and, if so, what topics would be usefully addressed. Interestingly, there seemed to be more support for ethics courses from the respondents outside academia than from those in it. Given that most students we teach do not wind up with academic jobs, issues faced by physicists in nonacademic environments deserve some attention in ethics education.

Eastern Michigan University has been offering Ethical Issues in Physics, a one-hour discussion course, for about 15 years. The issues it covers were modified in response to our survey. Students become familiar with statements from the American Physical Society, American Chemical Society, and various engineering organizations. They examine issues related to research and to the interaction between physicists and society. Although the course was originally conceived to cater to research physicists early in their careers, it now also is important to the education of future high-school teachers. Accrediting agencies have cited this course as a strength of our teacher education program.

Reference

1. B. Wylo, M. Thomsen, *Sci. Eng. Ethics* **4**, 473 (1998).

Marshall Thomsen
(jthomsen@emich.edu)
Eastern Michigan University
Ypsilanti

Fortunately, my experience as a graduate student included an adviser who had genuine concern for my welfare and was willing to consider the opinions of other faculty members regarding major decisions that affected my progress. I have taught only in departments that do not have a doctoral program. Therefore, I feel fairly free to voice my opinions without concern for departmental or career politics. I do, however, have an ongoing interest in the subject because, periodically, the best and the brightest of my students ask for advice concerning a choice of graduate school. My perceptions of the treatment of subordinates lead me to consider two primary causes of the abuse that is certainly present.

First, faculty members are not hired for their advisory abilities. Much of the "abuse" is not mean-spirited or cold-hearted behavior by advisers. It might better be described as neglect or even incompetence. The abuse results from the practice of hiring and promoting physics faculty members on the basis of their promise as researchers (or, for administrators, their promise as grant writers). They are not hired for their promise as instructors or supervisors, or on the basis of their people skills.

A second possible cause of the abuse of doctoral candidates is that advising decisions are made by an individual with no oversight. The culture of many PhD-granting departments is antithetical to external oversight of the treatment and guidance of students, or of acceptable conditions for finishing one's degree, beyond a vague notion that it should not take "too long." The first rule of faculty-to-faculty relations is that one does not meddle in the relationship between adviser and student.

Consequently, one finds supervisors who are in a role they have never filled before, and who were hired for abilities and skills unrelated to supervision. They then operate in a culture that precludes almost any form of unsolicited advice or direction concerning that role.

Students who take things into their own hands by trying to transfer to a new research group find a number of major hurdles. First, work done with the previous adviser is effectively erased, and that can cost a year or more of study. Second, the number of advisers willing to pick up transferring students will be limited, because advising a student who has left another group due to a disagreement is viewed by some as meddling.

In essence, the only check on an adviser's behavior is the long-term effect of chasing away graduate students—namely, the resulting low research and grant productivity. Of course, by the time that has happened, many graduate students will have been served up as cannon fodder, and the professor may have already been granted tenure.

Some form of external oversight is needed, and the adviser's power must be dispersed. Each department should adopt a formal and openly published policy for the treatment of graduate students. The Statement on Treatment of Subordinates (PHYSICS TODAY, November 2004, page 43, box 1) is a good starting point, but it needs to be more specific. The published policy should then be a guiding document in the advising that should become the responsibility of the student's entire research committee.

Currently, most dissertation committees serve mainly as gatekeepers. Instead, a student's work should be presented twice a year to the committee for a balanced assessment. To mitigate possible bias toward the

primary adviser's opinion, the committee members should put their assessment in writing before they engage in any collective discussion of the student's progress. As a positive byproduct, the committees would then also have some ethical oversight of the entire department's research practices. Committee members would be the first "outsiders" to see the results, and they would hear first-hand about the methods and practices. Some common ethics violations cited in the ethics survey in figure 1 of Kirby and Houle's article could be addressed at this stage, well before publication.

With the involvement of the entire committee, the rules concerning meddling would eventually become irrelevant. The advice and guidance provided would be normalized by including more experience and points of view. New faculty would have some introduction to their advisory duties, starting with their very first student. Research is rarely done in isolation, and advising should not be done in isolation.

Joseph O. West
(phjoseph@isugw.indstate.edu)
Indiana State University
Terre Haute

Kirby and Houle reply: The range of ethical issues in physics is certainly far broader, as noted by Frank Melsheimer and Peter Foukal, than those we focused on in our article. We share Jeffrey Marque's frustration that abuse and exploitation of graduate students and postdocs has long been overlooked. One goal of our article was to bring this concern to the forefront in the physics community. We hope that with awareness and good leadership, physics departments and their chairs can take steps to prevent and, where necessary, ameliorate abusive and exploitative situations. Joseph West is correct that the mistreatment of subordinates often arises from neglect, lack of management skills, and lack of awareness of the responsibilities that are specific to supervising students. Thus it is critical that departments establish a structure to prevent abusive treatment and to communicate a set of expected ethical behaviors.

While surveying physics department chairs, we heard about several college and university departments that have highly successful ethics programs or courses. The Task Force on Ethics Education of the American Physical Society will, we hope, help the physics community become more aware of such programs so that departments can implement them. Clearly, education about ethics needs to extend far beyond guidelines concerning data fabrication, falsification, and plagiarism to include the development of mentoring skills, understanding of supervisory responsibilities, knowledge of intellectual property rights and obligations, and appropriate processes for resolving ethical problems.

Kate Kirby
(kkirby@cfa.harvard.edu)
Harvard–Smithsonian Center for Astrophysics
Cambridge, Massachusetts
Frances Houle
(houle@almaden.ibm.com)
IBM's Almaden Research Center
San Jose, California

I offer a modest proposal. I recommend the establishment of a clearing-house for inquiries about research conduct and ethical behavior. There are many occasions when someone is uncertain about how to proceed and may be too junior or isolated to seek local guidance. In addition, ethics questions, particularly for a junior scientist, may be related to the senior scientist he or she would normally ask. Such a clearing-house would encourage a climate that would lead to good behavior. The method could be a moderated electronic mailing list where questions are posted in an anonymous, hypothetical, and timely fashion to ensure privacy.

Since this letter was written, I found a clearing-house, Ethics AdviceLine for Journalists (http://www.ethicsadvicelineforjournalists.org), by which nationwide toll-free telephone calls or e-mail questions are rapidly answered. The entity I propose could emulate AdviceLine. I'm grateful to Casey Bukro, their ethics contact, for details.

I helped set up our research misconduct rules here at Drexel University. Often, ethical problems are not amenable to conventional textbook analysis, and people can honestly and naively misunderstand good research practice.

Leonard Finegold
(L@drexel.edu)
Drexel University
Philadelphia, Pennsylvania

Whitbeck replies: I am glad to see that PHYSICS TODAY readers are interested in a wide range of topics concerning the responsible conduct of research.

Leonard Finegold recommends a clearing-house for inquiries about responsible research conduct. The Online Ethics Center for Engineering and Science Ethics Help-line, cosponsored by the Institute of Electrical and Electronics Engineers and the National Institute for Engineering Ethics, offers such a service. The help-line receives and answers inquiries about how best to respond to ethical problems that commonly arise in research or in engineering practice.

The help-line member in charge at any given time (usually me) decides whether an inquiry is an appropriate ethical question rather than, say, an advertisement or a request for homework help. That person removes any specific identifiers and sends the inquiry to the rest of the team. When a topic seems to require familiarity with a particular setting or situation, the help-line person may consult someone with the relevant experience or may send questions of clarification back to the inquirer. After the team discussion, the member distills an answer from the discussion, which may be a consensus viewpoint, two or more disparate views, or something in between.

We do not use an e-mail list, because we find that a Web form is easier for users. We give inquirers latitude to describe their situation in whatever detail and specificity they think necessary. Occasionally, they turn out not to be looking for help thinking through a particular situation, which is the service we offer. Instead, they want us to issue a judgment against someone. I explain that we have no resources to do investigations, so we cannot issue judgments.

I think we have provided a useful service not only to young investigators and engineers, but to some senior people in well-known research facilities. Our deliberations and advice are not open to public view, although we could offer a more public discussion of typical situations if there is interest.

In my article, I described a discussion method that serves two purposes. It can stimulate the formulation of criteria for responsible conduct that are suited to the conditions of research in a particular area, and it can strengthen a department's ability to communicate with and answer questions for trainees.