Issues in Teaching Ethics to Undergraduates

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For those of us trained to think and work as scientists, our comfort in handling objective, quantitative data makes it especially difficult to imagine ourselves willingly and competently entering into debate about matters of moral reasoning. The task of educating young scientists about research ethics may seem daunting, but consider the disservice done to them by tacitly fostering the belief that scientific research really is managed and executed as cleanly as we would like it to be.

Ethical concerns impinge on the practice of science in a number of different ways. Attempts to incorporate ethics into an undergraduate science curriculum should be clear on the differences. In part this is because the distinctions are important to grasp in themselves. In part it is because these different dimensions of ethical influence pose distinct challenges for curricular design and pedagogical strategy.

How can various ethical concerns be best tackled in the undergraduate curriculum? At Washington and Lee University, some science courses include basic coverage of ethical practice, many mentors consider ethical research principles an integral part of training, and an interdepartmental course focuses on bio-medical ethics. Each approach has strengths and weaknesses.

Some ethical norms are associated with the practice of science in a very generic sense. These include: ownership of intellectual property, fraudulent data manipulation, plagiarism, exploitation of assistants, and so on. Because these issues concern all scientific disciplines, they can, and probably should, be incorporated into science classes involving the practice of the discipline. Furthermore, mentors should consider modeling and discussing ethical practice in the same ways that they model and discuss scientific practice. In psychological science, most textbooks on methodology include material on ethical norms. At Washington and Lee such material is included in laboratory sections and evaluated on tests. Students read the web site of the major arbiter of ethics in psychology, the American Psychological Association. If a group project requires institutional approval for its conduct, the students as a group prepare a protocol for the University's I*nstitutional Human Subjects Research Committee.* Mentors and professors also have available web-based information on the teaching of ethics in other sciences.

Some ethical concerns arise as a consequence of the entities involved in scientific research. We recoil at the inhumanity of the Tuskegee syphilis studies, but not at the mutilation of some sub-atomic particles. Many objects of scientific research have a kind of normative standing that has implications for the ways in which they may be treated in the course of that research.

The curricular implications are (at least) two-fold. First, these kinds of concerns impact the various scientific disciplines differentially. Psychology is more deeply involved with issues of human and animal welfare than, say, physiology, physiology more so than biochemistry,

and so forth. Second, the line drawing between ethical and unethical behavior is more difficult in this domain. In part this traces back to controversies regarding the moral standing of non-human animals - can they be treated in ways that humans cannot? Does status on the phylogenetic tree make a difference? In part the difficulty revolves around issues of informed consent in human research. Think of the desperate AIDS patients willing to try an experimental drug before the test protocol has been completed.

Such complex issues produce conflicting opinions and have lead to conflicting moral intuitions. The consequence, for curricular design, is that these issues are much more likely to lead in the direction of open-ended and unresolved ethical discussions than the examination of the internal constraints on general scientific practice. Of course the discussion can be brought back down to earth by invoking the explicit standards that have been developed for research subjects. Students take lab courses and join faculty mentors in the conduct of real research, not only to gain expertise in data collection and analysis, but also to learn about the scientific enterprise. Certainly it is worthwhile to help students understand that the design of any study employing, say, human subjects must take certain standard ethical principles into account. Nevertheless, there is no avoiding the fact that these standards embody particular stances with regard to the controversies just mentioned and likely will not satisfy everyone.

The weaknesses of approaching ethics via scientific practice and mentoring alone may best be seen in the final set of ethical controversies. The issues discussed so far involve the ethics of doing science, but some of the ethical concerns relate to the nature of scientific knowledge itself. These problems arise in at least two ways. One is the obligation to put one's knowledge to work to do good when one is (relatively) uniquely positioned to do so. The global warming debate, for example, is fraught with political controversy, charged emotions, impassioned rhetoric, deep misunderstandings of science as a process, irrationality, and so forth. Whether we overestimate or underestimate global warming, there are significant well-being and economic consequences. A person working in this area might be tempted to steer clear of public debate. Would it be irresponsible, under these circumstances, to simply disengage and make no effort to get the truth out with regard to the global warming threat?

A second question of social responsibility concerns the very generation of certain kinds of scientific knowledge. Many scientists who worked on the Manhattan Project had serious crises of conscience upon witnessing the detonation of the first atomic bomb. Clearly, there is the argument on the other side – if we don't develop it, Hitler will. Would the situation have been different with no Hitler in the equation? Are there things we are better off not knowing? Are there areas of scientific understanding that it is simply unethical to pursue?

Incorporating social responsibility questions into a standard science course might be difficult. Exploring these broader normative concerns typically takes a special curricular vehicle — a special topics course, perhaps best team taught by scientists and others with a background suitable for reflecting on these larger questions of value.

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