Online Ethics Center
FOR ENGINEERING AND SCIENCE

A Young Woman's Struggle for Peace

Year

2000

Description

This case discusses the problems faced by a researcher when trying to reconcile faith with science, personal convictions and professional activities.

Body

From childhood, Ann had an aptitude for the sciences. She became fascinated by solar energy when her uncle gave her a solar-powered toy for her birthday one year. As she progressed through school, she began to read about photovoltaics, and she imagined that one day she would be an inventor or a scientist in this area.

When Ann entered college, she enrolled in a materials science program with the intention of eventually becoming a researcher in photovoltaics. She was attracted to the field because it would give her a chance to reach her potential as a scientist, and because this area of research would enhance people's lives by leading to a viable technology that would eliminate dependence on nonrenewable energy sources and contribute to the development of a sustainable world.

Ann was raised in a Christian home and chose to continue to practice her faith in college. She began to ponder how her religious and scientific backgrounds complemented and conflicted with each other, but not to the extent that she significantly changed her routine in either discipline.

During her senior year, Ann applied to various Ph.D. programs in materials science. As she had a strong record, which included original research and several academic honors, she was contacted by several schools. Professor John Doe in Materials Science at Engineering University invited Ann for an interview. They discussed a variety of research projects, including a key aspect of the development of a pliable, lightweight solar panel, which would greatly enhance the performance of solar-powered vehicles. He said that he was pursuing grants for each project and expected that at least one would be funded in time for her to begin research after her first year of coursework. Doe did not discuss the agencies from which he sought funding, and Ann did not raise the issue.

After this visit, Ann had a favorable overall impression of Doe and the Materials Science Department at Engineering U. She knew that Doe was a renowned researcher, and that successful work under his mentorship would help her to establish a successful career. Ultimately, she accepted admission as a Ph.D. candidate at Engineering U. During her first year as a graduate student, Ann was supported by a teaching assistantship and concentrated on her coursework. She did not begin any research, but she did officially nominate Doe as her committee chair.

At the same time, Ann also began to take an academic approach to her faith and attended talks and courses on various topics. In particular, she studied nonviolence, and she found herself drawn to its principles. She listened to many convincing arguments that indicated the necessity for Christians to decline to participate in violence and questioned the validity of the Church's just war theory. One effect of this study was that she became further interested in solar technology, for she came to see control of fossil resources as the object of many nations' aggressions.

The following summer, Doe invited Ann into his office.

"Ann," he said, "I have great news. The Air Force has just approved the grant to study the soft photovoltaic. Seems they have an interest in these materials to operate satellites for reconnaissance and missile guidance. As you know, anything that reduces weight and improves the conversion of solar energy into electricity is a boon to satellite technology."

"That's. . . great," replied Ann, a bit unsure of herself. "Out of curiosity, what other applications exist for this work?"

Doe looked mildly puzzled at this response, thought for a few seconds, and said, "Satellites are the way of communications in the future. Even now, people are depending on them to become more mobile and yet stay connected." He went on to cite other examples. At one point, he noted that individual satellites simultaneously perform civilian and military functions.

Ann went home wondering if she could begin to work on this project, and what alternatives she might have.

Discussion Questions

1. Characterize Ann's dilemma. Is it a conflict of interest or a personal moral dilemma? Depending on Ann's course of action, does Doe have a conflict of interest? (See Question 7.)

2. Does Ann's dilemma change if she is Jewish? Muslim? Buddhist? Hindu? Humanist? If so, how?

3. Identify Ann's goals and purpose as she matures and progresses. To what extent do Ann and Doe perceive differently the relevant applications, goals, or purposes of the research?

4. Does Ann have responsibilities to know and understand the applications of her work? How might these responsibilities depend upon the stage of her education or career?

5. Is Doe obligated to reveal the applications of the research to his advisees and the corresponding funding agencies? Does he have a responsibility to be aware of ethical concerns that others may have about his work, even if he does not share those concerns?

6. How is the funding agency related to the application of the research? Does Ann's dilemma change if:

- a) she pursues the same basic research with funding from NSF or DOE?
- b) she pursues research that has no direct military application, but is funded by the Air Force?

7. Consider the extent to which Ann and Doe have entered into a contractual relationship (written, verbal, implicit). It may help to draw upon your own experience

as a student or faculty member.

- (a) Is Ann bound by this contract if she discovers information that contradicts the initial premises of the contract? Is she obligated to reveal her own attitudes, which may conflict with her research?
- (b) What risks does Ann take if she voices her objections? What risks does she take if she decides to change her research course?
- (c) Does Doe have responsibilities to Ann if Ann determines that she cannot participate in the research, given its intended purpose?

For Further Thought and Investigation

8. Some people may perceive Ann to be "holier than thou." Do you agree, and on what basis?

9. Is there a conflict between science and religion in this case? In general, how are science and religion harmonious? Opposed?

10. (a) Is there a difference between "social order" and "peace"? Do threats of force and/or planned acts of violence maintain or threaten social order? Peace?

- (b) Are all weapons intended for genocide?
- (c) How have religious teachings and other philosophies answered these questions over the ages?

11. University teaching, especially at the graduate level, is influenced by faculty research. Research is typically funded by external organizations that have their own agendas (corporations, government agencies, nonprofit institutions).

- (a) To what extent is the relationship between basic research and research sponsorship discussed in teaching settings? In research settings?
- (b) To what extent do the values and interests of the research sponsors bias the teaching of basic science? Are students aware of these biases? Is objectivity compromised?
- (c) What can be done within the educational system to convey to students the need to understand the applications and implications of science and technology? Can social responsibility be "taught?"

12. (a) To what extent can individual researchers separate civilian and military interests in their own work?

- (b) How are civilian and military research coupled? Independent?

13. The medical profession is generally agreed that the advancement of knowledge - even with the intent of extending and enhancing life -- is unethical if research deliberately compromises human life or health. Guidelines to govern research on human subjects emphasize protection of the individual. This philosophy may be generalized as follows: *It is unethical to enhance the life or lifestyle of certain individuals at the expense of the basic health, will, or dignity of other individuals.*

Consider now that civilian technology (transportation systems, computers, etc.) has historically been developed as a result of military endeavors. Given the generalization stated above:

- (a) Is it ethical to choose to develop civilian technology in tandem with military technology, especially weapons technology?
- (b) Is it ethical to commit certain acts of violence with the intention of ensuring the safety of others?
- (c) Why might medical research be especially concerned with the welfare of the individual at the potential risk of the general population? Why might these factors not apply to warfare?

Notes

Brian Schrag, ed., Research Ethics: Cases and Commentaries, Volume 4, Bloomington, Indiana: Association for Practical and Professional Ethics, 2000.

Contributor(s)

Brian Schrag

Editor(s)

Brian Schrag

Rights

Resource Type

Case Study / Scenario

Parent Collection

Graduate Research Ethics: Cases and Commentaries - Volume 4, 2000

Topics

Conflict of Interest
Controversies
Cultural Awareness and Sensitivity
Dual Use Research
Human Rights
Mentors and Trainees
Military and Defense Research
Public Well-being
Security
Social and Political Conflict
Social Responsibility

Discipline(s)

Computer, Math, and Physical Sciences
Engineering
Material Science and Engineering
Research Ethics

Publisher

Association for Practical and Professional Ethics
Authoring Institution
Association for Practical and Professional Ethics (APPE)