Ethics and Empowerment: An Ethics Module for Introduction to Computers

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I. Introduction

We intend to explore a different dimension of practical and professional ethics, one that we can characterize as more positive. The dominant view of ethics is that it functions as a limit to power in that it establishes barriers beyond which we cannot go. (A colleague of our talks of la etica como un baden, ethics as a speed bump, an obstacle that we have to get around in pursuit of something more important.) In this paper, we want to do several things: (1) argue that ethics instruction actually empowers students in very interesting and fundamental ways; (2) delineate some of the skills that must be developed to become empowered ethically; (3) present a successful classroom exercise used to initiate this process; (4) discuss more generally other exercises that might promote ethical-empowerment; (5) raise the problem of how to go about assessing strategies, activities, and materials to ensure a continual process of improvement toward ethical empowerment.

The first task is to distinguish ethical-empowerment from more familiar forms of empowerment. Three examples (taken from the cases developed through our ethics initiative at UPRM) will facilitate this.

Case #1: A chemistry student, working in a computer lab at the university, downloads the Anarchist’s Cookbook from the Internet. He saves it in his designated storage area. A systems administrator, who routinely scans student files for pornographic pictures (students downloading pornographic pictures crowd out other students with more legitimate purposes), finds the Cookbook in the student’s files. What is the student doing with this information: satisfying his curiosity or planning for something more sinister?

Case #2: A student takes a computer systems class in which she learns how to deal with computer viruses. Using what she has learned, she creates her own virus and contemplates releasing it into the University system. Her plan is well intentioned enough: she wants to test the University’s virus detection system. If the system picks up the virus, then this proves that it is sound. If not, then the virus will enter the system but since it is fairly harmless—or so she believes—it will eventually be detected without doing any harm, dramatizing to the University...
that its virus detection system has some weaknesses. Either way, she believes, she will do some
good.

Case #3: An industrial engineering student from a small town has started working in his first
job as a member of a research and development team charged with designing a new generation
of printers for a market leader in this area. The company he works for wants to maintain its
leadership in this area. They also want to respond to the emerging environmental problem
caused by the disposal of the inkjet cartridges used in their current model. These inkjet
cartridges are made in his hometown. If the new generation of printers does not use
disposable cartridges, then the plant in his hometown will close, putting friends and family out
of work. His company is a leader in empowering its employees. But what should he do with
this newly found power?

In all of these cases, an individual has been empowered in some way. The chemistry student
has been empowered by what he has learned about chemical reactions, the computer systems
student by what she has learned about virus prevention (which she used to develop her own
virus), and the industrial engineer by the increased decision-making authority vested in him by
his new employer.

Knowledge gained by students in their professional education gives them the power to do
things that can have a great impact on the rest of us. When they exercise this power, they can
bring to us great benefits and serious harms. We will call this kind of empowerment,
"knowledge-empowerment." Knowledge-empowerment is not necessarily accompanied by any
wisdom on how to use it or how to channel it toward the beneficial side of the ethics equation.
At our university (UPRM) we empower students through what we teach them. Many will
become leaders in Puerto Rico; yet we have not taken any formal measures to ensure that this
power will be exercised beneficially.

Another sense of empowerment can be gleaned from case #3. We will call this agent-
empowerment, since the principal in the agent-principal relation creates this form of
empowerment. The Blackwell Encyclopedic Dictionary of Business Ethics provides a useful
and provocative definition of agent-empowerment:

> [Common to definitions of empowerment] is the idea of providing people the "power"
> necessary to fulfill their job responsibilities without having to secure approval from
> others (i.e., supervisors). With empowerment, control over the means of getting the job
done is left with the person doing the job, creating greater control over the results
produced. This responsibility for producing results leads to greater ownership on the
individual’s part for both the input and output of production.

The agent-principal relationship provides a nice way of getting at empowerment for four
reasons. (1) It allows us to characterize empowerment as the principal (employer) giving the
agent (employee) more discretionary authority. For example, when a corporate executive
empowers a work team, she delegates decision-making authority that she previously kept to
herself. (2) Agent-empowerment takes place primarily in the context of hierarchically
organized bureaucratic structures. By bringing down to lower bureaucratic levels both decision-making authority and responsibility for results, it rearranges the power and responsibility relations in these organizations. Hence (3) agent-empowerment is exercised primarily in bureaucratic organizations. Finally (4) agent-empowerment reveals an important relation between power and responsibility: increased power and authority must accompany increased responsibility for results. This raises an interesting requirement of agent-empowerment: power and responsibility must be kept together in implementing agent-empowerment. For example, attempts to empower without granting the agent increased authority result in holding the agent responsible for results that he or she could not have controlled. Hence, responsibility without power results in creating scapegoats, targets for pointing the finger of blame when something goes wrong. (It also serves as a means for stealing credit from an individual when things go well.) On the other hand, granting authority to the agent without at the same time designating accountability for results creates loose canons; the empowered individual acts irresponsibly because the sense of ownership of the action and the results is missing. In agent-empowerment, the link between power to determine results and responsibility for results must not be broken.

During much of the decade of the eighties and nineties, corporations have abandoned hierarchical decision-making structures and replaced these with decentralized areas of control. Employees, especially professional employees, have been empowered by their employers. To get a quick sense of this transition consider two well-known studies, one conducted before, the other after this change. In 1987, *Moral Mazes* portrayed a corporate structure that was largely hierarchical and driven by financial goals. On the other hand, the Hitachi Report showed a very different picture: customer-driven and engineering-driven companies gave professionals a greater role in decision-making. Disagreements between management and professionals, previously solved by management fiat, are instead solved by a more democratic process of reaching consensus without coercion; management treats engineers as equals, especially in areas of professional concerns such as product safety and quality. Here we see how agent-empowerment is driving a reorganization of the workplace and the relation between management and professional employees. This workplace trend has translated into a pedagogical challenge for our university: how do we shape our curriculum to equip our students to function effectively as empowered employees?

Another interesting idea stems from the three cases mentioned above. In each case, empowerment has raised a moral problem associated with how the newly acquired power is to be used. The chemistry student now knows how to interpret the material in the Anarchist’s Cookbook; does the fact that he can build the bombs entail that it is permissible to do so? The computer systems student now knows how to construct a virus and introduce it into the university’s computer system. Should she do it? Is her plan to improve the university’s virus detection system, however well intentioned, a good one? Finally, should the industrial engineer use his influence on the research and development team to steer his employer toward a design option that will keep his hometown friends employed? How should he exercise his agent-empowerment?

Agent-empowerment and knowledge-empowerment also give rise to a kind of existential burden that is sometimes so powerful that it makes the use and control of empowerment
difficult if not impossible. "Existential" here refers, not to the *angst* the existential philosophers describe, but a strong feeling of uncomfortableness that accompanies decision-making and acting in contexts in which we are empowered. Several things can trigger it: deep involvement in a situation whose outcome is uncertain, a feeling of ownership for results that we cannot entirely control or predict, or being empowered to act in situations in which there is a strong moral conflict that makes it difficult to honor one moral value without endangering the others. This is a concrete dimension of empowerment that must be taken into account, especially in forming pedagogical strategies, as we will discuss shortly.

We can summarize what we have set forth up to this point.
1. There are initially two ways in which our students are empowered: knowledge-empowerment and, as they learn how to function in authority-free contexts, agent-empowerment.
2. Because knowledge-empowerment and agent-empowerment can be exercised both beneficially and detrimentally, and because our empowered students will soon be in positions to exercise great influence over the lives of others, we need to accompany the first two forms of empowerment with a third.
3. It is important not to sever the link between empowerment and responsibility: responsibility without empowerment creates scapegoats and empowerment without responsibility creates loose canons.
4. The increased accountability implied by empowerment creates an existential burden that often interferes with the exercise of action and decision-making.

II. Ethical Empowerment

Knowledge-empowerment and agent-empowerment imply a third form of empowerment, ethical-empowerment. The cases at the beginning of this paper lay the ground nicely for ethical-empowerment in that each presents a situation in which agent- or knowledge-empowerment creates a moral problem as to how to use, control, and direct empowerment. We would like to refine this notion of ethical-empowerment by describing five of its characteristics.

1. **Ethical-empowerment concerns the morally responsible employment of empowerment in the first two senses.** The chemistry student in the case above knows that he has the ability to download the Anarchist’s Cookbook and to study its contents. But when ethically empowered, he proceeds with care and caution. He informs his supervisor of what he wants to do. He might integrate it into a broader purpose: a report on how easy it is to make home-made bombs or readily available materials for making explosives. Responsibility in this sense is acting toward others with care and respect.

2. **Ethical-empowerment involves moral autonomy.** This issue arose in our literature search into agent-empowerment. Many organizations want to empower their employees but are afraid to do so because they fear that empowerment leads to the abandonment of control over employees. But if we link agent-empowerment to ethical-empowerment, recognize the centrality of autonomy in ethical-empowerment, and characterize autonomy as the internalization of control and monitoring through self-discipline then we have recast the problem. Employers can empower if their employees are morally autonomous. But this places
a burden on universities that offer professional education to graduate students who are morally autonomous. Universities have to move from more authoritarian modes of education to those in which students can practice the skills that compose moral autonomy. The key insight here is that ethical-empowerment does not require that employers and teachers abandon control but that they enable individuals to internalize control. After all, autonomy, in the Kantian sense, refers to the internalization of moral imperatives; duty becomes the expression of the will of the morally autonomous individual. The pedagogical response here is to habituate students to acting without external monitoring and control, in other words, to accustom them to monitor themselves and exercise self control.

3. Ethical empowerment also involves considerable skill in implementing what is morally good or correct. Ethical-empowerment enables good people to do good things. Sometimes this is not easy since our environment offers many obstacles to "doing the right thing." But we can address this problem by giving our students scenarios that present obstacles to their doing the right thing and give them practice in designing strategies to defeat these obstacles. Ethical-empowerment focuses the professional on diffusing the barriers that stand in the way of doing good (rather than characterizing ethics itself as an obstacle) and developing the skills to do even more good, to go above and beyond the call of duty. The goal here is not to work around ethics to do the things that we really want to do, but empowering ourselves ethically to do what is good.

4. Ethical-empowerment requires becoming accustomed to the existential burden that accompanies being accountable for one’s actions. Too often, when we discuss ethical issues, we fail to place ourselves into the participant’s point of view and feel the drama of the situation, including the various pressures that arise when we act in the real world. Simply recreating the drama of the contexts in which we act, make decisions, and strive to overcome obstacles can enhance ethical-empowerment through the hands on experience.

5. Ethical-empowerment provides us with a new, more positive, perspective on ethics in general. We see ethics as facilitating action and decision rather than functioning as a barrier. And we see that ethical-empowerment complements the other forms of empowerment. An analogy with training in the martial arts will make this clearer. Instruction in the martial arts empowers in the second sense: agents are empowered with the ability to exercise deadly force. But in the classic paradigms of training in the martial arts, agent-empowerment follows ethical-empowerment. The skills imparted in agent-empowerment are preceded by training in how to use these skills, on whom, and in what kinds of situations. The ethical-empowerment consists of aiding the apprentice in the acquisition and refinement of certain virtues that together constitute a framework for self-discipline that ensures responsible and controlled use of deadly force. Most important, prior training in ethical-empowerment leads the apprentice to see ethical-empowerment and agent-empowerment as inseparable; ethical empowerment is so thoroughly integrated into agent-empowerment, that it completely colors the agent’s understanding of his skills and knowledge. This ideal of complete, seamless integration serves as a guide in constructing a program of ethical-empowerment at the university level.
III. The Pedagogical Challenge

In the second part of this paper, we want to discuss our responses to the pedagogical challenges that these three senses of empowerment create. First, we will present an exercise we have been using that has proven effective in bringing about the goals of ethical-empowerment. We will describe this exercise in detail. Next, we will present a schematic summary of other activities we have used at UPRM, both in ethics classes and in classes in the professional and occupational areas. Finally, we want to raise the issue of assessment: how do we effectively assess different classroom exercises using ethical-empowerment as the standard?

A. An Exercise in Ethical-Empowerment: Integrating Ethics in an Introduction to Computers Course

Faculty training through an "Interdisciplinary Research and Training Program in Ethics for Business, Science, and Engineering in the Puerto Rican Context (NSF grants SBR-9952958 and 9810253) has helped us develop exercises for integrating ethics across the curriculum. Two retreats and related activities provided the background for faculty to feel comfortable with the idea of integrating ethics into their courses. Some of the ideas developed were to consider ethics content when adopting new textbooks, discuss topics in ethics earlier in the semester, utilize sidebars and discussion exercises related to ethics found in many books, and to incorporate a discussion of current ethical issues.

Many more elaborate exercises emerged from the general discussion. One such exercise integrates ethics into the course content of an Introduction to Computers Course. This exercise provides exposure to ethics for a large number of students from many disciplines in their first or second year of college, provides them with the basic skills to develop arguments to support or refute ethical positions, and provides basic ethical skills that can be applied outside the context of computers and information technology.

B. Source: Textbook Exercise

This exercise is an adaptation of a textbook exercise that requires students to consider whether a scenario is a computer crime or not. The modified exercise provides more room for discussion, helps illustrate that ethical issues are not just "black or white" and provides more opportunity to discuss related ethical issues outside the context of computers and information and technology.

C. Students evaluate and discuss whether scenarios are ethical

The first step of the exercise is to have students individually evaluate 8 to 10 scenarios using the following 3 questions: (see Appendix)

1. Do you think this situation is common/realistic? (Yes or No)
2. Do you think this situation is ethical or unethical? (Ethical or Unethical)
3. Do you think others may disagree with you? (Yes or No)
The first question emphasizes the fact that we are considering real-world issues. The second question asks students to provide an intuitive answer by evoking an honest, anonymous opinion on the issue. The third question serves to illustrate that the issues are not "black or white".

The scenarios can be taken from a variety of sources: from textbook exercises, from the newspaper, from novels and movies, in other words any source that suggests something provocative and realistic. Many of the cases we developed in our NSF ethics initiative have been adopted to fit into this exercise.

D. Informal and Formal Discussion of Scenarios

During the first step, students reflect on the issues individually. In step two, the instructor leads an informal group discussion of a few of the scenarios. For example, the class could discuss whether using a computer at work to send e-mail to relatives is ethical. This simple statement has often generated 20 to 30 minutes of lively discussion. Some students will advocate one extreme (that the action is unethical) while others will argue the other extreme (that the action is customary and ethically permissible). Many students will try to secure the middle ground by citing circumstances in which it is ethically permissible (when workers are taking a break) and when it is impermissible (when a worker spends too much time doing this).

Even as simple an exercise as this gives students good practice in framing moral arguments. Students will offer analogies based on the telephone, fax, or regular mail. Many offer examples from their own real-world experiences. Discussing the scenarios familiarizes students with the complexity of the issues, gives them practice in drawing analogies with their own experiences, and helps them to frame moral arguments.

E. Ethical Decision-Making Tests Provide Insight and Focus

The informal group discussion sets up the next stage since students already have raised many relevant issues in their comments. In the third step, several intuitive ethical tests are applied to two or three of the scenarios.

**Reversibility**: Would I think this a good choice if I were among those affected by it?
**Publicity**: Would I want this action published in the newspaper?
**Harm**: Does this action do less harm than a possible alternative?

These tests help students to formulate supporting arguments that evaluate the scenarios. Often during the informal group discussion, these tests have already been employed either by the students themselves or informally by the instructor. In either case, it is important for students to realize that they are thinking already in ethical terms and that their ethical reflection is complex and sophisticated. It is also helpful to use local idioms for expressing these notions: the expression, "putting yourself in someone else's shoes" is, for example, a good way of presenting the reversibility test. This helps students realize that their parents, teachers, and religious leaders have passed on much of this "wisdom" to them.
F. Student Groups Re-evaluate Scenarios with Ethics Tests

The next step allows student to apply the ethics tests. In groups of three or four, the students select two or three scenarios and re-evaluate them using the tests to sharpen their ethical arguments. The results are impressive: students quickly reach a consensus, back their position with well-constructed ethical arguments, and emerge from the discussion with more confidence. They are, in short, ethically empowered. A debriefing session follows in which students summarize their group results with the rest of the class. This, in turn, generates more discussion.

G. Closure: Brief Discussion of the Importance of Ethics

The final step is a brief discussion to synthesize the exercise in its totality. Issues that can be raised: (1) awareness that ethics affects our behavior, (2) incorporating ethical considerations early into the decision-making process helps to avoid ethical dilemmas later on, (3) we can learn from past problems and adjust future actions to avoid their repetition, (4) everybody practices ethics, not just the so-called expert, and (5) generally speaking, "Good ethics is good business." We conclude the exercise with the slogan, "Be Ethical, be Wise."

H. Some students want to learn more…where to go from here?

Past experience indicates that this exercise has had a strong impact on many students. When they have asked where to learn more about ethics we have made the following suggestions: take a formal course in ethics, watch for ethical issues in the media, study professional and corporate codes of conduct, watch for ethics-related chapters and excerpts available in many textbooks. Finally, encourage them to discuss related situations (scenarios or experiences) with friends.

I. How does this promote ethical-empowerment?

What has impressed us most by this exercise is the way in which it changes the student’s perspective on ethics in the direction of empowerment. In fact, it promotes ethical-empowerment in several ways.
1. Students learn to recognize ethical problems in real-world contexts.
2. Students discover that they are already thinking ethically. Employing the ethics tests produces a sense of recognition in the students of skills they already possess.
3. It gives students practice in formulating ethical arguments and gives them more confidence.
4. It excites further interest that often leads to follow-up activities.
5. This is an exercise that can be used by instructors who are not experts in ethics and can be integrated into the content of their classes. In fact, through careful selection of scenarios, students can be led to see how ethics is a natural and essential part of a real-world practice such as engineering, computer programming, or strategic planning.

IV. Schematic Summary of Ethical-Empowerment Skills and Pedagogical Responses
In this section, we present a scheme that identifies skills inherent in ethical empowerment and classroom exercises that develop these skills in our students. We are not presenting this scheme as logically entailed by the notion of ethical-empowerment; we formulated the exercises first and, upon reflection, saw that they were empowering students in ethics. Consequently, ethical-empowerment presents for us an interesting normative ideal that we can use to assess what we have already accomplished through our various ethics initiatives. For the last five years we have carried out activities designed to integrate ethics across the curriculum at our university. Some of these are the following: an NSF grant to provide faculty training in ethics and develop cases for use in the classroom as well as a grant from the UPR Central Administration to make curriculum changes that will integrate the materials developed through the NSF grant. As a result of these activities, we have designed materials for use in the classroom: 50 real-world cases in practical and professional ethics, 12 exercises that integrate ethics into non-ethics classes, and activities that integrate real-world subject matter into practical and professional ethics classes.

In the table below we try to summarize some of these results from our ethics initiatives, unifying them around the idea of ethical-empowerment. In the left hand column, we have named a skill area involved in ethical-empowerment. Then, moving from left to right, we give the characteristics of the skill, the name of an exercise that promotes the skill, and a detailed description of the exercise.
## Activity required by ethical empowerment

<table>
<thead>
<tr>
<th>Skill required</th>
<th>Skills exercised in carrying out activity</th>
<th>Teaching Exercise that helps develop skill</th>
<th>Description of exercise</th>
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<tbody>
<tr>
<td>Evaluative</td>
<td>The ability to evaluate something that has happened in the past by applying to it different ethical approaches.</td>
<td><em>Evaluative case study analysis</em></td>
<td>Taking a big news/bad news case such as the Ford Pinto and applying ethical approaches. Does it violate rights? Harm individuals? Who is to blame?</td>
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<td>Preventive</td>
<td>The ability to uncover ethical surprises and design preventive measures before they issue into full-blown dilemmas.</td>
<td><em>Social Impact Statements</em></td>
<td>Students prepare a report for the client on hidden ethical surprises they find in a major design project. They use an ethical matrix and empirical methods to uncover embedded ethical issues.</td>
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<td>Decision-Making (Designing)</td>
<td>The ability to integrate (not just apply) ethical considerations into a decision or design such that the considerations play a constitutive role in the final product.</td>
<td><em>The Ethics Laboratory</em></td>
<td>Using a case or scenario that presents a real world decision-making situation, students use a seven-step model to resolve the case by constructing a solution around ethical and feasibility requirements.</td>
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<tr>
<td>Doing good above and beyond the call of duty</td>
<td>Awareness of surroundings, perception of opportunities for service through professional skills, personal involvement and accountability, sensitivity to social and environmental effects of work.</td>
<td><em>Good Works Projects</em></td>
<td>Students, through interviews and other forms of research, uncover community needs. They then apply their knowledge, agent, and ethical empowerment to respond to the need. (Students develop design to allow aquaculture company to clean effluent while maintaining profit margin.)</td>
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### V. The Assessment Challenge: the Next Step

We want to conclude by suggesting that ethical-empowerment can make a further contribution. In the course of writing this paper, we have found it to be a powerful assessment tool. As the scheme presented above suggests, it can establish a series of standards that can help to assess the classes and exercises we have developed to promote ethics-across-the-curriculum. The
notion of empowerment potentially provides an alternative standard for assessment. Simply put, we can ask whether what we do in the classroom ethically empowers our students.

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Works Cited

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José A. Cruz is an Assistant Professor of Information Systems of the College of Business Administration at the University of Puerto Rico at Mayagüez (UPRM). Currently is the PI of a grant from the National Collegiate of Inventors and Innovation Alliance to incorporate the concept of E-Teams in the Technology Based Entrepreneurship course.

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**APPENDIX**

For each of the computer-related scenarios react to the following three questions:

1. Do you think this situation is common/realistic? **Yes** or **No**
2. Do you consider this situation Ethical or Unethical? **E** or **U**
3. Do you think someone may disagree with you? **Yes** or **No**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Realistic?</th>
<th>Ethical?</th>
<th>Disagree?</th>
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<tbody>
<tr>
<td>1. An employee uses his computer at work to send e-mail to his relatives.</td>
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<td>2. An employee installs a new upgraded version of a word processing program on his office computer. Because no one will be using the old version of the program the employee takes it home to use on his personal computer so his children can use it to write school papers.</td>
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<td>3. While reviewing her employees' e-mail messages, a department manager discovers that one of her employees is using the e-mail system to operate a weekly football betting pool. (Consider both the employee and the manager.)</td>
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<td>4. A company hires a consultant to develop a custom program. After completing the program, the consultant tries to license the program to other companies.</td>
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<td>5. A programmer is asked to write a program that she knows will generate inaccurate financial information. When she questions her manager about the program, she is told to write the program or risk losing her job. She writes the program. (Consider both the programmer and the manager.)</td>
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<td>6. As a practical joke, an employee enters a program on the company computer. Each time an employee uses a floppy disk on the company network, the program is copied to the floppy. The first time the floppy is used after January 1st, a &quot;Happy New Year&quot; message is displayed.</td>
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<td>7. A Japanese engineer refuses to work with a woman, Puerto Rican engineer precisely because she is a woman.</td>
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<td>8. An engineer accepts an offer from a vendor to pay her expenses to a conference where software that her company is interested in will be displayed.</td>
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<td>9. An industrial engineer uses information in her new job that she had obtained while working at another, previous job.</td>
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<td>10. A mechanical engineer spends time outside of work and at his home to develop a cheap muffler for electric generators because he has a neighbor who couldn’t sleep in the aftermath of Hurricane Georges on account of his neighbors' noisy generators.</td>
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<td>11. A student tells his professor that another student was copying from his exam during the test.</td>
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<td>12. A newspaper uses photo-retouching software to replace a billboard advertisement for a competitive newspaper from the background of a front page photo.</td>
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<td>13. A student takes a computer systems class in which she learns how to deal with computer viruses. Using what she has learned, she creates her own virus and contemplates releasing it into the University system to test their virus detection system.</td>
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<td>14. A company occasionally uses software to monitor the productivity of its staff. It only uses the software to monitor an employee thought to be repeatedly goofing off.</td>
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∞ Adapted from "Interdisciplinary Research and Training Program in Ethics for Business, Science, and Engineering in the Puerto Rican Context (NSF grants SBR-9952958 and 9810253)."