe work practices to continue.
- Working for a private firm and a government agency at the same time when the firm and the agency may have conflicting interests.
- Writing a feasibility study with the opportunity to make a decision in the writer's own financial or professional interest.
- Hiring a college graduate and then withdrawing the offer after the graduate has already refused other offers.
- Accepting expensive gifts and favors from a supplier.
- Paying bribes to foreign officials to obtain contracts.
- Not giving proper authorship credit to a graduate student for a research paper.

In not every case mentioned here has the ethical line necessarily been crossed. For example, sometimes there are honest disagreements as to whether something really is an environmental hazard or an unsafe work practice. Sometimes the obligation to maintain a client's confidentiality makes it very difficult to draw the ethical line where it needs to be. Because whether behavior is unethical is often ambiguous, it pays to check on your own perceptions.

Talk to your colleagues about what you perceive to be unethical behavior, including unethical requests or orders. Talk to your supervisor. Talk to the person you think is behaving unethically. There may be satisfactory explanation for the behavior, or perhaps the person will agree to modify it. The table in Figure 6–7 lists the responses of 48 experienced technical communicators when they were asked what they would do if asked to enter gray areas of ethical behavior.

If after careful investigation you remain convinced that unethical behavior will continue and is harmful, then you should act. Some organizations have standing committees that will consider reports of unethical behavior and evaluate such situations. In other firms you may have to deal with higher management. Report the facts and the implications of those facts only. Do not make accusations that could land you in legal trouble; leave any formal complaint for those who deal with the matter.

What if the person who is in your opinion behaving unethically is your supervisor or your client? In the case of the waste dump with the methane gas problem, you could have detailed for the client in writing and orally the possible consequences of proceeding. If this presentation had failed, then given the very real risk to life and property, you would have had no alternative to reporting the matter to the proper authorities. This would have meant reporting the presence of the dump and documenting the possibility of a methane gas explosion there by citing situations at comparable dumps. Having done this, you would have met your ethical responsibility.

In this chapter, we have made you aware of some of the ethical situations you may encounter on the job and suggested ways to deal with them. To become more skillful at recognizing and dealing with unethical behavior, find and read the ethical code that covers your discipline. You can probably find it online at the Illinois Institute of Technology Center for the Study of Ethics in the Professions <http://csep.iit.edu>. This center also provides links to other sites that deal with ethics.

The Online Ethics Center for Engineering and Science <http://onlineethics.org> offers many aids, such as essays on ethics, case histories, and descriptions of

exemplary ethical behavior by scientists and engineers. However, no amount of reading about ethics will make you or anyone else ethical. That result requires a good will, good judgment, moral sense, and, frequently, courage. In the end, it's character that counts.

EXERCISES

1.   Radon is an odorless, radioactive gas produced by the breakdown of uranium in the soil. Exposure to radon at sufficient levels can cause lung cancer. The U.S. Surgeon General considers radon to be second only to smoking as a cause of lung cancer in the United States. Imagine that you live in an area where radon in houses is a potential health threat. Concerned residents frequently hire radon removal contractors to test for radon levels in their houses and, when necessary, to install radon removal systems.

You obtain summer employment with one such contractor. His name is John May and his firm is called May Radon Removal. Typically, the contractor tests the house for radon and then presents a proposal to the householder detailing any work determined to be necessary and naming a price. To obtain more information about radon and its reduction, you read a government booklet entitled *Consumer's Guide to Radon Reduction.*[5] From this reliable source, you learn that the most expensive radon reduction systems are needed for houses that are built either on concrete slabs or with basements. Systems for such houses can run as high as $2,500. Houses built over crawl spaces can almost always obtain adequate reduction by increasing the ventilation of the crawl space, a measure that seldom costs more than $500. You realize that you have been helping Mr. May install expensive systems suitable for basement and slab-constructed houses in houses built over crawl spaces.

You look at a proposal being presented to a householder who owns a house with crawl space construction. In the proposal, you find that Mr. May has recommended suction depressurization, a system normally used under basements or slabs. It requires an expensive installation of pipes and fans in the soil under the house to trap and suck away radon. Your employer offers no alternatives to this system. In the proposal, Mr. May justifies the suction depressurization system with this statement: "Suction depressurization is the most common and usually the most reliable radon reduction method." From your research on radon, you know this is a true statement.

What should you do? Write a memorandum to your instructor describing your conclusions and any actions you plan to take (see Chapter 13, Correspondence, and Letter and Memorandum Format in Appendix B).

2.   Form collaborative groups of five or six people and let each group discuss the following problem, using the bulleted questions as an aid:

Thelma Miller has been working on her new job as systems analyst in Oglethorpe Consulting for some three months now. It is her first job out of college and she is enjoying it. She has made friends with Jim Brown, whose workstation is next to hers. At lunch time, Jim frequently eats at his workstation while playing electronic games at his computer. One day Thelma mentions to Jim that she wonders how he can afford such a variety of expensive games. Jim smiles, and says, "No problem."

Later that day, Thelma gets an e-mail message from Jim directing her to a bulletin board (BB) that he maintains. Logging on to the BB, she finds that it a repository of copyrighted business and game software, as well as free shareware, that any user of the BB can download without cost. There are warnings on the BB that any users should maintain complete confidentiality about the board's existence.

Upon asking her coworker where all the software comes from, Thelma learns that Jim set the BB up a year ago and has gradually established a network of people who share any software they obtain. She asks Jim if he thinks the distribution of copyrighted software is unethical.

Jim smiles and says, "No problem." He adds, "Some of the people right here at Oglethorpe Consulting download business stuff from the BB that they need on the job. It saves the time it takes to fill out the requisitions to get the firm to buy it. Hey, the firm monitors all our e-mail; they must know what's going on."

When Thelma frowns, Jim says, "Hey, don't use it if you don't want to, but keep quiet about it, OK?"

- Is Jim being unethical? Why? Why not?
- Is anyone being harmed? Who?
- Are the people who download software from the BB being unethical? Why? Why not?
- What is the company's stake in what is going on?
- What should Thelma do?

Each small group will compose a memo to the instructor that summarizes the group's discussion and gives its conclusions (see Chapter 13, Correspondence, and Letter and Memorandum Format in Appendix B).

3. You are the head of Bangor Testing, a medium-sized consulting firm. Dana Anderson is your director of research. One of his projects, contracted for by

the Maine Department of Transportation (MDOT) has just finished. The report has been printed and is ready for transmittal to the MDOT. At that moment, Dana learns that one of the technicians assigned to the project has not followed the proper procedure in one of five tests that were part of the contracted research; therefore, the results of that particular test are worthless. Dana and his test crew are sure that the results of the other tests conducted support the report's conclusions, and that the report is valid without the invalidated test. You agree with that conclusion.

To redo the test and print a corrected report would both prevent the MDOT's from moving forward promptly with an important project and hurt the reputation of Bangor Testing. Dana comes to you with the problem. What will you advise him to do, and why? Write him an e-mail message advising him on a proper course of action and giving the rationale for your advice.[6]

4. The instructor will assign a case that may involve unethical conduct to five students and ask them to role-play the members of a board of review looking at the case. The board must discuss the case and decide whether the conduct involved is unethical.

For advice on role-playing, see "Role Playing in an Engineering Ethics Class" on the Online Ethics Center for Engineering and Science <http://onlineethics.org/edu/loui2.html>.

5. Whether professional organizations should have codes of ethics is a matter of controversy. Some believe the codes provide useful standards by which to judge professional conduct. Others believe that professional ethics is no different from the ethics of any moral person and, therefore, such codes are pointless or, worse, misleading and harmful.

In groups of four or five, discuss this matter. For guidance in the discussion, the group should go to the Center for Study of Ethics in the Professions: Codes of Ethics Online Project <http://csep.iit.edu/codes/index.html>. See particularly the introduction to the project.

Following the discussion, each small group should prepare a position paper that reflects the consensus of the group about the value of professional codes of conduct. These position papers can become the basis for a class discussion on the subject.

6. Look through journals, magazines, books, and newspapers to find one visual you believe to unethical and one you believe to be ethical. Make photocopies of each. Write a short memo to your instructor that states your belief and substantiates it (see Letter and Memorandum Format in Appendix B). Attach photocopies of each ad to your memo. The instructor may use the memos as a basis for a class discussion.

FIGURE 6-1 • The Ethics Code of the Society for Technical Communication

FIGURE 6-2 • Line Graph
Source: U.S. Department of Commerce, *Statistical Abstract of the United States: 1998,* 118th ed. (Washington, DC: GPO, 1998), 119.

FIGURE 6-3 • Misleading Pictograph

FIGURE 6-4 • Tabular Data
Source: U.S. Department of Commerce, *Statistical Abstract of the United States: 1998* 118th ed. (Washington, DC: GPO, 1998), 487.

FIGURE 6-5 • Line Graph Created by Using Constant Dollars

FIGURE 6-6 • Fault Tree

FIGURE 6-7 • Sources of Advice Making Moral Choices
Source: Sam Dragga, "A Question of Ethics: Lessons from Technical Communicators on the Job*," Technical Communication Quarterly,* spring 1997, 169.