



Why the Topic of Bioethics in Science Classes?

A New Look at an Old Debate

by Carolyn Csongradi

The Curriculum:

Science and Problem Solving Techniques

Writing Project

Introduction:

While working on this project, you will:

1. Read about different problem solving perspectives which may be used during conflict resolution.
2. Examine your own thoughts and ideas while exploring a real life dilemma.
3. Compare conflict resolution techniques with scientific reasoning.

Background Reading

We have all been faced with a personal problem that requires a difficult choice. Biology, medicine and law, to name a few, are careers which involve very complex decisions as part of the job. Sometimes a conflict affects only us, causing a struggle with our conscience. More often we try to balance the desires of a friend, family member or even society against our own wants. A dilemma develops when the consequences of a plan of action are painful, no matter which path is taken. In searching for an acceptable resolution, consider the following questions:

- Is the dilemma clearly understood?
- Has sufficient information been gathered from a variety of sources?
- What personal values and principles are relevant for everyone involved?
- Will reference to a source of "right" and "wrong" such as the Koran or Bible be made(*deontological* ethics) or will a reasoned analysis of the benefits and harms of each choice be undertaken(*teleological* ethics)?
- What are the primary obligations of the person making the decision?



The Search for Solution

Theory versus Reality: One Professions Approach to Identifying Values

Ethics or moral philosophy is the study of the principles and methods for distinguishing right from wrong and good from bad. A related field called metaethics tries to determine the meaning of ethical terms such as the words "right" or "wrong". Philosophers such as Kant, Aristotle, and Plato have written complex texts about these fundamental issues.

Ethical problems in medicine have long posed real life tests of how well these theoretical principles are able to assist physicians in making responsible decisions which may have legal and moral consequences. Bioethics and medical ethics are fields of study composed of experts using a multi-disciplinary approach to analyze possible options in complicated cases. A professional code for ethical behavior, which has grown out of Western traditions, helps make these hard decisions. Health providers should choose an action which:

1. Benefits the patient - life is sacrosanct (**beneficence**).
2. Does no harm unless balanced by the hope for improvement (**non-maleficence**).
3. Is even handed in allocating scarce resources- characterized by fairness (**justice**).
4. Respects others as equal partners in making a decision (**autonomy**).

The tricky part is that in any given situation, some of these values may be in direct conflict and require prioritizing. (Ref: Ernie Young, *Alpha and Omega; Ethics at the Frontiers of Life and Death*)

Other Influencing Factors:

Looking at all sides of a conflict is not an easy task. Factors, which we may not be aware of, contribute to our understanding (or misunderstanding) and hence, influence the final choice. Consequently, people involved in the same conflict may arrive at different solutions using the following:

- **Context**, the circumstances surrounding the issue, influences what parts are thought important or unimportant. For instance, if the individuals in a conflict are acquainted, the nature of the relationship matters. The bond between family members is very different than the one between friends. Gender, past experiences, education and age also act as a frame, modifying how the problem and the consequences are viewed.
- **Values**, which are personal beliefs, are learned from traditional sources such as family, religion and school. They form an underlying framework which focuses our attention on certain aspects of a problem and advocates a particular course of action. Values vary from individual to individual reflecting cultural, religious and other personal experiences.
- **Principles** are equations which assist with conflicting values by giving greater "weight" to one particular value. Adhering faithfully to a particular principle is a requirement of our conscience, although experience may modify the priority given to any one value.
- **Perspective** is a way of viewing the world - a particular frame of reference or "lens" through which certain principles are filtered.



Here is a story which might help clarify your understanding of some of the words just described:

Story

The setting is in California and the conflict about the use of medicinal marijuana. In November of 1996, Californians were asked to vote on a voter's initiated ballot measure. Among other things, Proposition 215 exempted patients and defined caregivers from criminal prosecution for the possession and cultivation of marijuana for medical treatment when recommended by a physician. As of November 6, 1996, with 78% of the precincts reporting, 56.1% of California voters, voted "yes" on Proposition 215. The results of court challenges are not known as of the publication this date.

Jane, who is a law abiding, caring person, believes that people should have access to drugs which provide relief to those suffering from the side effects of chemotherapy used to treat cancer and AIDS. Jane's friend, John is confined to bed while receiving intravenous therapy. He has nausea and weight loss from his chemotherapy and he requests that Jane purchase some marijuana for him, as has been recommended by his doctor.

Jane is genuinely concerned about her friend's physical health, but she has observed what she believes is John's developing psychological dependence on marijuana. To be consistent with her view about access to drugs in the face of suffering, she feels obligated to buy the marijuana for John. However, she is troubled by the thought that giving drugs to her friend might also be harmful. What if John were injured or injured someone else while driving under the influence of marijuana?

Jane's values include honoring the quality of her friend's life, responding to requests for help, and obeying the law. These values are in conflict, creating a dilemma. Jane must set some priorities and realize that a course of action can, on the surface, appear contrary to her feelings about drug access, but at the same time, be internally consistent with principles having higher priority such as obeying the law or not harming others. Meeting her friend's need for more marijuana does not have to outweigh all the other values. Her perspectives may include both a belief in law and order and a strong need to maintain her friendship.

How does she go about prioritizing the conflicting values and arriving at a decision which honors her values and also respects her friendship?



Some Different Types of Perspectives:

The following are examples of perspectives which have been described by educators and psychologists after interviewing adolescents and adults. These perspectives, which are practical rather than theoretical, may co-exist in one individual and are not mutually exclusive. They may produce different approaches to the same conflict and lead to different courses of action.

- **Perspective of Justice:** Conflicts are: viewed from the perspective where you think of yourself as a separate person from others. You think of others as you would like them to think of you. Relationships are defined by rules and obligations to a particular role in life. approached by referring to impartial rules or standards. When deciding on a course of action, you consider what your obligations are and how you would like to be treated if you were in the other person's place.
- **Perspective of Care:** Conflicts are: concerned with issues that involve maintaining relationships. You might see yourself connected rather than separate from others. You view others in their own situations and contexts. approached by responding to others on their own terms. The welfare of others is emphasized. You try to do no harm and to relieve suffering.
- **Perspective of Fairness or Equality:** Conflicts: come from a need to *balance* resources or desires among individuals or groups. are evaluated by deciding on how an ideal group of people, blind to their own needs and desires, might have concluded was fair when originally faced with a similar problem. In principle, no one benefits at the expense of another, particularly if that person can least afford the sacrifice.

In selecting a course of action, a particular perspective is defined by the answers to these questions:

1. What is more important, my needs or the other person, group or society?
2. Are maintaining relationships or adhering to impartial standards or rules more important?
3. Are there inherently right and wrong choices or are the standards for deciding what is fair purely arbitrary? What makes an action right? By whose rules do we abide?
4. Is equality the best definition of what is appropriate behavior for society?

Anxiety plays a big role in making the final decision. Too many trade-offs or compromised principles increase the level of anxiety felt. If a choice becomes too difficult, then no course of action is taken, which, of course, represents a decision. Experience gained from any course of action often affects subsequent behavior by modifying priorities and perhaps reducing anxiety.



Making Decisions: A Practical Model

Edward Hundert, a psychiatrist, wrote an article* designed to assist physicians in making life and death decisions involving patients. Hundert describes a practical model for complex problems: He believes that each new dilemma represents a set of conflicting values. Making a list of these relevant values helps clarify what is important. Utilizing a scale which attempts to equate values, a decision can be made as to whether one side has more "weight" than the other. An example follows:

Problem: A psychiatrist must decide if a patient is mentally ill enough to require commitment to a psychiatric hospital. The moral principles involved are part of a physician's code of conduct stating that: the primary duty of a physician is to benefit the patient; to enable patients to be self-determining agents; to do no harm. A potential list of conflicting values follows:

To **Commit** against the patient's will versus to **Not Commit** the patient:

Concern for the patient's welfare and safety versus patient's right to individual liberty

Need to relieve patient's suffering versus patient's right to privacy

Concern for safety of others who may be affected by patient versus modesty concerning one's own who may be affected by actions i.e. suicide or homicide

In the final analysis, the physician, guided by a code for ethical behavior, decides while being consistent with his/her own principles and perspective which course of action would be most appropriate. Should the patient remain free and subsequently commit suicide, this result might modify the physician's confidence in predicting a patient's future behavior and may change the priority given to that particular belief. Such experiences may change the physician's future actions, but not necessarily alter the fundamental principles involved.



Conclusion

In the end, we each must find a model which works for us - a system which enables us to face, evaluate and make the hard choices now and down the road. Ideally, practicing on situations which mimic life will provide a level of comfort and make the real dilemmas less anxiety provoking. We need to feel what our limits are, accept that others may be guided by different values and perspectives, and respect that most people already have their own internal standards for ethical behavior.

* Copies of the this journal article are available.

Hundert, Edward M.D., "A Model for Ethical Problem Solving in Medicine, With Practical Applications." *The American Journal of Psychiatry* 144:7, July 1987.

An additional reference if you are interested in the subject of ethics:

Young, Ernle, *Alpha and Omega, Ethics at the Frontier of Life and Death*, Addison-Wesley Publishing, 1989. Ernle Young is Professor of Medical Ethics and Chaplain at Stanford University Medical Center. This book provides fascinating case histories while exploring the complex problems surrounding medical care using expensive high-tech equipment.

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Science and Problem Solving Techniques

Writing Project

ASSIGNMENT I _____NAME

DUE DATE: _____

STUDY GUIDE: Problem Solving in Science

Read the handout on **Problem Solving**. **On this paper**, complete **one** of the following assignments given the vocabulary words: **value, context, principle, perspective**:

A. Use your imagination to develop through words, pictures, or a flow chart an analogy which shows how these words are related to one another.

OR

B. develop a chart which lists the vocabulary words, definitions and a specific example of each word from your own experience.



Science and Problem Solving Techniques

Writing Project

Assignment II _____ due date

- **Study Guide:** *A Model for Ethical Problem Solving in Medicine with Practical Applications* *The American Journal of Psychiatry* 1987; 144: 839-846 by Edward M. Hundert, M.D.
- Read your "Problem Solving" handout and the attached article.
- As you read, answer the following questions and define the vocabulary words as they appear in the context of the article.

I. Define:

1. dilemma
2. unpalatable
3. violate
4. incommensurable
5. reflective
6. equilibrium
7. articulation
8. coherent
9. bias

II. In the "Science and Problem Solving Techniques" handout, four factors are listed as influencing choices. List those factors and using the following analogy: Looking at all sides of a problem is much like studying a painting. If context is thought of as being like the frame of the painting, then what factors would best match "hues", "color preferences" and "artistic vision"?

III. Think about a difficult choice that you have had to make in the past. After reading the article, answer the following about **a particular dilemma you have faced**. Refer to the story about John in the first reading assignment for some ideas.

1. Describe the core issue or central problem.
2. What was the main conflict for you? This should be stated such that both sides of the issue can be clearly understood.
3. List several of your beliefs or values that were involved in this particular dilemma. Were these beliefs incommensurable? Which belief had the highest priority? Answer these questions by preparing a list of beliefs which appear to support different possible problem solutions as demonstrated in the article by Hundert.
4. Relating to problem resolution: (a) Which solution did you choose to the problem? (b) Was there another acceptable solution to the problem than the one you selected? (c) What made one solution more acceptable? How did you choose?
5. With respect to perspective: (a) What perspective do you think you used when you made the final choice? (b) Do you think your perspective might change depending on the conflict or do you favor one particular perspective? Discuss your answer - "yes" or "no" won't do!



Science and Problem Solving Techniques

Writing Project

Assignment III _____ due date

I. TOPIC DESCRIPTION:

Goals:

This assignment asks that you become the reporter of a real life dilemma which might be faced by researchers, politicians, or other individuals whenever new technologies or procedures are developed in the face of limited resources. Your article should be thoroughly researched with respect to events, history, science and courses of action.

Hints:

Here are some helpful questions for you to think about as you do the topic research. These questions are intended to assist you as you read the topic. **They do not require written responses.**

- *Describe the central issue:*(s) What was the situation? What was the conflict for you in that situation?
- *Accumulating facts:* Have you enough information to adequately examine all sides of the problem? Have you consulted relevant resources such as books or other individuals?
- *Identify the motives of those involved:* What values are at stake for you in this dilemma? What is at stake for others? What are you considering while thinking about what to do?
- *Develop a plan of action / behavior :* What did you decide to do? Is there another way to see the problem?
- *Consequences of action::* What happened? Do you think it was the right thing to do? How do you feel about it? How do you think the others feel about it? What, if anything, do you think you learned from it?



II. PROCEDURE:

There are **required questions**. Your answers to the questions must be incorporated into a written or oral text. It is important to include a fictitious physical description including name, age, gender and other additional demographic facts. You are encouraged to have a character which is in a "voice" different than your own i.e. a different gender, age or culture. **Part A may be done individually or in pairs.**

1. **Required Questions: There are three different ways to meet this portion of the assignment; select one method for presentation:**
 - a) Assume you are interviewing a person - the victim or perpetrator or advocate and asking a series of questions. Your "interview" may be taped (video, recorder) or written as a magazine or newspaper article. At the beginning include a description of the person being interviewed. The final product may be a series of questions and answers. If you decide to include your own opinion as a reporter, then make that clear in your article or video taped interview.
 - b) Identify two or three individuals who represent conflicting points of view from the "Cast of Characters". Report on a debate between these individuals who are asked the required questions.
 - c) Incorporate two or three individuals from the "Cast of Characters" into a short story where different perspectives are illustrated using a common issue.
2. Which ever approach you select, be sure that answers to the following questions are a part of your presentation:
 - a) What was the situation? Give a full elaboration of the story and its players.
 - b) What was the conflict for the characters?
 - c) In thinking about what was an appropriate action, what factors were considered? Why were these things important? What biases might be influencing the person's answers?
 - d) What course of action was selected? What happened?
 - e) Describe three values that were involved in the conflict. Which value had the highest priority? What was at stake for others?
 - f) Is there another solution to the problem other than the one described? Is there a way to solve the problem so that all parties will be satisfied? How could this be done?
 - g) Of all the solutions considered, which one seems the best? Why?
3. **Discussion:** Requires written answers following completion of Part A. **Must be done individually.** Answer questions from your own point of view.
 - a) What is one perspective one of your characters used? Refer to your hand-out for assistance. Is this consistent with your personal philosophy? Discuss your answer by giving examples from the interview which support that particular perspective.
 - b) Describe the main conflicts (maximum of two) described in the interview. How do you determine what is "right" or the "truth" in a conflict?
 - c) Select one conflict from (2) and make two lists representing competing values using the technique described by Dr. Hundert.
 - d) What basic underlying principles apply in deciding which values have higher priority?



4. **Science Related Discussion: Written answers only. May be done in pairs.**
- a) Discuss the chemistry involved in the story. What is nicotine and how does it affect the human body? What does the nicotine molecule look like?
 - b) How does nicotine cause harm to the body?
 - c) What is the difference between physiological and psychological addiction?
 - d) What marketing schemes have been used by tobacco companies to sell their products? Include three examples of advertisements from publications. Describe the audience being solicited and the implied message in the ad.
 - e) What is the government's responsibility, if any, in regulating the tobacco industry and protecting the American public?
 - f) What parts of the tobacco conflict can be analyzed by the scientific method or scientific reasoning and what areas involve a different type of decision making? Describe the "other" type of reasoning.



Science and Problem Solving Techniques

Writing Project

Nicotine: An American Way of Life?

Cast of Characters

Select **one** of these to interview (assume all are still alive). You may change the name and gender or use the following real names.

Rose Cipolione: Rose was a teen-ager in the 1940's when she began smoking. In 1984 and 15,000 packs of cigarettes later, she succumbed to lung cancer. Before she died, she sued three cigarette manufacturers claiming intense advertising had drawn her into a deadly nicotine habit. The Liggett group, which was targeted in the suit, stated that Congress's 1965 decision to require health warnings on cigarettes shielded them from liability. Rose was a victim, a nicotine addict and a consumer dependent on the government to protect her

David A. Kessler, M.D.: Dr. Kessler is the new FDA Chairman. One of his jobs is to draft policies which regulate drug testing and approval and affect drug company profits. Currently he is recommending a policy to the White House which would restrict access to tobacco for adolescents. He says: "The tobacco industry survives by replenishing the ranks of dead and dying smokers with newly addicted young people." Newt Gingrich blasted the FDA plan as evidence the agency "has lost its mind." Mr. Gingrich represents Georgia, a southern state. Dr. Kessler is a key spokesperson for the medical community and consumer health interests.

Tom Fitzgerald, a senior employee for Brown and Williamson: Tom is part of the public relations department for a major tobacco company which produces Kool, Viceroy and Raleigh cigarettes to name a few. He is incensed at the release of some 4,000 pages of internal, confidential documents. The papers were stolen from files of the tobacco company, leaked to a UCSF medical school professor and scanned unedited onto the Internet where access was unrestricted. His views represent all the financial and corporate interests, having given sworn testimony before congress on the position of tobacco companies denying any wrong doing or nicotine level manipulation.

Mary Gonzales (fictitious name), a consumer protection lawyer and attorney general for a southern state : Mary is currently involved in a class action lawsuit against Brown and Williamson. She alleges that tobacco companies have known for more than 40 years that nicotine is addictive and that chemists have routinely manipulated the levels of nicotine in cigarettes so as to maintain blood levels consistent with addiction. She claims tobacco companies have long been aware of the health risks while publicly stating there was no relationship between lung cancer and cigarette smoking. She states that the sole motive for the behavior of the tobacco giants is greed. Her views represent the consumer who is unable to muster the necessary resources to file a lawsuit.

Ian Uydess, a senior scientist formerly employed by Philip Morris: Ian was responsible for supplying corporate executives with information about nicotine levels in tobacco leaves. He also performed basic research in the areas of addiction and the effects of nicotine on the human body. His affidavit is being used by the FDA to support its policy recommending limiting access to cigarettes. He is both an ex-employee and chemist.

ACCESS EXCELLENCE
Classrooms of the 21st Century



Bennett LeBow, a corporate raider and a CEO for Liggett: Bennett is interested in one thing only, money. He wants to settle a large class action suit against Liggett (Eve and Chesterfield cigarettes) brought about by several states seeking money to help pay the costs of smoking related diseases in impoverished people. Liggett is a minor player in the cigarette business. He wonders why other tobacco companies have resisted settling for so long because the cost of continuing to fight legal battles is greater than the proposed settlement. Bennett is not concerned that he is undermining the solid wall of denial projected by Philip Morris or Brown and Williamson. These giants have been made vulnerable by the action of Bennett LeBow. He represents a major financial threat.

James Laird, a Kentucky tobacco farmer and smoker: James is a tobacco farmer like his father and his father before him. He inherited a thriving farm, mortgaged his home to update his farm equipment and has no other source of income. He supports a wife and two high school aged children and is concerned about farm subsidies and the price of tobacco leaves on the open market. While sympathetic to those who suffer from smoking related diseases, when fewer people smoke and the stockmarket share price of tobacco companies drops, he becomes concerned.



Science and Problem Solving Techniques

Writing Project

Radium: Narrative of a Moral Dilemma

We are all faced on occasion with a hard choice in life. Telling a narrative about a conflict in which you have had to make a difficult decision contributes to your personal growth. This assignment is about becoming a character in an ethical real life dilemma faced by medical researchers and patients whenever there is a breakthrough in the development of a procedure or drug to cure a disease. Take the time to explore how you might feel if you were the patient. I plan to explore these ideas in other assignments throughout the year. Hopefully, science will become more relevant as you are given an opportunity to examine your own values.

After you have read the following directions, you may see me if you have **personal** knowledge of a similar dilemma that you would be willing to share with just me. I will allow you to substitute your personal narrative for this assignment **IF WE HAVE DISCUSSED THE IDEA THOROUGHLY FIRST AND I HAVE GIVEN YOU CLEAR WRITTEN DIRECTIONS ABOUT YOUR RESPONSIBILITIES.**

Read the following article: "Radium Time Bomb" from the *San Francisco Chronicle*, Sunday, August 14, 1994. Your narrative must contain very specific information about Radium and its discovery in addition to the creation of a fictional character whose feelings, behavior and responses you must describe as if they were your own.

Background Information: You may combine the answers to questions in a paragraph, but include the requested information.

1. What are the chemical properties of the element, Radium? Where did the name of this element come from?
2. Briefly describe the life of Marie Curie. Was she always a scientist or did she have other occupations? Be sure to include when and how she discovered Radium. What are the theories about how she died? What was unusual about her life as a scientist?
3. What knowledge was available about the hazards of Radium exposure prior to 1940?



Scenario

You have been notified that old medical records, thought long lost by the military, have been located in an old basement. These records show that you were treated on four occasions with Radium by placing a capsule in your nose to treat chronic nose bleeds that you experienced when you were a soldier (male or female) in World War II during 1943. You were told at the time when you received the 2 hour exposures that the treatment was safe and that you were also a part of a group of military personnel who were undergoing the experimental use of Radium to control superficial bleeding vessels. You considered the treatment very successful, having been freed from what had become an unpleasant and dangerous health problem.

For the past several years you have been facing chronic sinus infections and pain. A recent x-ray of your skull has revealed some abnormal bone growth in the area of you nasal passages, but there is no evidence of cancer. You are also experiencing gum disease and having some trouble with your teeth becoming loose from the bone tissue. It is now 1994 and you are trying to assess the impact on your life.

Some personal information: You were born in 1924, and are currently married with three adult children, one of whom is mentally challenged, still lives at home and is financially dependent. You are receiving a veteran's pension with medical coverage for yourself but the money does not take care of the expenses of your dependent 45 year old son, who has a heart defect. A reporter has approached you for a magazine article about how this medical news might affect you and your family.

Be creative and invent some dialogue to respond to the questions asked by the reporter. You are considering your options with the Army, who is denying responsibility, and are interested in having the truth told. Weave a story in first person incorporating some of the ideas below. I encourage you to create your own questions too. It is important that what you have your character say is believable and consistent with common sense and medical knowledge. You might need to look at information about sinuses, gum disease and birth defects associated with Radium if that is part of your response.

Provide an introductory statement which includes a physical description and the sex (the person may be either male or female) of your character. Any comments to the following reporter's questions should be gender consistent. At some point in the essay clearly state the moral dilemma that you think your character is facing.

Questions:

1. What caused you to seek the assistance of the Army doctors? How much was explained to you in 1943 about your treatment? Did the Army doctors give you any information about the side effects of Radium exposure? What did they tell you? Did you know Radium was inside the capsule?
2. How did you feel physically after the treatments? Were they painful? Did you feel ill afterwards? Did they fix your problem?
3. When did you find out that there may be some long term problems associated with the treatments? Has the Army notified you of any potential problems yet? Are you part of a group of people being watched now for complications? Do you have any current health complaints? Do you think any of your complaints are related to your old exposure?
4. Can you share with me what went through your mind when you first read the article after you found out about your old records? How did this affect you? How did this affect your family?
5. Are you worried about having any complications now? Do you think your sinus or dental problems are related to the Radium treatments? What do your current doctors or dentists say?



6. What do you think the Army should have done differently in 1943? Do you think it was a mistake for you to participate in the trials?
7. What do you think the Army should do now about the 80,000 documented Radium exposures to military personnel and their families? The Army's official position is that Radium was and is a safe treatment for certain types of medical problems. Do you think the Army should be responsible for long term care of victims? What types of conditions do you think the Army should be responsible for?
8. Has any one suggested that your son's problems might have been related to your Radium? Have you asked the Army doctors for additional help in this area? What were their responses?
9. What are your plans for the future? What would you like to see happen?



THIS ASSIGNMENT IS DUE: _____

THE GRADE VALUE OF THIS ASSIGNMENT IS _____ POINTS POSSIBLE.

Your grade will be based on the following specific criteria:

1. **Format:**

- a. The story is neatly typed/written and sufficient in length to write at least a one page magazine article from the information provided. This represents about 1,000 words.
- b. Spelling and grammar have been checked. There are no sentence fragments, run-ons or paragraphs which lack good construction.

2. **Content:**

- a) The story line is believable and contains sufficient facts to demonstrate that you have researched the required areas. Some of the material maybe fiction, but must be consistent with known facts.
- b) The character is developed in a compassionate fashion so that the reader (me) could easily feel the position of the character described.
- c) The story clearly describes at least two ethical dilemmas and offers insight into the feelings of the individuals involved and potential plans of action.



Additional Sources Of Information:

Curriculum examples:

Materials prepared and used by the author in a high school science class:

- [Nicotine and the Tobacco Companies](#)
- [Radium Dilemma](#)
- [Woodrow Wilson: Bioethics](#)
(http://www.gene.com/ae/AE/AEPC/WWC/1992/bioethics_intro.html)

Reference materials:

Favorite Reference Books

- Beauchamp, Tom and James Childress, *Principles of Biomedical Ethics*, 4th Edition, Oxford University Press, New York, 1994
- Hundert, Edward, *Lessons from An Optical Illusion: On Nature and Nurture, Knowledge and Values*, Harvard University Press, Cambridge, 1995
- Munson, Ronald, *Intervention and Reflection: Basic Issues in Medical Ethics*, Fifth Edition, Wadsworth Publishing Company, 1996
- Young, Ernle W.D., *Alpha and Omega: Ethics at the Frontiers of Life and Death*, Addison-Wesley Publishing Company, Inc., California, 1989