

Chapter 1

Introduction: Ethical Concerns in Biological Anthropology

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For the past 20 years there has been an increasing emphasis on ethics in professional life. One indication of this increase is the expanding number of professional organizations codifying statements of professional ethics. The Center for the Study of Ethics in the Professions at the Illinois Institute of Technology collects professional codes of ethics. In 1981 there were 241 codes; there are currently over 850. New codes and revisions to older codes are a response to both advances in science and technology and to an intensified public awareness and scrutiny of professional life. Doctors and medical researchers confronted by the atrocities of World War II were subsequently required to confront life sustaining technologies and their implications. In the 1970s lawyers were required to confront Watergate; business people and engineers were confronted by a series of bribery scandals (Davis, 1999). In addition, during the past 20 years centers for the study of ethics in professional life, including the Hastings Center, the Ethics Resource Center in Washington, and Josephson Center in California were established to provide training in ethics. The International Society of Ethicists was founded in 1985 for consultation in the application of ethics (Davis, 1999, p. 10). Publications on ethics in the professions have also increased dramatically.

Practitioners of medicine, law, business, and engineering are most often thought of as facing ethical dilemmas. However, every discipline has its own history and its own ethical challenges. Anthropologists face a variety of issues as they engage in research with human and animal subjects. Numerous examples of ethical dilemmas can be found throughout the history of the discipline. Many dilemmas, including the ones that led to Franz Boas being stripped of his membership in the governing council of the American Anthropological Association (after he wrote of a letter to *The Nation* in 1919 accusing

some anthropologists of spying for the U.S. government) and the accusation in the late 1960s of anthropologists engaged in counterinsurgency actions in Thailand, concern the possibility of covert activities by anthropologists in foreign countries. (Weaver, 1973) Some of these issues have much in common with those faced by sociologists and other social scientists; others, however, can be subsumed under the general term "bioethics."¹

Cultural anthropologists, archaeologists, and biological anthropologists working with modern or ancient human populations deal with many of the same issues. Who speaks for a group? If the group is nested within a larger group, who represents the original group? What is the relationship between expatriate communities and the community of origin? Does permission from the national government to conduct a project have meaning for the populations studied? How does one obtain informed consent from an individual or a group whose members have little understanding of the project or the risks involved? How can the culture of the population be taken into account in the design and implementation of the project? What are the implications concerning the disclosure of the identity of the group? Can consent be withdrawn sometime in the future? How? Can samples be withdrawn sometime in the future? How? Are there appropriate benefits for the population under study?

Many anthropologists currently regard their research as a collaborative effort between the researcher and the study population. They feel that trust between the researcher and the study population is a fundamental requirement for successful research collaborations. This trust implies a long-term relationship, agreements protecting the financial and health benefits of the participants, training and research opportunities for group members, and the recognition that specific historical and cultural contexts facilitate some research projects and preclude others. There remain many unresolved issues in this era of collaboration, including the ways to address the effects that research can have on a study population.

Biological Anthropology and Ethics

Anthropology can be defined as the study of humankind in all its aspects. Biological anthropology is one of the four fields of anthropology. Cultural anthropologists, archaeologists, and linguists approach the breadth of the study of the human experience from the touchstone of culture. Biological anthropologists concentrate on the biological basis of human behavior, diversity, and evolution using evolutionary theory as the major organizing principle. It is a particularly diverse field of inquiry. Practitioners of the field face an array of ethical issues as they confront their involvement and obligations to their research subjects, their discipline, society, and the environment. These issues

are complex and often contentious. Many biological anthropologists are most familiar with the issues in their own particular subfield; they are not always aware of the similarities across subfields. The participants in this volume represent the major subfields of biological anthropology—primatology, genetics, human biology, paleontology, and skeletal biology. Each participant has confronted ethical challenges in his or her work and has reflected on the nature of ethical challenges and principles in the discipline. The underlying assumptions inherent in the ways we address these ethical issues provide the norms (or principles of action) of the discipline. A code of professional ethics, a common consensus, forms the framework for the ways members of our profession should act.

History of Professional Ethics

Professional ethics are considered to be a branch of normative or applied ethics based on either the late eighteenth century utilitarian theories of Jeremy Bentham and John Stuart Mill or the deontological theories of Immanuel Kant (Mappes & DeGrazia, 1996; Beauchamp & Childress, 1989). An ethical theory indicates an overall perspective that informs an ethical problem (Ridley, 1998) and provides moral principles or standards. Utilitarian theories are based on consequences. “Any ethical theory that claims the rightness and wrongness of human action is *exclusively* a function of the goodness and badness of the consequences resulting directly or indirectly from that action” is a utilitarian theory (Mappes & DeGrazia, 1996, p. 6). Act utilitarian theories suggest that a person should act in such a way as to produce the greatest balance of good over evil. The interests of everyone associated with the act should be weighed. An act that results in the greatest good for the greatest number is ethically good. “Rule” utilitarian theories state that a person should act in accordance with a rule that if generally followed would produce the greatest balance of good over evil, everyone considered. Act utilitarian theories are situational whereas rule utilitarian theories are not. Rule utilitarian theories envision a mediating step, the moral rule, between an individual action and an ethical principle. “According to the rule utilitarian, an individual action is morally right when it accords with the rules or moral code established on a utilitarian basis” (Mappes & DeGrazia 1996, p. 13). The foremost proponent of the deontological theory, Immanuel Kant, argued that the single fundamental ethical principle was not utility, but the categorical imperative. The first and second formulations of the categorical imperative state “Act only on that maxim through which you can at the same time will that it should become a universal law” and “Act in such a way that you always treat humanity, whether in your own person or in the person of any

other, never simply as a means, but always at the same time as an end.” (Mappes & DiGrazia, 1996, p. 17). Particular duties and obligations are derived from these formulations and form the basis of deontological theory. Notable perfect duties, based on a respect for persons, include the duty not to kill an innocent person, the duty not to lie and the duty to keep promises (p. 18).³

Both utilitarian and deontological theories have been used as the basis for discussions of personal and professional life. Professions are characterized by the scientific competence of their members as well as a collective ideal of service and duties that the members share (Bayles, 1989). At the center of a profession is a collection of skills or competencies. Professional ethics are concerned with the rules and decisions concerning the practices, methods, policies, and research of various professions (Appelbaum & Lawton, 1990) and are derived from ethical theories and principles. The first code of professional ethics in the United States was that of the American Medical Association (1847). The first two decades of the twentieth century saw a “boom” in ethical codes when many professional societies organized and adopted their first statement of ethics. The past 25 years have witnessed a second boom in codes of ethics. In addition to an increase in the number of recognizable professions, many of the original codes have been reevaluated in light of new moral problems.

Bioethics

A special branch of applied ethics—bioethics—is concerned with human health and human subject research. Bioethics has a set of standards and principles that have become the model for work in medicine and research. Formal bioethics began after World War II (in the wake of Nazi experimentation on concentration camp inmates) with the Nuremberg Code. The 1947 Nuremberg Code emphasizes the centrality of voluntary consent and sets forth other criteria that must be met before any experiment using human beings as subjects can be judged morally acceptable.

The 1950s and 1960s saw the establishment of multiple codes of ethics for biological research and medicine. In 1953 the National Institutes of Health issued a policy for its clinical centers. This was the first code to establish protections for subjects in U.S. government facilities. In the early 1960s the U.S. Congress passed legislation regulating the drug industry in part as a result of the birth defects due to the use of thalidomide. The law required that researchers inform subjects of a drug’s experimental nature and required that consent be obtained for participation in a clinical trial. In 1964 the World Medical Association formulated the Helsinki Code, which distinguishes be-

tween therapeutic and non-therapeutic research. The Helsinki Code, was used by many other agencies as a model in establishing their own guidelines. In 1966 institutions receiving federal funding were required to provide peer review of research, that included the rights and welfare of subjects, the appropriateness of methods, and the balance of risks and benefits. However, the review was entrusted to local institutions and there was little oversight. Despite various codes, multiple infractions of bioethical principles continued. Congress acted in response to various allegations with Institutional Guidelines of the Department of Health, Education, and Welfare (1971) and the Patients' Bill of Rights (1972). (see Beecher, 1970; Gray, 1975; Faden & Beauchamp, 1986; Coughlin & Beauchamp, 1996; and Doyle & Tobias, 2001 for a fuller discussion of the history of bioethics)

Current generally accepted principles of bioethics emerged from the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, created by Congress in 1974. The commission was charged with developing guidelines for research involving human subjects. The existing codes, including the Nuremberg Code, the Helsinki guidelines, and the 1971 HEW Guidelines, were "inadequate, conflicting and difficult to apply" (Gert, Culver, and Clover 1997). A new set of guidelines, known as the Belmont Report, emerged from the commission and articulated three ethical principles—respect for persons, beneficence, and justice. These three principles form the basis of bioethics and are usually understood in terms of moral requirements and prohibitions, such as do no harm, apply the rules of justice and fair distribution, do not deprive persons of freedom, and help others.

The principle of respect for persons is often the most difficult for researchers and is one that anthropologists working with living individuals and populations often wrestle with. It is usually understood in terms of respect for autonomy and is implemented through informed consent. However, informed consent is often difficult to implement on an individual level. If the research is community- or population-based, the principle of respect for persons and informed consent becomes more complicated. The National Research Council (1997) recommends strategies for the implementation of respect for persons that may require that the population, not only the individual, give permission to pursue a research project.

Ethical theories are intended to provide a broad perspective on an ethical problem, ethical principles are intended to indicate a particular guideline or rule of thumb that one ought to follow in ethical reasoning. Some ethicists discuss autonomy, beneficence, and justice as prescriptive ethical principles, whereas others take agreed upon moral rules, such as do not kill, do not deceive, and keep your promises, and mesh these with the particular culture or profession to provide a particular ethical code. The results of both

practices set forth ethical principles for the treatment of human subjects that are based on respect. The Belmont Report has been codified into federal regulations and is routinely used by Institute Review Boards in their analysis of research protocols. The National Research Council, the National Bioethics Advisory Commission (NBAC), which was created by presidential order in 1995 (charter expired in 2001) and the President's Council on Bioethics continued to examine these issues and prepared updated guidelines. Two relatively recent reports to emerge from the NBAC dealt with ethical issues in international research and research involving human biological materials (NBAC, 1999, 2000).

These are the issues that biological anthropologists dealing with genetics and human diversity must address. They are the same issues skeletal biologists and archaeologists working with local populations need to address. In the United States, skeletal biologists work within additional federal regulations stipulated by the Native American Graves Protection and Repatriation Act. NAGPRA, enacted by Congress in 1990, provides that the ownership of control of Native American cultural items and skeletal remains excavated or discovered on federal or tribal land after the enactment of the law should be given, in the following order, to: lineal descendants of the Native American, the Indian tribe on whose tribal land the objects or remains were discovered, the Indian tribe recognized as aboriginally occupying the land, or the Indian tribe with the strongest demonstrated relationship. Another section of the law addresses repatriation of remains and objects possessed or controlled by federal agencies and museums. Agencies and museums are required to return these objects at the request of a tribe with lineal descent. Inventories of remains held in museums and federal agencies are required. Additionally, if cultural affiliation can be demonstrated, the material must be returned to the requesting tribe. Outside the United States paleoanthropologists face additional questions relating to access and ownership of fossil material.

Primatologists also address the well being of their study subjects. And although they do not face issues of informed consent, they address the psychological and physical well-being of their subjects. Appropriate care for animals has also been codified by federal regulations, including the Animal Welfare Act of 1985. There is an ever-increasing literature on the ethical treatment of animals that addresses issues such as self awareness, the awareness of pain, and cognition. In addition, primatologists are often intimately involved in conservation issues in host countries.

Biological anthropologists adhere to the principles of the Belmont Report, the Animal Welfare Act, and NAGPRA in their work. During the past year the AAPA adopted its first code of professional ethics (see appendix II). It is based in large part on the code of ethics of the American Anthropological Association (AAA) (see appendix I). The current AAA code discusses research, teaching, and the application of anthropological research. The AAA

recognizes that the anthropologists' first responsibility is to the people and animals with whom they work and whose lives and cultures they study. The code clearly states that its aim is to foster discussion and education. In line with these goals, the AAA Web site presents the most recent code of ethics, the charge to the committee to revise the older code, and chapters on the history of the discipline and the discipline's Committee on Ethics. The Committee on Ethics of the AAA does not adjudicate complaints. However, the Executive Board of the AAA can commission a task force to conduct an investigation of allegations, as it has recently done with the material presented in Patrick Tierney's book *Darkness in El Dorado* (2000). That inquiry was intended to contribute to the Committee on Ethics efforts to extend guidelines for field research. The AAA Web site also provides links to relevant codes of ethics for professional organizations, such as the Society for American Archaeology, the Animal Behavior Society, the Society for Applied Anthropology, the Society for Vertebrate Paleontology, and the Society of Toxicology. Some of these organizations credential members, others do not. Some can adjudicate alleged ethical violations, others do not. However, all these codes spell out the duties and responsibilities of members to their subjects or materials, science, and society.

Although professional codes provide a foundation for behavior, the application of this foundation to real situations is often problematic. Examples of these applications are usually examined through case studies. The AAA Web site provides a series of case studies for discussion and education. These case studies were provided by field researchers and present a series of ethical dilemmas faced by anthropologists. The technique of case study analysis is well established in the examination of ethics in various situations and is one that we have adopted here for volume. Case studies represent real situations, real dilemmas, and real solutions. They provide the basis of discussion because a single situation can have more than one solution, depending on the ethical theory, principle, or moral rule invoked. The nature of an ethical dilemma is that choices are presented.

In this volume each contributor was asked to describe an ethical situation they faced as they worked. The contributors are from all subfields of the discipline. In addition, other biological anthropologists have been asked to comment on the contributors' papers. In this volume, a series of papers or case studies are presented in a specific area of the discipline and these are then commented on by a member of the discipline.

Contributions to This Volume

The first section of the volume deals with primatology. Primate research takes place either in the laboratory or in the field. This research presents unique situations for researchers. The first case, by Linda Wolfe, begins

with a discussion of the ethics in science and field research and the ways in which this intersects with the study of nonhuman primates. Her chapter includes a detailed discussion of the difficulties faced by a field researcher and the types of behavior that are acceptable. Wolfe goes on to describe the work of several field researchers in various parts of the world, as well as her own work with a free ranging, habituated group of rhesus monkeys in Florida. She makes two important points: 1) researchers are obliged to conduct themselves in a way that will allow other researchers to continue to work in a given area and 2) researchers must conduct their work on nonhuman primates continually keeping the adage “do no harm” in mind.

Leanne Nash compares the similarities and differences in the study of primates in the field and in captivity. Nash begins her contribution with a review of attitudes toward primates as research subjects. She describes the utility of “critical anthropomorphism” and the “3Rs” (replacement, reduction, and refinement) to the use of primates as study subjects. Nash asks three critical questions: What ethical questions have researchers raised? Is there evidence of regulatory review? Do published papers show a concern with ethical issues? She reviewed articles from the *American Journal of Physical Anthropology* published directly after and 10 years after the implementation of the Animal Welfare Act. Although she found a marked increase in concern and review of studies of primates in captivity, this did not hold true for studies of primates in the wild.

Michele Goldsmith’s contribution discusses the ethics of research on wild populations of gorillas. In her chapter she presents a history of habituation and the researcher’s relationship to the animals they study. She suggests that researchers work to reduce the risks of habituation by minimizing stress and only habituating to the point of tolerance. Measures should also be taken to minimize the risk of disease transmission from human to animal. She argues that the habituation of long-lived animals, such as the great apes, necessitates a lifetime commitment.

Cathi Lehn discusses the uses of biological samples collected from animals maintained in zoological gardens. Samples collected from animals in zoos often involve less stress to the animal than samples collected in the wild. There are numerous ethical issues surrounding the curation of biological samples, including access to samples and the transfer of animals and samples. Lehn uses as an example the curation of samples at the Wildlife Conservation Society headquartered at the Bronx Zoo. Zoos have been instrumental in conservation programs working with Species Survival Plan (SSP) and the Taxon Advisory Group. Lehn shares the expertise and experience of the WCS in her discussion of tissue banking.

Jay Kaplan comments on the chapters and includes his own experience with primates in the laboratory and in the field. In the wild, habitat destruc-

tion and the bush meat trade are the greatest threats to primate populations. However, the capture and transport of animals for research can also severely affect populations. Kaplan discusses his experiences with cynomolgous monkeys imported from Indonesia. Kaplan was part of a group that forged an agreement between the government of Indonesia and academic institutions in the United States to establish a two-way transfer of resources. Macaques were imported into the United States; training and resources were provided to Indonesians.

A second subfield of biological anthropology deals with the skeletal biology of living and fossil humans and nonhuman primates. This section begins with a paper by Janet Monge and Alan Mann. They discuss the ethical dilemmas in the casting of fossil material. Because considerable research and teaching is based on casts of material, access and reproducibility are important considerations. Monge and Mann discuss the implications of the loss of anatomical detail that results from reproducing and handling fossil material. Access to casts is another issue that contrasts openness of access to conservation of resources. They use the casting program at the University of Pennsylvania as an example of an institution that deals with these issues.

The second chapter in the section is by Clark Spencer Larsen and Phillip Walker. They discuss the tensions that exist between scientists, who regard ancient human remains as objects with enormous research potential and the ability to tell us about the history of the human condition, and descendants of the people whose remains are found, who regard the remains as objects of veneration that need to be protected from indignity. They believe that human remains should be treated with dignity and respect, that descendants have authority over remains, and that if at all possible remains should be preserved so that they are available for study. Reaching and maintaining a balance between conflicting demands requires considerable effort. They describe a cooperative arrangement that was worked out with the Chumash Indians of Southern California. Remains were repatriated to a subterranean crypt where they are available to both native people and researchers.

Heather Walsh-Haney and Leslie Sue Lieberman discuss some of the ethical issues involved in forensic anthropology. Forensic anthropologists analyze skeletal material for legal and humanitarian purposes. They work within the legal system. Although much of their work is applied, they usually are associated with research institutions and are required to teach and publish. There are specific ethical questions that follow from this dual role. Some of the issues include the participation of students in formal investigations, harvesting tissues for the resolution of cases and consent, and the intricacies of consent with the families of deceased individuals.

Susan Antón discusses the papers in this section and includes additional discussion of some major issues in skeletal biology. In her discussion of the

claims and counterclaims regarding permit areas and fossil finds, she asks where such issues should be raised. Should they be raised at scholarly meetings or in some as yet unavailable international forum? Antón also discusses the ways in which the availability of casts helps shape thought on human evolution and the obligation to build infrastructure and train students in host countries.

Human biological variation and genetics are regarded as separate subfields of biological anthropology. However, they both face the same ethical questions, especially when dealing with genetic variation in human populations. Because of this similarity, the commentators were asked to discuss chapters in both sections and they are placed together in this volume. Sara Stinson's chapter discusses the nature of studies of human biological variation. This particular subfield deals with the relationship between biology and culture, and both biomedical and behavioral data are collected. When behavioral data are collected there exists the possibility of psychological harm to the subject. An individual may be embarrassed by questions, they may confront a loss of social status, face economic or legal problems, or they may be stigmatized by their social group. A group may also face the possibility of negative stereotypes. Stinson also discusses her work with children. Children have special status in research settings. They are considered to have diminished autonomy, especially with regard to informed consent.

Stacy Zamudio discusses the frustrations of a researcher engaged in a multi-institution research project. Every institution has its own IRB and requirements are not standardized. Zamudio gives several examples of the way in which this complexity has proved to be an impediment to research. She also discusses the ways in which IRBs in other countries differ from U.S. requirements. She suggests standardization of U.S. IRBs and also suggests ensuring culturally sensitive demands for international IRBs.

Trudy Turner and Jeffrey Nelson discuss the controversy generated by the publication of Patrick Tierney's *Darkness in El Dorado*. The book discusses James Neel, Napoleon Chagnon, and others who did research among the Yanomami of Venezuela. Tierney accused Neel of complicity in a measles epidemic in 1968. Turner and Nelson review the charges and find that Neel actually worked hard to save Yanomami lives. The controversy has, however, raised other ethical issues, including the long-term storage of biological samples and the changing nature of the consent process.

The chapter by Cynthia Winston and Rick Kittles discusses the African Ancestry Project. The project was designed to use genetic, historical, and cultural data to provide a bridge to the past and to answer the question of "who am I" for an American of African ancestry. DNA based testing is used to determine which of several indigenous African maternal and paternal lineages are present among African Americans. The project has a database of

over 9,000 individuals available for comparison. Winston and Kittles discuss the ethical as well as the positive and negative psychological effects of this project. They conclude that benefit for the community and a significant contribution to science are requirements for individual participation in a research project. In addition, researchers must ensure confidentiality, prevent discrimination, and fully disclose all risks.

Sloan Williams discusses the results of testing whether Thomas Jefferson fathered some of Sally Hemmings's children. This study is an example of historical genetics. In this type of study the risks to participants are usually psychological and social. Descendants of Jefferson and Hemmings were left with a sense of anger because they felt that some promises made to them were not kept. Williams emphasizes that trust between researchers and subjects can possibly mitigate the effects of results that are contrary to expectations. Her discussion focuses on the need to protect the privacy of individuals, the nature of group consent, and the conflicting aspects of peer review and scientific publication and the popular dissemination of information.

Frederika Kaestle and David G. Smith discuss the utility of the use of genetic evidence in assessing the cultural affiliations required by NAGPRA. They present the results of some of their analyses of ancient DNA from samples found in the Americas. Kaestle and Smith deal specifically with the Kennewick Man samples, which they worked on. They discuss the weight given to scientific and nonscientific evidence in determining affiliation.

Dennis O'Rourke, M. Geoffrey Hayes, and Shawn Carlyle discuss the legal, ethical, and social issues encountered when working with ancient DNA samples. These include access to samples, the consent process, a realistic assessment of the risks and benefits, results assessment issues, and NAGPRA. Their experiences include working with two Native American populations, those of the Great Salt Lake Fremont, and the Aleut of the Aleutian Islands. The Aleut project was successful and they discuss the methods they followed that helped insure this success.

Jeffrey Long and Jonathan Friedlaender are the two commentators on the human biology and genetics chapters. Friedlaender reaffirms the need for caution when working with individuals and groups where a large power differential exists. Group consent, an explanation of goals, and an assessment of outcomes is crucial when working outside the United States. Friedlaender also discusses his work in the Solomon Islands, Papua New Guinea, and Indonesia. He first went to the Solomon Islands over 30 years ago. He is able to trace the differing attitudes toward consent and research through his own experience and reminds us that the ways in which we do research can be time and place specific.

Jeffrey Long also discusses the gap that can exist between the researcher and the subject. Currently researchers are responsible for the scientific design

of projects, for monitoring participant rights and welfare during the project, and are also responsible for insuring that all personnel are trained and qualified. Long suggests that in order to ensure that researchers are able to meet these goals the biological anthropology community further its discussion of ethics with an annual workshop at the AAPA meetings.

Trudy Turner discusses the new technologies available for the sharing of data between colleagues around the world. The Internet and computer databases have allowed access to both genetic and fossil information. These new technologies are expanding the ways in which all researchers can participate in a global scientific community.

The authors hope this book will provide a basis for a continuing discussion of ethics in our discipline. All of the participants have at one time or another commented on how much more difficult it is to discuss ethics than it is to produce a data-based paper. The discussion of ethics in professional life is not easy, but it helps to clarify the relationship and responsibilities of individuals to each other.

Notes

1. For an account of the ethical issues anthropologists faced from 1900–1970, see Thomas Weaver (ed.) (1973). *To See Ourselves*, Scott Foresman, Glenview, IL.

2. The word “deontological” is derived from the Greek word *deon*, which means duty or obligation.

3. It is not the purpose of this chapter to review major philosophical theories. Any of the works listed in the bibliography can provide such a review with special reference to bioethics.

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the same geographical area. Second, researchers are expected to conduct their research on wild primates from the perspective of “*do no harm*.”

Science and Ethics

As members of the scientific community, field primatologists are guided by the same general ethical principles as other scientists. For a brief overview of science and ethical principles see Jackson (1997), Ahearne (1999), and a National Academy Press document (1995). For more complex discussions, see Woodward and Goodstein (1996), Broad and Wade (1994), and Segerstrale (1994).

The guiding principles for members of the scientific community include:

- Avoid plagiarizing, fabricating, cooking, or falsifying data. According to an editorial in *Science*, the low-end estimate is that there is 1 case of fraud per 100,000 scientists per year (Marshall, 2000). The author of the editorial advocates ethics training for graduate students.
- Avoid carelessness when collecting data and the falsification of grant records.
- Avoid mistreating or discriminating against students, coworkers, or employees.
- Avoid giving professional advice on topics for which you are not qualified by professional training or experience.
- Avoid speaking for a professional organization unless its permission is obtained.
- Report professional activities when and where there is a conflict of interest. This has recently become more of an issue with the increase in university and private industry joint research ventures. Shulman (1999, p. 114) reports that in a review of the publications “of more than 1,000 scientists at universities in Massachusetts . . . more than a third of the these articles had one or more authors . . . [who] stood to make money from the results they were reporting.” However, none “of the papers mentioned that the authors had a financial interest in the results.” Science depends on truthfulness and openness, and all conflicts of interests should be openly reported.
- Be cautious when engaging in any research for which the results cannot be freely published. This is, of course, one of the more controversial issues currently under discussion in the scientific community. Much of the concern is focused on graduate students and postdoctoral fel-