Applying CPR to the Teaching of IT Ethics

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ABSTRACT
The approaches typical of philosophers teaching introductory ethics are often strikingly different from those commonly used in information technology courses. Instead of teaching methods and topics commonly accepted across the discipline, philosophers typically immediately introduce students to competing theories and approaches. Unfortunately, a pedagogical approach that emphasizes this "essentially contested" [7] nature of philosophical disputes has the risk of bewildering students and occupying much course time. Conversely, using an artificially narrowed and prescribed approach to teaching IT ethics such as professional codes of ethics or historical case studies does not do justice to the topic or to the students. Here the student may end up with a good appreciation of historical codes or cases, but little grounding in philosophical thought to help them in the unknown situations that will arise in their professional careers. In seeking a middle ground, we survey the literature regarding instructional methodologies for teaching ethics in engineering and technology. Following is a discussion of disputes among philosophical ethical theories, especially utilitarian, deontological, and virtue ethics. We then suggest a simplified framework that captures important elements of these theories while still allowing students to use a unitary conceptual framework in ethical decision-making. This approach, conveniently labeled the CPR Framework, includes the three elements of Character, Principles, and Results. It incorporates elements from the different theories into a framework to be used by students, both in class discussions, and hopefully, in their professional careers.

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1. INTRODUCTION
Teaching information technology ethics courses can require a delicate balance dealing with the coverage of philosophical ethical theory. While philosophical theories guide and inform ethical debate, they can also become a distraction from applied practical ethics because of the many overlapping and even conflicting sets of ideas. As information technology faculty, we need to teach both the core theories and the applied practice. The question arises, however, in what should be covered and how much time to devote to each topic. While some programs of study may include a “typical” philosophy course, others may include a single “professional issues” course or modules incorporated into regular courses. [11] Thus the amount of time available can become a problem. After all, could you, or more importantly, should you, try to condense an entire ethical theory course into a two week module of a professional issues class?

As a starting point, we should determine exactly what the objectives are for teaching IT ethics. In base terms one objective could be to simply satisfy the ABET CAC requirement of “An understanding of professional, ethical, legal, security and social issues and responsibilities.” [1] More important, however, is the development of our students as wholly educated persons and professionals. As a guide to this end, Harris et al [8] list nine objectives for the teaching of applied ethics to students. Somewhat summarized, these are to help the student:

- Stimulate the ethical imagination
- Recognize ethical issues
- Analyze key ethical concepts and principles
- Deal with ethical disagreement, ambiguity and vagueness
- Take ethical responsibilities seriously
- Increase sensitivity to ethical issues
- Increase knowledge of relevant standards
- Improve ethical judgment
- Increase ethical will-power

When trying to develop and meet these objectives there are the questions of what should be covered and how it should be covered. With respect to recognizing ethical issues, a good start would be with a professional code of ethics. By reviewing the codes of ethics of various computing societies, key words or phrases are immediately apparent, such as “obligation” in the AITP Code of Ethics. [3] These include obligations to the client, the employer, society, the profession, and finally to oneself. With this number of stakeholders, conflicts of obligations or responsibilities are sure to arise. These conflicts could include honesty, intellectual property, privacy, complete disclosure, competence, and even professional development. Also important
are the current laws and regulations having to do with these issues. While these problems and issues may be well-established, the IT domain in which these are applied is changing rapidly. The rise of social media and internationalization has created many new areas where the application of IT ethics has been required. Covering just applied topics, however, would be doing a disservice. Thus there is also a need to teach the underlying theories behind ethical decision making, though balancing these topics can be a problem.

2. INSTRUCTIONAL METHODOLOGIES FOR ETHICS INSTRUCTION

Though it is essential to include ethics in the IT curriculum, and not just because it is has been required for accreditation, one must recognize that as a subject matter it has substantial differences from engineering or design. Whereas a technologist or engineer typically tries to design a product or system from scratch to solve a distinct problem, in ethics one is typically faced with a conflict or dilemma where something has gone wrong. Perhaps someone else has failed to carry out a responsibility and the professional has to respond or she is urged to subvert a norm because of some other value, and she cannot go back and start over. The situation has to be addressed as it is, in all its messiness. To use a term from the anthropologist Claude Levi-Strauss in The Savage Mind, the ethical engineer is forced to think more like a bricoleur than an engineer. The bricoleur is more of a tinkerer or handy man, forced to rely on whatever tools are at hand to deal with a problem. Now students may take this to the extreme and fall into the facile relativism of “anything goes”. But ethical decision-making differs from bricolage in that students can and should draw on the wealth of ethical theoretical reflection in constructing their responses to cases. Of course, in the classroom it would be good to end any class discussion of a problematic situation with a discussion of how the whole mess could have been avoided in the first place. In other words, what institutional mechanism or better educational effort might have avoided the conflict or dilemma. Going back to the main point, however, where has ethical theory fit into current instructional methodologies?

Haws [9] reviewed 42 conference papers from the American Society for Engineering Education for the years 1996-1999. He writes that “engineering attracts convergent thinkers who tend to become oblivious to the wider ramifications of their work.” Thus ethics education needs to “enhance the efficacy of our students divergent thinking, help them to see engineering outcomes through the eyes of non-engineers, and give them access to the common vocabulary of ethical articulation.” In his analysis, he determined that the “six basic approaches to the introduction of engineering ethics content center on the Professional Engineer’s Code of Ethics, humanist readings, grounding in theoretical ethics, ethical problem solving heuristic, case studies, and service learning.”

Haws [9] viewed the Code of Ethics as “more important to our students profession development than to their ethical development” since it does not develop a student’s divergent thinking, to think like non-engineers. Humanist readings do allow this other perspective to grow, but can be difficult to include in a packed engineering or technology curriculum. He feels that “theoretical grounding is critical, because none of the other pedagogical approaches gives engineering students access to the shared vocabulary of ethical thought.” The use of an ethical problem solving heuristic was exemplified by the “Seven-step guide to ethical decision-making” [6] from Michael Davis. Case studies were mentioned in the majority of papers reviewed by Haws, but he expressed concern that, without theoretical grounding, the use of case studies may lead to “ethical relativity – that everyone’s ethical ‘opinion’ is of equal value.” Lastly, Haws gives a couple of examples where service learning courses that included a Social Impact Analysis and reflective writing exercises were used to broaden the students’ perspective.

In a different and later survey of papers, Hipp [10] classified four different approaches that satisfy ABET criteria. First was micro-ethics, the use of a code of professional conduct from a professional organization. Examples here for an IT professor would be the codes as developed and presented by ACM, AITP or CIPS [2][3][4]. Hipp defined the second approach as macro-ethics, the classical philosophical ethical theories such as virtue, duty, and utilitarian. The third was heuristics, a procedure for students to follow when they have recognized an ethical dilemma. Last was casuistry, the use of case studies to expand and apply ethical thought. Hipp [10] recommends that

we should avoid cases, or minimally too many cases, that consist of a decision at a crucial moment with only a few options – one or two of which are morally acceptable. Rather, cases should be more open-ended to allow students to think creatively about the moral decision-making process, promote personal and professional moral accountability, and reasonably map to contemporary engineering practice

He then proposes that instructors follow a three step process that integrates these four approaches. The first step is Foundations, consisting of the study of both classical ethical theories and professional society codes of ethics. Next is Guidelines, a heuristic provided by Hipp to guide the students in making ethical decisions. The third step is Application, using both historical case studies and possible ethical situations that would be seen by students in their professional life.

Connolly [5] recommends a very different approach. He is concerned that faculty of information and computing technology (ICT) often focus on an evaluation of the ethical impact of a technology. Since all of the effects of any technology are unknown, however, the use of one or two macro-ethical theories that depend on certainty for evaluation makes any evaluation incomplete. He states that we need “to move away from the preoccupation with the ethical evaluation of ICT impacts and instead emphasize the social context aspects of the Social and Professional Issues knowledge area.” By doing this, “While this may seem to some an abrogation of moral duty, it is perhaps the path that may end up being ultimately more socially responsible because it exposes our students to a more socially-nuanced understanding of their profession.”

On a cautionary note, Pfatteicher [13] makes the point that there is a difference between teaching and preaching. That is, “there is a vast difference between being responsible for documenting student’s behavior and being responsible for documenting their knowledge.”

3. DANGERS IN TEACHING

PHILOSOPHICAL ETHICAL THEORIES

Each discipline has its own conventions. Many philosophers think of philosophy as basically an activity, that one does philosophy, not simply study or learn about it. Thus philosophy students are
often expected or at least encouraged, even in introductory classes, to argue, that is to develop their own views on the various issues central to the discipline. In this it is more akin to an art class such as Introduction to Drawing that expects students both to practice techniques of drawing that the instructor shows the student and as well to actually draw figures of the student’s choice. What is distinctive about many philosophy classes is that it expects students to make choices of an advanced level at a quite introductory stage. It is more demanding in this respect than say, an introductory biology course which combines both lectures and labs, but in which the labs are of staged manner with expected outcomes of the required experiments.

Thinking of philosophy as an activity is not the problem. What is problematic about introductory philosophy courses is the tendency to concentrate on coverage of the basic conceptual divides of the discipline. For example, students in an introductory ethics course typically ponder basic differences between the deontology of Immanuel Kant and the utilitarianism of John Stuart Mill and then are charged with writing a paper adjudicating between them. Whether or not that is reasonable in a semester long introduction to philosophy course is debatable, but we believe that it is not a reasonable approach to take in an ethics and information technology course, especially if ethics is just one topic in a professional issues class.

Philosophers also get worked up over theoretical simplicity. Start with a number of basic intuitions about what is right and wrong, and try to see if they can explain all of these in terms of a single theory. For example, virtue ethics emphasize the individual’s moral character, with actions coming as a result of that character. Deontological or duty ethics emphasizes a person’s obligations while downplaying the results that those obligations may have demanded. Utilitarian ethics look at the “greater good” with actions being more moral if they maximize happiness and minimize suffering. This theory attempts to explain duties and virtues in terms of what promotes the greater good. Care ethics centers on relationships while rights ethics focuses on human rights. Each starts from a different area, and they cannot cover all the basic intuitions equally plausibly or otherwise be totally reconciled.

This presents a dilemma for instructors in IT ethics courses. Given that even for upper level students there is a great deal of background on the technologies and the rapid social changes that are occurring, how much can one also introduce students to the theoretical intricacies of philosophical ethics? These theoretical debates, however, are not necessarily relevant to the sort of issues one deals with in teaching a course in applied technological ethics. The danger is that students come away with a sense of philosophy as a succession of contentious theories, without a workable framework or approach to deal with the inevitable problems they are likely to face. Needed is an integrated framework that can be used by a student, or added onto if a student takes a subsequent course.

4. A SIMPLIFIED FRAMEWORK RECOMMENDATION

The authors believe that we need the information technology student to go beyond using a heuristic or a case example and become a moral agent, grounded in classical theory. Further, it is the experience of the philosopher author of this paper that many students tend to take the stance, when pressed, that their own ethical position is a combination of the theories that they have studied. Very few have a well worked out sense of how the components that they have gleaned from the course are to be fitted securely together in a logically consistent, well reasoned fashion. As a first approximation of an ethical belief system, however, their intuitions have considerable validity. In order to help students in developing this belief system, we advance a framework that we believe allows a modest amount of dealing with some of these theories while allowing a relatively easy connection to the philosophical underpinnings. In other words, a job aid for the bricoleur to “wrestle with ambiguity.”[13]

We have termed this the CPR approach as a helpful (we hope) mnemonic device. The CPR stands for Character, Principles, and Results, a way of linking the discussion of ethical theories into a heuristic. The character portion covers ethics of virtue and the more recent ethics of care. Principles refers to the application of the deontological or duty approach, but can also stand for rights ethics. The prime example of results (consequences) is the utilitarian approach to ethics as promoted by Mill. What one wants to avoid is the pedagogical equivalent of the old biological slogan “ontogeny recapitulates phylogeny” which claims that the developmental stages of the individual organism follows evolutionary stages of the various species. That is, to make the introductory student follow the stages that philosophical debates took. Of course, that is not done, since otherwise students would all start with a discussion of virtue ethics from Plato and Aristotle.

We recommend that before introducing the CPR framework, the class discusses a few cases which the instructor has chosen with an eye to covering the various elements of CPR. Cases involving honesty or cheating have worked well, perhaps because students have thought about them in their own education, and can supply many cases of their own. Including one where a teacher fudges test scores to meet an arbitrarily imposed standard is helpful to prompt students to think about why professionals cheat. Here the agenda is not so much “what is right or wrong” as why is it wrong. Is cheating wrong because the results are damaging? Because it violates a principle? Because it violates the relationship between professional and client? Then the instructor can develop the framework to the depth that is appropriate given the course restrictions. For example, the number of philosophical theories covered from Table 1 can vary depending on time.

<table>
<thead>
<tr>
<th>Table 1 - The CPR Framework</th>
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<tbody>
<tr>
<td>Character</td>
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<td>Virtues - Aristotle</td>
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<td>Care - Gilligan</td>
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| | Natural Law - Aquinas | | }

When applying CPR, students would be expected to think about a situation, perhaps by reading a case study or listening to a guest speaker. They might be expected to first clarify the facts of the case, identify the various parties or stakeholders, etc. Next they should identify different courses of action in response to the case. Following a guide like the “A Framework for Ethical Decision
Making” [12] would be useful at this point. CPR comes into play when they are asked to think about or compare these responses. Often students will initially focus on the consequences or results of the different actions. Who is helped? Who is hurt? To what extent? Here is where instructors typically have to get them to think about long term consequences in addition to immediate ones. Next one can turn to the issue of what ethical principles are upheld or broken by the action – typically more on which are broken! Here one engages with rights and duties, with the Golden Rule (What if everyone did that? Well, they won’t, etc.) But one also may have issues of what seems natural or unnatural, culturally expected or not. Here the issues can both be between competing principles, or between principles versus results. The analysis may seemingly end here, or get bogged down here. But students may still have valuable reservations. For example, the argument thus far may have supported a conclusion of less than full disclosure. And students may object with “It just seems to be dishonest” or “My parents said that you always tell the truth.” This is where virtue ethics comes into play, and where students can start to inquire of themselves.

Two common examples that could be discussed are illegal music downloads and software piracy. Even putting aside the legal implications, in both cases we have found that the Results approach is discounted by students. After all, in their minds the greater good is that they have the music or the software. The Principles approach would probably key into a discussion of rights. But the intellectual property rights of a giant corporation, or even an admired artist, are not always viewed importantly by students unless we can get them to view the situation from the developer as opposed to the user. Thus we are left with a question to the student, namely, what does this action say about you, or, in other words, what does this action display about your character?

5. CONCLUSION
We believe that the CPR framework fits well with current instructional methodologies. It gives students a structured approach that connects to the classical ethical theories of Western philosophy, as covered by Haws [9] and Hipp [10]. Even though at a basic level, acquainting students with humanist figures such as Aristotle, Kant, and Mill is valuable in itself. But it also shows how the theories connect to a heuristic that is a valuable guide when dealing with a specific case. It does not prescribe a definite point of view. Some students will strongly uphold following a certain principle or rule; others will place more emphasis on virtues or results. But they should come to a better understanding of the differences, and thus better “deal with ethical disagreement, ambiguity, and vagueness.” [8]. As part of an entire curriculum, it can be introduced in an introductory IT course, then used as appropriate in other courses, and later revisited in greater depth as part of a senior capstone or service learning course. It is the authors hope that by teaching CPR we can help our students develop their ethical potential, becoming more complete moral agents, both for their profession and themselves.

6. REFERENCES