Using the Socratic Method to Teach Computer Ethics

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INTRODUCTION

The meanings of words (which are nearly always taken for granted) evolve out of a process of social consensus. During times of great social stability, meanings are well established and to question these meanings would make one look foolish. However, in times of social turmoil and social change, these meanings evolve and questioning these meanings is an important part of the process of reaching a new consensus. Socrates lived in a period of great social turmoil in ancient Greece when traditional values (particularly personal and political) were changing. In this period of evolving meanings, Socrates contributed to the public debate by asking questions of the form - "What is X ?" where X could be justice, virtue, beauty, or any other concept that was worthy of scrutiny.[1][2] The Socratic method of questioning is now famous and is used as a teaching method as well as a method of philosophical inquiry.

In the twentieth century, we have seen enormous social upheaval, not the least of which is the advent of the so called "Information Age". Information technology has changed many of our habits and routines, while forcing us to face new personal, social and political issues. The collection of large amounts of personal data in databases has led to the questions - What are the limits of personal privacy ? and Is privacy a right ? The distribution of software and the availability of information over the Internet has given rise to the questions - What is property ?; What is ownership ?; and more specifically - What is stealing ? The promises of artificial intelligence have led people to ask - What is thinking ? and What is intelligence ? The introduction of information technology in organizations causes power shifts leaving one group with greater power and another group with less. This shift in power leads us back to the classic Socratic questions - What is fair ? and What is just ? Unreliable software, bad data in databases, and irresponsible behaviors of computer hackers have caused us to revisit personal responsibility and recall the classic questions of moral philosophy - What is right ? and What is virtue ?

At a larger social level, information technology has impacted our lives in significant ways. It is creating a skills gap between the technologically literate and the technologically illiterate. Instead of calling in an order for pizza, we fax it in. Instead of calling someone on the telephone we send them an email. Instead of sitting around the television at an appointed time to watch our favorite television show, we record it and watch it at some other time. Sometimes we sit back and wonder where all this technology is going ? On the balance is life better or worse ? This reflection leads us back to basic questions such as What is the purpose in life ?, What is quality of life ?, and, more recently, How does technology affect the quality of life ?

The Socratic method of questioning provides us with a means for examining these difficult questions both in the classroom and in public debate. When used in the classroom, the Socratic method offers three benefits. First, the approach of Socratic questioning stimulates discussion and allows students to approach ethical issues with less apprehension. Instead of directly addressing the issue of whether copying software is right or wrong, students can explore why stealing is wrong, and whether or not copying is stealing. This creates an environment that is more open for discussion because the students are less afraid of uttering a wrong answer. Second, Socratic techniques can be operationalized, thus placing less burden on the discussion leader. As will be shown later, there are guidelines that the instructor can follow to formulate questions and stimulate discussion. Third, the Socratic methods avoids moral indoctrination and helps develop the student's ability to make moral judgments. Instead of telling the student what is right and what is wrong, the instructor helps the student figure it out. Thus, when the student confronts a new situation, he or she has the moral reasoning tools to address the new situation. The purpose of this paper is to introduce the Socratic method as a valuable pedagogical tool for teaching computer ethics and provide some operational guidance for implementing this technique.

THE SOCRATIC METHOD

There are several commonly used approaches to moral development including moral indoctrination, value clarification, and cognitive development [3]. Moral indoctrination seeks to pass the values of society on to individuals by instructing them with respect to right and wrong. Moral indoctrination does not question values and thus

does not develop moral reasoning. This approach is of questionable value in computer ethics since it assumes that ethical issues are fully resolved and that the student need only learn the socially adopted positions. It does not prepare the student to confront new ethical dilemmas in the future. Value Clarification [4] [5] attempts to help students clarify and understand their own value systems. It attempts to aid individuals only in the clarification of their own values and does not attempt to prescribe values. The major strength of value clarification is that it is highly operationalized providing a wealth of teaching techniques and strategies. For example, one of the early books on value clarification provided seventy nine techniques that could be employed in the classroom [6]. Most of the techniques address children in earlier stages of development. However, some techniques can be adapted and applied to a college level computer ethics course. These techniques include: making lists of ethical and unethical activities; identifying extremes of ethical and unethical behaviors; ranking activities on a continuum; peer evaluation; and voting on the moral status of an activity. The cognitive development approach of Lawrence Kohlberg [7] goes beyond the identification of individual values and seeks to develop an individual's ability in moral reasoning. Advocates of the cognitive development approach have identified six levels of moral development and seek to raise the level of an individual by confronting him or her with moral dilemmas that are not solvable at their current level. The cognitive dissonance that results, forces them to think at a higher moral level.

The Socratic method, as adapted in this paper, avoids moral indoctrination, employs techniques similar to those used in value clarification, and has, as its goal, to develop moral reasoning and raise the student's level of moral development through cognitive dissonance. Thus, it is based on existing research in moral development and has been adapted to the unique problems in teaching computer ethics. The Socratic Method is often called a dialectic from the Greek word for dialogue. Socrates would pose a question of the form "What is X ?" and other participants in the discussion would offer their understanding. Typically, the discussion would wander through the key issues in the concept and conclude by saying that they really did not know what X was. However, in the process of the discussion, much about the nature of X was revealed.

The key attributes of a Socratic dialogue are:
1. a concept is offered for discussion,
2. participants offer their understanding of the concept,
3. as the discussion evolves the participants attempt to clarify their understanding of the concept through discussion,
4. the process is facilitated by a questioner who asks key questions that attempt to get at the heart of the concept.

For example, consider the problem of software piracy. The slogan "Don't copy software" is inadequate to address the dilemmas that practitioners face in the everyday world of business. Using the Socratic approach we can gain greater insight into the issue and begin developing a morally justifiable position. First we can begin by establishing extremes. We do this by looking for the most flagrant example of software piracy and the most overly conservative reaction to the problem. For the most flagrant example, we might propose somebody who bought a software package and then sold copies to other people. Not too far behind that might be someone who acquired a copy of a software program and then

freely distributed copies of the program. For the most overly conservative reaction we can imagine someone who will not make backup disks for fear that someone might steal the disks and make copies of the programs. Most moral issues involving software piracy fall in between these two extremes. Next we ask the class for other instances of copying software. The class might suggest a whole range of possibilities from making a copy to analyze for purchase, to not paying for shareware. After accumulating a list of situations the class can vote on the moral quality of each. The voting gives each student a sense of how others feel about the issue.

The dialectic component in this approach goes beyond the identification of individual values and proceeds to develop moral reasoning through a reflective social process. It consists of three components: discussion, questioning, and concept analysis. The purpose of the discussion is to have a participatory social environment in which understanding can be achieved as a group consensus. The purpose of the questioning is twofold. First, the instructor can use questions to stimulate the discussion and focus on the clarification of the concepts. Second, the questions asked by the teacher can serve as models for the students to ask questions on his or her own. The purpose of the concept analysis is to drive the nature of the questions toward the understanding of a concept.

Concept Analysis

A person who copies a software program might justify their action by saying that what they did was not really stealing. What they are saying is that the concept of stealing defines certain behaviors which do not include the action they just took. In order to be certain that this is the case, we need to refine our understanding of the concept of stealing and concept analysis is the technique we use to do this. Concept analysis seeks to refine the understanding of a concept by asking questions that go to the essence of the concept. When doing concept analysis in the classroom there is a tendency to avoid to this taxing intellectual process by simply deferring to the dictionary or to the law. However, few people know either the dictionary definition of a concept nor the body of law (if applicable) surrounding it. Further, even if they did know the dictionary definition or the law they may choose to ignore it because they may believe it does not apply to their particular situation. Hence, most people act in accordance with their understanding of a concept and it is that understanding that concept analysis attempts to find. Following are some general strategies used in concept analysis. These strategies have been adapted from Wilson's Thinking with Concepts, [8] refined and expanded upon.

1. Look for exemplars: Find examples of stealing that everyone agrees upon. (e.g. A burglar breaks into an appliance store in the middle of the night and takes a toaster oven.)
2. Look for counterexamples: Find examples of actions that are like stealing but are clearly not stealing. (e.g. A customer comes to the store during working hours and purchases a toaster over.)
3. Attribution: Determine the characteristics of the action that is stealing. They should apply to the first case and not the second. (e.g. middle of the night, receives goods without paying)
4. Borderline cases: Find examples that are not clear. Borderline cases help to focus on key attributes. (e.g. What if the thief and the owner are the same person ?)

5. Socratic Shuffle: List several examples and then try to find a definition that covers all of them. Once the definition is found find examples of stealing that don't fit the definition.

6. Inclusion of Particulars: Search for specific examples and determine whether or not they are examples of stealing.

7. Continuum Construction: Rank all examples in a continuum from clear cases to counterexamples.

8. Invent Cases: Sometimes it is necessary to construct cases to test essential attributes. These contrived cases may be unlikely to occur, but help clarify key characteristics. (e.g. The shop owner and the thief are the same person. He came to the store in the middle of the night because he needed a present and forgot his key. But, he did not record the fact that he removed a toaster.)

9. Embed Within a Social Context: The meaning of a concept is often defined by its social context. (e.g. If the owner of the store was your favorite uncle you might be less inclined to call the action stealing. If the owner was you next door neighbor who repeatedly dumps his lawn clipping in your back yard, you might be a little less lenient.)

Concept analysis does two things. First, it helps individuals clarify their thinking. And second, when used in a discussion, it helps develop a consensus view of ethical behavior.

Group Discussion

The purpose of the group discussion is to explore a moral concept in a social context and attempt to reach a consensus regarding the moral boundaries of that concept. Discussion in an educational setting is a more refined activity that discussion in a normal social setting.

"Discussion is a form of group interaction, people talking back-and-forth with one another. What they talk about is some issue, some topic that is in question for them. Their talk consists of advancing and examining different proposals over the issue. The proposals may be various understandings, facts, suggestions, opinions, perspectives, experiences and the like. These are examined for their contributions toward resolving the issue." [9]

Dillon offers several implicit attributes of a productive group discussion. Members of the group take turns offering different views on the issue under consideration with the intention of coming to an understanding. The participants must be reasonable, truthful, respectful of each others opinions, and unified in their commitment to understanding the issue. They must be judicious in that they don't accept or reject opinions arbitrarily and they must have a concern for evidence or rational support of arguments. The discussion must be orderly, open to differing opinions, and accessible to all participants. In addition, the members must share a skepticism of authority, open-mindedness, judiciousness, and self awareness. The individual contributions should be clear, concise, and guided by a desire to understand the issue being discussed.

An inspection of some of these characteristics, or their absence reveals the nature of discussion. If all participants already agree with one another, or if they are not interested in more fully understanding the issue at hand then the discussion will go nowhere and no insight will be gained. If the members are not skeptical of authority then they may look to the discussion leader for answers or to the dictionary for definitions rather than trying to understand things for themselves. If they are not open minded, then they are not likely to consider the positions of others and the discussion is likely to become a debate instead. If the discussion is not orderly then it may deteriorate into a shouting matching or just a continual rehash of the same points without any progress. Similarly, an absence of other key attributes may reduce the discussion to a less productive form of group interaction.

In computer ethics there are many fertile topics for group discussion. Is copying software really stealing ? What is stealing ? Is software property ? Is breaking into a computer the same as breaking into a person's house or office ? The list goes on and on. Following a value clarification exercise to help students identify their own values with respect to an ethical issue, a group discussion can help them clarify their own understanding of this issue, sharpen their moral reasoning, and work to develop a social consensus.

Questioning

When a discussion group is formed either in a classroom setting or on an ad hoc basis, there is no way to ensure that all group members share the same commitment to search for meaning. Some group members may be disinterested in the topic. Some may be more interested in convincing others than in achieving more insight. Some may wish to add confusion to the topic rather than clarification. The discussion leader is not in a position to force the group members to adhere to the tenets of good group discussion. The only tool that the discussion leader has to shape the discussion is the use of questions [10][11]. Questions can be used to draw members into the discussion. They can be used to force members to be more self reflective. They can be used to promote the search for meaning and understanding, and they can be used to help the group achieve consensus. For the purposes of this paper only three broad categories of questions will be addressed.

The first type of question is a process facilitation question. These questions are used to make the group discussion process productive. The discussion leader may ask questions such as "Is this topic even worth discussing ?", or "Mr. Smith, what do you think of Mr. Jones' claim ?" Process facilitation questions are important for two reasons. First, they help to get group members to buy into the discussion format. And second, they keep the discussion going in a productive direction.

The second type of question is a concept refinement question. These questions were discussed earlier and serve to help the group in achieving a greater understanding of the topic under consideration. Clearly, these type of questions assume that the group members have accepted the group discussion format and hence rely on the success of the first type of questions.

The third type of question attempts to get at underlying justifications or inconsistencies in a group member's position. In this category there are three types of questions: rational, emotive, and disposition to act. Rational questions are of the form: "What do you think about X ?" and calls the student's reasoning processes into play. Emotive questions are of the form "How do you feel about X ?". Emotive questions call for an affective response and may not agree with rational claims. Questions that inquire about

a disposition to act are of the form: "What would you do in case X ?" and seek to determine what the student would do if called to act in a situation. Asking questions of these forms identifies inconsistencies in the student's moral concepts and sets the stage for further inquiry into the nature of the concept.

PUTTING IT ALL TOGETHER

Operationally, this method consists of three distinct stages: exploration of individual values, concept analysis and refinement, and group consensus. Each will be address in turn.

Exploration of Individual Values

Begin with an ethical issue in computing such as software piracy and ask the class to come up with an example of copying software that everyone would agree is ethical. Similarly, ask for an example of software copying that everyone would agree is clearly unethical. Then ask each student to list three examples of copying software that they believe is unethical, three examples that they believe is ethical and three examples where they aren't sure. Then ask the students to volunteer scenarios in each of the three categories and write them on the board. Have the students rank the activities from the most ethical to the most unethical. When there is not a clear agreement have the class vote on the ranking. The activity up to this point should be nonjudgmental, in keeping with the tenets of value clarification. The only feedback on the positions at this point should be the voting that occurred and the evaluation implicit in the ranking. This stage allows the students to participate in an ethical analysis in a non-threatening way. It also allows them to see that the boundaries of ethical behavior are not completely clear and that not everyone agrees on what constitutes ethical behavior.

Concept Analysis and Refinement

The next step is concept analysis. You can begin by asking what are the attributes of scenario X that make it less ethical than scenario Y. For example, if we claim that copying software is unethical because it is stealing, we may explore why stealing is immoral, what we mean by copying, and why copying is stealing. The techniques listed earlier can be used to gain insight into the nature of the concepts being explored. The goal of the concept analysis is to help the students explore the assumptions inherent in their ethical beliefs and to clarify the concepts that make up those assumptions. Exploring their assumptions may also lead to inconsistencies in their moral views that may need resolving.

Group Consensus

The concept analysis should be done through group discussion, drawing out different perspectives on the concepts from different students. Eventually, the discussion should move toward a consensus. Developing a consensus should be the goal of the discussion with each member contributing observations that may help achieve that consensus. The purpose of the consensus building is to show how ethical positions are largely a matter of social agreement and that it is possible that people may disagree with regard to what constitutes ethical behavior.

EXPERIENCES IN THE CLASSROOM

This method was developed over several years in response to specific problems encountered in the classroom at both the undergraduate and graduate levels. For example, some students are resistant to discussing computer ethics because they feel that ethics is 'just a bunch of rules to follow'. Other students just want to be told what the rule are and defer to the instructor or seek guidance from laws or policies. The focus on rules often deadens any productive discussion of computer ethics. The method discussed here, avoids the focus on rules by demonstrating that the rules defining ethical behavior are a product of social consensus and thus open for discussion.

A second problem encountered in the classroom is that of getting the students to participate in a class discussion. Students often feel reluctant to offer a personal critique of an ethical position because they are afraid of being wrong. The initial value clarification exercise draws students into the process because they are simply reporting how they feel about specific behaviors in a nonjudgmental environment. By the time that any evaluation occurs, they have usually bought into the process.

The third problem is the most troublesome from an ethical perspective. Students will often proclaim a certain ethical position but will later admit that they might not actually behave that way. Consider the following example. Bob has three computers at home: one for himself, one for his wife, and one that the kids share. Bob buys a computer game product and installs it on all three computers. Since Bob only bought one copy of the software and installed it on three computers is his action unethical ? Most students would agree that buying one copy and installing it on three machines is unethical behavior. Yet when you ask a specific student what they would do in that situation, most of them would do exactly what Bob did showing a gap between what students claim is ethical behavior and what they would do in a given situation. The method described in this paper addresses that gap by asking more personal questions such as "What would you do in a given situation ?" and "How do you feel about someone who chose a particular action ?"

This method has evolved to address problems encountered in teaching computer ethics and has been used successfully in the classroom for students at all levels (from undergraduate to doctoral) in the university programs. It draws students into the discussion, helps them examine their ethical positions, and demonstrates the role of social consensus in defining ethical behavior.
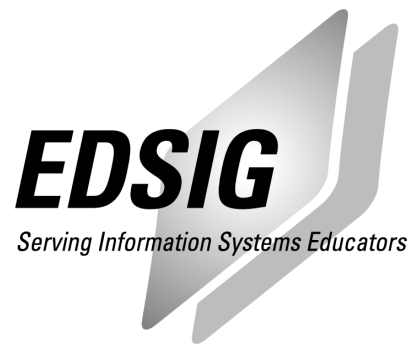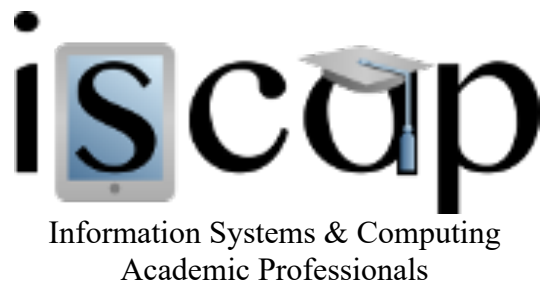
THE SOCRATIC METHOD VS. OTHER APPROACHES

Currently, he most common approach to teaching computer ethics is "raising awareness". The justification for this approach is that if you make students aware of an ethical issue they will respond by doing the right thing. While this position is well intentioned, it is also naive. Raising awareness does nothing to develop the moral reasoning capabilities of students. It just gives them something to worry about without any tools for addressing the problem. The second most widely used approach is rational analysis. This approach does help develop the moral reasoning of students but fails to connect with them experientially. While it does

help develop their moral judgement is also leads to gaps in moral consistency such as the one described earlier involving the game software. The Socratic method as described in this paper augments rational analysis and considers the student's moral sympathies as well as reasoning. The third most popular approach to teaching computer ethics is to survey classic ethical theories such as Kantian ethics and utilitarianism and apply them to problems in computer ethics. The problem with the classical theories is that students often have trouble making the leap from Kant's Categorical Imperative to software piracy. Students can often tell how they feel about an issue and can usually figure out why they do or don't agree with a particular position. But, the leap from utilitarianism to software piracy is often quite beyond the reach of the students of computers and information systems.

In conclusion, the method described in this paper is one approach within a portfolio of techniques for teaching computer ethics. It can be used as a stand alone technique, or it can be used in conjunction with case studies, role playing or regular classroom discussions to tease out the difficult ethic issues. This technique can be used to explore ethical issues in a single class that is contained in a semester course that surveys information systems. If the course is a full semester course, this technique should be supplemented with a survey of ethical theories that would arm the student with a wider variety of ethical frameworks from which to evaluate an issue. Thus, the technique is quite flexible and can be used in a variety of circumstances.

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