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Research Ethics: An Introduction

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Research Ethics: an Introduction focuses both on how Responsible Conduct of Research (RCR) fits into the field of applied ethics and on procedures for making decisions that have a moral component. Tom Regan presents "Morally Relevant Questions: A Check List" with the central theme of balancing conflicting obligations. We expand this discussion with several classic resources by well known experts in research ethics that articulate critical topics. We present a Case Study from The Association for Practical and Professional Ethics. We consider the question of professional codes and think about the toll of making the right decision. In the Additional Resources section you will find an annotated bibliography of some of the classic research ethics articles, books and websites.

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1) <u>INTRODUCTION</u>

This module is like a road map that you keep in the glove compartment, a guide for the rigorous thinking that goes into making decisions that involve ethical issues. Although, as Alfred Korzybski the noted mathematician said, "The map is not the territory" to venture forth without a plan would be akin to doing research without a protocol. There is a great deal of superb writing on research ethics; we have acted as a filter, selecting what seems both practically helpful and current. As you develop your personal Research Ethics Portfolio, this module will be supplemented with other documents, materials that suit both your personal style and discipline.

This first module in the series, <u>Research Ethics: an Introduction</u>, will familiarize students with the major ideas in research ethics. Our expert is Dr. Tom Regan, Professor Emeritus from the Department of Philosophy and Religion at North Carolina State University. In addition, we will present some of the classic readings and authors in this emerging specialty within applied ethics.

In subsequent modules we will refer back to this Lesson One, as a kind of primer. Why do we need a primer, a road map, a method? Can't we just go by our gut? After all, it would seem that researchers are particularly skilled in problem solving.

Although intuition is valuable both in ethics and research, it is not sufficient in and of itself. Our gut may give us a general conviction re right and wrong, but in complex situations where we see a range of possibilities, then our decisions become more challenging. Just as we make decisions in an orderly fashion when conducting an experiment, we need to be equally orderly in making decisions that have a moral component.

Theoretical ethics analyzes questions of value and moral choice so as to arrive at abstract principles. Applied ethics seeks to utilize these principles in specific disciplinary contexts: e.g. business ethics, bioethics, and environmental ethics. As with all areas of applied ethics, research ethics has both theoretical aspects and discipline specific components.

> "All is not murky when it comes to research ethics. Every researcher knows that fabricating data, plagiarizing someone else's work, or making unfounded charges about another researcher is unacceptable behavior. No one needs special training in research ethics to know this. Even so, all of us probably can recall situations where we were genuinely uncertain about what we should do and where, whatever we decided, our decision was controversial."
>
> Regan, Tom. *Research Ethics: an Introduction,* p 2.

Values can be both quantitative and qualitative. The former, tangible and easy to grasp, (e.g. weight or mass) are the factual material of our work and are often discipline specific. Qualitative values, not as tangible, are the ethical material. They cross disciplines and involve attitudes we bring to our research activity, such as fairness, honesty and obligation. Qualitative values are the key to moral reasoning.

Here is where theoretical ethics and applied ethics work together. Resnik lists some of the major values the study of research ethics concerns itself with: "honesty, objectivity, integrity, carefulness, openness, respect for intellectual property, confidentiality, responsible publication, responsible mentoring, respect for colleagues, social responsibility, non-discrimination, competence, legality, animal care and human subjects' protection."

We can see that many of these values are also key concepts in both theoretical ethics and applied ethics. E.g. the idea of obligation is a central topic in ethical theory: it is also a driving concern in health care ethics. In research ethics we might focus on how our obligations inform our work as researchers. It seems clear that our daily lives as researchers, whatever our discipline, are grounded in values such as those listed: we all have our personal moral code and yet may find ourselves unsure about a specific situation. As Tom Regan says, "We may have a clear sense of right from wrong, but given life's complexities we may be 'genuinely uncertain' as to how best to proceed in ambiguous situations."

> "…ethics are norms for conduct that distinguish between or acceptable and unacceptable behavior...one may also define ethics as a method, procedure, or perspective for deciding how to act and for analyzing complex problems and issues. For instance, in a complex issue like global warming, one may take an economic, ecological, political, or ethical perspective on the problem…Finally, a course in research ethics should be able to help researchers grapple with ethical dilemmas in that it introduces researchers to some important concepts, tools, principles, and methods that can be useful in resolving these dilemmas. In fact, the issues have become so important that the federal government has decided that researchers who use federal funds need some kind of certification in research ethics…
>
> Resnik, *What is Research Ethics?*

Research Ethics has several goals. First, it seeks to clarify the application of ethical principles to the daily life of researchers across disciplines. Second, it focuses more narrowly on the context specific rules and regulations to follow in grey areas where there may be a range of possibilities for different decisions. And third, it seeks to increase our sensitivity to the ethical content of our work. Traditionally, we think of science and research as inherently ethical, as work in the public interest. Increasingly, this "carte blanche" has come under examination, not because we doubt the researchers' best intentions, but rather because we as a society have become increasingly sensitive to the ethical implications and assumptions of both our work and our decisions.

3) <u>Applied Ethics: Research Ethics as a Discipline</u>

Here is a summary of four differing ethical approaches: Consequentalism, Non-Consequentalism, Virtue Ethics and Care Ethics. Tom Regan's approach is that of the Non-Consequentalist school of thought—ethical principles are the heart of the matter, not results. Interestingly enough, there will be times when philosophers might disagree as to method and still end with the same decision. At other times, they will disagree about both method and outcome. Often people will use a combination of approaches in their thinking: e.g., professional codes are often a mixture of Consequentalism and Non-Consequentalism.

For the **Consequentalist**, it is the result of a decision that matters. Utilitarians use this approach: *for them, the right ethical decision is one that provides the greatest benefit for the greatest number of people.* Most Utilitarians would argue that long-term benefits are more important than short term. For example, honesty, in the long run, will benefit more people than telling lies will. For this school of thought, *it's about the action*.

A **Non-Consequentalist** would follow a general principle in making a decision: the outcome would be secondary. Deontologists are those who think that fulfilling obligations or moral duties is the basic principle to follow when making decisions. The word "deontos" is from the Greek meaning "duty" and some in applied ethics call this approach "Deontic." Immanuel Kant was a key figure for this tradition so the approach is also called the "Kantian" approach. Kant said that a central principle is to emphasize the intrinsic value of the individual. For a Deontic, *what makes an action right is the one that honors our obligations to others.* The obligation of researchers to give complete information to research subjects would be an example of this approach. For this school of thought, *it's about the intention.*

Virtue ethics does not posit either principles or results as most important. Rather, the point here is what sort of character one has and how a decision fits into our concept of what a person of good or virtuous character would decide. For example, we believe that a moral person should be honest and thus being honest would be the right choice of action: when wondering what to do we decide what a person of virtuous character would do as our guide. For this school of thought, *it's about character.*

Care ethics takes a very different view than the three general approaches just summarized. Care ethics began as a feminist revolt against the intellectual, rational approach to ethics. This school of thought says that we don't make ethical decisions from the mind, but from the heart: ethics is subjective and emotional. Here an individual is viewed as part of a complex web of relationships. *For this school of thought, what makes an action right is the one which most honors the network of relationships we find ourselves in: it's about relationships.*

As researchers, one of the tasks in thinking about these different approaches is deciding how to apply them to the questions that arise *for us.* And here is a challenge to research ethics: its principles must go across a wide range of disciplines and yet remain context specific enough to be useful.

In this spirit, Ken Pimple says that we can organize our thinking with three overarching sorts of questions:

1) *Is it true?*
2) *Is it fair?*
3) *Is it wise?*

The first question concerns quantitative values; the second and third involve qualitative values. We can relate his organization to Resnik's focus on key values, e.g. objectivity, respect for colleagues and social responsibility. By putting these principles or values into the form of questions, Pimple helps us focus, saying, here are the questions we need to ask ourselves.

"The first question, Is it true?, concerns the relationship of research results to the physical world…The second question, Is it fair?, concerns social relationships within the world of research…For example, although *true* reports can be published without citing previous publications, or without securing informed consent from human subjects, these are not *fair* research practices. The third question, Is it wise?, concerns the relationship between the research agenda and the broader social and physical world present and future.

Ken Pimple, *The Six Domains of Research Ethics,* p.192-193.

In his article, *The Six Domains of Research Ethics,* he explains how he organizes these three questions into six categories, in order to further fine tune our focus. E.g. he defines the question "Is it wise?" as "the relationship between research and the common good" echoing a major theme in theoretical ethics: the balance between the individual and the common good. In this category, e.g. he places issues of research priorities, public service and environmental impact, to name three.

Thought Question

If we think about the four schools of ethical thought summarized earlier, how might Ken Pimple's three questions relate? Which school of thought would you put the question "Is it true?" into? Non-Consequentalism? What about "Is it fair?" – is this a Utilitarian question or is it closer to Care Ethics? What about "Is it wise?"- is this a Consequentalist question or one about principles? Or does it fit best with the Virtue Ethics stance?

4) <u>Central Theme: Thinking about Decisions that have a Moral Component</u>

Tom Regan says that moral dilemmas arise out of multiple demands on our loyalties; our quandary involves sorting out and ranking somehow our various obligations. "To ask what we ethically should do is to ask what our duty is" (Regan, 11). Seeing the core issue in an ethical decision as one of honoring obligations is in the Kantian tradition, the approach that says an act is right if we follow a moral principle, regardless of the consequences. Here is his "road map" from *Research Ethics: an Introduction*, for organizing the questions we need to ask when faced with a moral decision:

Morally Relevant Questions: A Check List

1. What are the morally relevant facts of the case? In particular, who are the stakeholders? And what does each stakeholder have at stake?

2. Which (if any) concepts need to be clarified before we can make our best ethical judgment or decision? In particular, are there any evaluative or normative ideas that require thoughtful analysis?

3. Is anyone behaving in a virtuous manner? If so, who? How?

4. Is anyone behaving in a way that flouts the moral virtues? If so, who? How?

5. Are any non discretionary duties involved? If so, who has them?

6. Are any discretionary duties involved? If so, who has them?

7. Are any special duties involved? In particular, are there professional duties that are applicable? If so, who has them? To whom?

8. Are any duties of justice involved? If so, who has what rights? Against whom?

9. Are any duties of utility involved? If so, who will be affected? By whom? How much?

10. Do any of the duties involve conflict with one another? If so, which ones? How?

11. Has someone acted in supererogatory manner? If so, who? How?

12. Is someone being asked to act in a supererogatory manner? If so, who? By whom?

13. Taking all the relevant considerations into account, what do we think should be done? What would be right? What, wrong?

14. What reasons can we give to support our answers to the questions asked in (13)?

15. What are the implications of applying the Bad Consequences Test to the answer we favor? Can we continue to favor this answer, given these implications?

16. What are the implications of applying the Universalization Test to the answer we favor? Can we continue to favor this answer, given these implications?

Looking over this Check List, we can see that Regan is approaching the issue of making decisions from a strong Kantian stance. Here what matters is the principle at hand, and the heart of the issue is balancing the obligations we feel for the various people in our lives, how we meet this challenge, and what standards we use as a basis of our behavior. The Universalization Test is similar to Kant's Categorical Imperative, the idea that we need to act in such a fashion so that if *everyone* did this, it would work out well.

Muriel Bebeau also bases her discussion on the idea of balancing conflicting interests and outcomes: "What constitutes an ethical conflict? A dilemma, by definition, is a situation in which rights or obligations of interested parties conflict." (*Developing a Well-Reasoned Response to a Moral Problem in Scientific Research,* p. 4) In this well known essay, Bebeau, as did Pimple and Regan, organizes a method for us to follow when weighing differing courses of action.

She suggests organizing your information, the context specific situation you are analyzing, into four categories:
1. Issues or points of conflict
2. Interested parties
3. Consequences
4. Obligations

This is similar to Regan's list – but we can also see connections to Ken Pimple's three questions as well. If we ask, "Is it fair?" or "Is it wise?" we are considering interested parties, consequences and obligations. And there are connections to Resnik's list of values as well, e.g., legality, respect for colleagues, social responsibility. In addition, Bebeau brings up a critical point that relates to Virtue Ethics. She speaks of the possibility that one might act unethically without immediate consequence, but in doing so, jeopardize our character. In the quotation below we can also see the relevance to the Utilitarian Calculus and the Universalizability test, or the Categorical Imperative.

"But whether or not the act is detected, engaging in actions we believe are wrong undermines our sense of integrity. The effects of an action on a person's character may appear to be minor in the short run, but often have a cumulative and debilitating effect on one's self-confidence, self-esteem, and habits…When writing about the obligations of professionals such as scientists, it is not enough to say that someone has a duty to do "x." You must say why the professional has that duty. That is, you should refer to the moral justification in terms of values, principles, character and outcomes. …Scientists have a responsibility to colleagues, to the research community, and to society to participate in the monitoring of research practice."

Bebeau, Muriel J. *Developing a Well-Reasoned Response to a Moral Problem in Scientific Research,* 5- 6.

Discussion Topic: Popular Movies with Ethical Themes as an Example of Societal Values

An excellent movie about conflicting obligations is *The Insider*. This movie is based on the famous real life situation of Dr. Jeffrey Wigand, a research chemist in the Tobacco Industry. After being fired from his job, Wigand agrees to testify against his former employer as part of an expose of cigarette companies: this expose will be the focus of a 20/20 segment. In spite of threats against his family and himself, Wigand does testify and does appear on 20/20.

> "I am honored that people think I am a hero… but I do not accept that moniker as others are much more deserving of it. I did what was right… I have no regrets and would do it again. As you see, we were just ordinary people, placed in some extraordinary situations and did the right thing, as all should do."
>
> Jeffrey Wigand, Jeffrey Wigand.com

This is perhaps an extreme situation, most research jobs do not end up with this sort of complex and exceedingly difficult decision. Wigand signed a confidentiality agreement when he was fired; how binding is that piece of paper? What are the legal issues? What are reasonable obligations and what are unreasonable? Was Wigand morally justified to put his family at risk because of his beliefs that he needed to testify in the public interest?

Using the Wigand case as an example, we might review the different sets of questions as per Regan, Pimple and Bebeau for deeper insight into the set of conflicts that Wigand went through. Regan describes obligations that go above and beyond the normal call of duty; these are called supererogatory. In testifying, is Wigand fulfilling his job as a scientist working in the public interest, or is his decision to testify a supererogatory action? And what about the issue of cigarette research in general?

Does Wigand have an obligation to do work in the public interest? Should he not have been working for a cigarette company in the first place? Should scientists refuse to work on projects that they deem not in the public interest, or do they have another obligation to follow: the obligation to their discipline, to advance knowledge? Can one be obligated to your discipline? How would you rank these various obligations?

> "Research ethics is important not only because it helps students, the public and experimental subjects avoid research related harm, but also because it provides a framework for examining the ends and goals that research serves. Because taxpayers ultimately fund much university based scientific work (especially at public institutions), academic researchers have a special duty to ensure that their work serves socially desirable ends and goals, such as democratic freedom, societal welfare, equity and growth in knowledge. Indeed, we shall argue in chapter two, under the 'trusteeship model' for research professionals, *all scientists* have a duty--to varying degrees—to ensure that their work serves socially desirable ends."
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> Shrader-Frechette, Kristin. "Basic Principles of Research Ethics: Objectivity." Ethics of Scientific Research. Rowan & Littlefield Publishers, 1994.9.

Tom Regan's Check List when analyzing the case as well as Ken Pimple's three questions and Muriel Bebeau's four questions. Different cases will lend themselves to different sets of questions and different parts of the Check Lists.

For our case study for this module we will present and link to a very well known case from the Association for Practical and Professional Ethics (APPE) collection about a conflict faced by a young researcher that involves the sort of dilemma of obligations that are the focus on this first module. This case brings out the complexity of sorting out personal values in a professional setting. The case is posted, along with others from the APPE collection by The Onlineethics Center at the National Academy of Engineering.

We will present a summary of the Case Study here in the box to the right, but reading the original Case Study, Discussion Questions and Commentaries will enable you to go more deeply into the issues.

You will find that with this case, as well as others, there are two levels of questions and/or concerns; firstly there will be the personal issues to balance, and then secondly, the deeper, more complex societal implications to ponder.

For the original Case Study, as well as Discussion Questions and Commentaries by Brian Shrag and Michael Pritchard, well known experts in the field of research ethics training see:
A Young Woman's Struggle for Peace.

Ann had planned on being a research scientist in the area of photovoltaics and solar power since childhood. After applying to a range of PhD programs in materials science, she selects a program mainly because she would be able to work with a well known scientist in this area, Dr. Doe. In her interview for the program, she and Dr. Doe discuss a range of projects up for funding that Ann might work on in the future. Ann was brought up in a religious household and finds herself becoming interested in the ideas of non-violence. Then Dr. Doe asks her to work on a photovoltaic project being funded by the Air Force. The Air Force is particularly interested in the direct applications of this solar technology to satellite technology in terms of reconnaissance and missile guidance. In discussing the project with Dr. Doe, he points out that there are many civilian applications as well.

Ann wonders if working on this project will compromise her personal beliefs and goals.

This case, although seemingly straightforw the balance between professional work and private beliefs; the question of the responsibility of researchers for the applications of their work; the relationship between a student and a faculty mentor; the challenge of conflicts of interest between funding agencies and the university; and, the social implications of research in science and technology. The issue of "work in the public interest" is also part of the mix.

This case is also of interest since it involves the challenge of balancing work and religious concerns. And since one of the central questions involves the ethics of weapons research, our pondering the issues is critical indeed. Furthermore, this Case Study describes the sort of situation anyone might find oneself in, where we are certain of our own moral code and yet be "genuinely" perplexed as to what to do.

Suggested Methodology:
Access the original Case Study, A Young Woman's Struggle for Peace, read it thoroughly, including the Discussion Questions.

Next review Muriel Bebeau's list of four questions: Then review Muriel Bebeau's list of four questions: 1) Issues or points of conflict; 2) Interested Parties; 3) Consequences; 4) Obligations. This will help organize your thoughts and summarize your ideas about the core issues in the Case.

Then print out the Check List from Tom Regan on page 4 of this module and go straight down Regan's list and answer the questions. If you find yourself stuck on any of the answers, keep going and go back to those questions later. Regan's list is more detailed than Bebeau's so you will be going deeper into the Case with his questions.

What seems to you to be *resolved* in your own mind?
What seems to you to be *unresolved* in your own mind?
What do you find challenging to *articulate*?

Now review the section "For Further Thought and Investigation." Write down any further thoughts you may have.

Now access the Commentary by Brian Shrag and the Additional Commentary by Michael Pritchard. Reading their ideas when you have already struggled with this case will add to your ability to become articulate with the ethical issues and help you work on areas that are still unresolved. Both of these authors are experts on teaching research ethics and they will help you articulate the deeper issues of this case. One of the realities of both case studies and real life situations that involve moral dilemmas is that you might have decided on how to go forward, and yet still feel the pull of the dilemma or find that there are still areas that feel unresolved to you.

6) Study Question: should we follow professional codes or rely on our personal decisions?

The experts quoted in this module clearly think that we are all individual moral agents, responsible for making ethical choices. Although there are basic ethical values to uphold, we cannot dispense with the need to look at each case on an individual basis before we decide on the right course of moral action. Thus, the previous section of this module has focused on the decision making skills.

Another approach is to look to Codes of Behavior to tell us what to do. Module V: Professional Responsibility and Codes of Conduct will discuss this approach in more detail as will Module VII Rightdoing and Misconduct in Research.

In the box to the right we have printed out a partial, brief version of Guidelines for the Responsible Conduct of Researchers, a professional code developed by Dr. Gregory Brock at the University of Kentucky. This code addresses a central challenge for research ethics, to develop principles that work across the disciplines and yet remain helpful for context specific situations.

When faced with competing obligations, or other sorts of difficult ethical questions, which seems to you to be more helpful, a Professional Code such as the Guidelines, or a framework for logical analysis, such as Tom Regan, Ken Pimple or Muriel Bebeau have proposed? Some argue that Codes are too general, and can't substitute for personal morality. What—if anything--do codes leave out of the equation?

The Office of Research Integrity's website is a major resource for our governmental rules and regulations about Responsible Conduct of Research official policies and information.

Guidelines for the Responsible Conduct of Researchers: General Principles

1. Commitment to Society and Global Well-Being: Researchers protect the interests of society within a broader commitment to global well-being. They recognize that the public has entrusted them to uphold the integrity of the scientific record.

2. Commitment to Competency: Researchers are aware that they are responsible for maintaining professional competency and remaining knowledgeable within their areas of expertise.

3. Understanding Laws, Regulations, Policies: Researchers are aware of and stay informed of professional, institutional, and governmental regulations and policies in proposing, conducting, and reporting research.

4. Conflicts of Interest: Researchers are cognizant that conflicts of interest occur in the context of professional activities and they recognize and avoid them.

A Caveat about Making Decisions about Moral Matters

Many of the moral decisions we need to ponder will not be life or death, career break-or-make situations; our daily life is full of "little" questions. There is one aspect to problem solving in the ethical dimension that we don't much talk about; this is the toll that selecting the right choice can take. For instance, you may find that a close colleague is "nudging" the data and you also know that he comes up for tenure in a year. You may go through the steps, correctly analyze the situation according to a Consequentalist, Non-Consequentalist, Utilitarian and Care Ethics, and reach the conclusion that reporting your friend is the proper thing to do. Still, you feel lousy.

This doesn't mean that your decision is wrong—the reality is that we are emotional beings and being right does not necessarily feel good. This is the dilemma with intuition: it doesn't always clarify what we *should* do although intuition cannot be ignored in decision making.

The example I use when talking about this quandary is an experience many of us have gone through--deciding to euthanize a cherished pet, when the animal is incurably ill and/or suffering. Intellectually, this may seem the correct course of action, but we feel no better for it. We might even feel worse but that doesn't mean our decision is wrong. We are often told that our intuition will tell us that we have made the right decision, but in this case, either way, we will still feel awful, and whatever we decide, we quite possibly will "feel wrong." Of course, to be against euthanasia is morally acceptable: I am making a heuristic point here about decision making.

When thinking about how to follow through on our ethical decisions, it is important to factor in the toll the decision will take. There may indeed be situations where the fallout is unacceptable and a different solution needs to be found. Are further negotiations possible? Recalling the Care Ethics approach, might further discussion, interaction and brain storming be of help? Have we been creative enough in analyzing the problem – e.g. can the problem be *prevented*? In the last analysis though, we need to have the strength to tolerate feeling bad about a good decision. And maybe we should add the question, "How will I follow through and live with my decision?" to our list. Muriel Bebeau calls this sort of ability to follow through, "moral perseverance."

There is a term in philosophy that brings this sort of internal conflict out very well: it is the idea of a "moral remainder." We all recall learning long division, e.g., 17 divided by 5 equals 3 and 2/5. 2/5 is our remainder. Thinking back to our Case Study for this Module, "A Young Woman's Struggle for Peace," what different decisions might Ann make that would result, for her, in a set of "moral remainders," feelings, thoughts or regrets that might remain, might be "left over?"

ADDITIONAL RESOURCES

We have posted a reading list for research ethics, classic articles and book chapters, developed as part of the original project for these modules, via the [North Carolina State University Libraries electronic course reserves.](#) You will need a current login from NC State to access these. Once you have accessed the course reserves search page, select *search by instructor* and enter the name, *Rufty*. Select course *GRAD500*. You will be brought to our list of articles and book chapters. There are about 300 titles in this list: we include here several classic and current articles and classic book titles in the field

Articles

Drenth, Pieter J.D. "*Responsible Conduct in Research."* Science and Engineering Ethics, 12, 2006. 13-21.

Grinnell, Frederick. "Ambiguity, Trust and the Responsible Conduct of Research." Science and Engineering Ethics, 5, 1999. 205-214.

Hillman, Harold. "[Honest Research](#)." Science and Engineering Ethics, 1,1995. 49-58.

French, Warren and Alexander Weis, ["An Ethics of Care or an Ethics of Justice"](#), Journal of Business Ethics, 27.1 -2, 2000. 125-131.

Friedman, Paul J. "*An Introduction to Research Ethics."* Science and Engineering Ethics, 2.4, 1996. 443-456.

Kalichman, Michael. "*Use and Abuse of the Internet in Teaching Research Ethics."* Science and Engineering Ethics, 11, 2005. 341-345. An interesting article by a major online educator in research ethics, one of a series of articles on online teaching in this volume of the journal.

Kaposy, Chris. "*Ethical Muscle and S*cientific *Interests: a Role for Philosophy in* Scientific *R*esearch." Quarterly Review of Biology, 83, 2008. 77-86.

Pimple, Kenneth D. [A Few Key Issues in Research Ethics](#). See [Ken Pimple's Home Page](#) for links to various articles focused on learning research ethics.

Steneck, Nicholas H. "*Institutional and Individual Responsibilities for Integrity in Research."* The American Journal of Bioethics, 2.4, 2002. 51-53; "*Fostering Integrity in Research: Definitions, Current Knowledge and Future Directions."* Science and Engineering Ethics, 12, 2006. 53-74.

Weber, Todd Bernard. "Analyzing Wrongness as Sanction-Worthiness." <u>The Journal of Value Inquiry,</u> 40, 2006. 23–31, A very interesting article on moral conflict and moral remainders.

Books

Barnbaum, Deborah R. and Michael Byron, <u>Research Ethics: Text and Readings</u>, Prentice Hall, 2001

Bebeau, Muriel et al. <u>Moral Reasoning in Science</u>, The Poynter Center

Bulger, Ruth Ellen and Elizabeth Heitman and Stanley Joel Reiser, <u>The Ethical Dimensions of the Biological and Health Sciences</u>, 2nd edition, Cambridge University Press, 2002, A classic in the field.

Elliot, Deni and Judy E. Stern, Eds. <u>Research Ethics: A Reader</u>, University Press of New England, 1997 a well known anthology of essays covering a wide range of basic topics. Available electronically: Chapter 1, <u>"Teaching and Learning Research Ethics,"</u> by Judith P. Swazey and Stephanie J. Bird) and <u>Professionals as Researchers, Researchers as Professionals, a Context for Laboratory Research Ethics,</u>

Erwin, Edward, et al, Eds. <u>Ethical Issues in Scientific Research: An Anthology.</u> New York: Garland Publishing, 1994. 69-89. Selection of essays on key topics, the chapter <u>Fraud and the Structure of Science,</u> by William Broad and Nicholas Wade, discusses bias, objectivity, and the political and social nature of science.

Macrina, Francis L. Editor, <u>Scientific Integrity: An Introductory Text With Cases</u>, 3rd edition, Washington DC: ASM Press, 2005. This text is widely used in courses across the country. Chapter 2, <u>"Ethics and the Scientist"</u> by Bruce A. Fuchs and Francis L. Macrina and Chapter 7 <u>"Managing Conflicting Interests"</u> by S. Gaylen Bradley work well with the material in this module.

Oliver, Paul. <u>The Student's Guide to Research Ethics</u>. McGraw Hill Education, 2003, covers a wide range of subjects.

Penslar, Robin Levin, Ed. <u>Research Ethics: Cases and Materials.</u> Indiana University Press, 1995.

Pimple, Kenneth D., Ed. <u>Research Ethics</u>. The International Library of Essays in Public and Professional Ethics. Ashgate Publishing, Ltd. (In press; expected publication date August 2008.)

Resnik, David B. <u>The Ethics of Science: an Introduction</u>. New York: Routledge, 1998. Well known basic book in this field, the chapter: <u>Science as a Profession</u> focuses on interactions between scientists and society.
Adil E. Shamoo and David Resnik, <u>Responsible Conduct of Research</u>, Oxford University Press, 2002. Excellent, well known book, a must for your library.

Shrader-Frechette, Kristin<u>, Ethics of Scientific Research</u>, Roman & Littlefield Publishers, Inc. 1994. Ch. 2 <u>Professional Codes and the Duty to Do Scientific Research</u> is quoted in this module.

Steneck, Nicholas <u>ORI Introduction to RCR,</u> This is probably one of the basic must-read books for this field, it covers the nine RCR core instructional areas thoroughly and includes case studies, discussion questions, and electronic and printed resources. A standard resource for research compliance and information on the governmental rules and regulations we need to follow.

Whitbeck, Carolina<u>, Ethics in Engineering Practice and Research</u>. New York: Cambridge University Press, 1998. The chapters <u>"Ethics as Design"</u> and <u>Responsibility for Research Integrity</u> (<u>part 1</u>) and (<u>part 2</u>) work well with this module. Whitbeck's comparison of ethical problems with design problems is a well known contribution to research ethics.

Websites

<u>Ethics Updates</u> This extensive site for applied ethics was originally started by Lawrence Hinman, University of California, San Diego.

Indiana University's <u>The Poynter Center for the Study of Ethics and American Institutions</u> is a primary resource for teaching research ethics. They run an annual well known training workshop, <u>Teaching Research Ethics;</u> See their <u>Resources in Ethics</u>, for additional excellent resources. They are the umbrella organization for <u>The Association for Practical and Professional Ethics,</u> (APPE) a major professional society that hosts an annual meeting. Check APPE's <u>"Links"</u> for a listing of other websites to visit.

<u>The National Center for Case Study Teaching in Science</u>, a goldmine for cases

<u>The Online Ethics Center for Science and Engineering</u> This is another major informational site.

<u>The Office of Research Integrity</u> (ORI) U.S. Department of Health and Human Services has an extensive website. This is an especially important resource for compliance issues and training.

The Responsible Conduct of Research Education Committee, (RCREC) originally begun at University of California, San Diego, is now a standing Committee of APPE. From their site you can link to the online, open access, Columbia University RCR course. The RCREC Resources for Research Ethics Education is another major online site.

The W. Maurice Young Centre for Applied Ethics hosts the Applied Ethics Resources on WWW, which contains a separate listing of Research Ethics Resources,

The University of California, San Diego hosts courses as well as seminars: their site, Research Ethics Program, is a well known resource.

The University of Pittsburgh's Survival Skills and Ethics Program is geared to graduate students.

"Is There a Correct Method for Answering Moral Questions?"

Such a method would function in the case of moral questions in ways that are analogous to how the scientific method functions in the case of scientific questions. This latter method does not itself contain answers to particular questions (for example, what happens to the pressure of gas when the temperature is raised). Rather, the scientific method can be understood as specifying how we must approach particular questions *if we are to give scientific answers to them*…Well, if there is a correct method for answering moral questions, similar things would be true of it: it would not contain answers to particular moral questions (for example, whether wilderness should be preserved only if it is economically profitable to do so); rather, it would specify how we must approach *questions if we are to give moral answers to them."*

Regan, Tom, Ed. "Introduction". Matters of Life and Death. New York: McGraw-Hill, 3rd edition, 1993. 4-5.