

It is not surprising that junior members of the physics community would respond so forcefully to questions about professional ethics, or that their major concerns are about abuse and exploitation rather than the more conventional ethical concerns of plagiarism, faking of data, piggybacking of authorships, and the like. When papers that came out of Lawrence Berkeley National Laboratory and Lucent Technologies' Bell Laboratories were shown to be based on faked data, the physics community responded with loud calls for immediate reform and with conspicuous expressions of shock and shame. But when graduate students and postdocs, by the thousands and over a period of many decades, complain about their working conditions and their powerlessness, the physics community shrugs and says, "Yeah, so what else is new?"

Kate Kirby and Frances Houle wrote, "Particularly shocking to the task force was how often the words 'abuse' and 'exploitation' were used to describe the treatment of graduate students." However, members in the academic community could be shocked by those words only if their eyes were glued firmly shut to what goes on around them every day. When abuse has become habitual and acceptable, then it no longer is perceived as unethical. Instead, it is perceived as "business as usual."

As long as we have a system in which the professional survival and advancement of junior members of the profession depend on more established members of the community for letters of recommendation, all the ethics training in the world for professors will be for naught unless someone is held accountable for abusive and exploitative behavior. Many senior physicists, with or without training in ethical behavior, will be supportive mentors, while others will continue to exploit and abuse.

It would be nice to think that professional organizations, such as the American Physical Society, and funding organizations, such as NSF, would make a serious effort to eliminate as much abuse and exploitation as possible from college and university campuses. However, I doubt that significant motivation exists to do so. After all, abuse and exploitation of junior scientists typically do not make the newspapers; they occur away from the spotlight of public scrutiny. Instead, strong motivation at the junior level is what has led to unionization of



Albert Einstein to Michele Besso¹

Translated and annotated by Bertram Schwarzschild
Einstein writes to Besso, his close friend since 1897, six months after completing the general theory of relativity and a few days after the death, at age 42, of Karl Schwarzschild, who found the first exact solutions of the theory's field equations.

Berlin, 14 May 1916

Dear Michele,

All went well on my journey [from Switzerland] and later. . . . Our real-life *Sterne* novel² is at least as nice as the original; it calls for a sequel.

That stuff about Brownian motion is just tipsy talk [*eine Bieridee*] from [thermodynamicist Aurel] Stodola. I've already tried, in vain, to talk him out of it. . . . I hope your teaching [a course in patent law] is giving you pleasure. I still remember well that one has to give oneself a real push to overcome the initial aversion, and that one always thinks that everything one says is too obvious. But that's an optical illusion. Do you remember how courteously you always came to my [radiation theory lectures] in Bern? And now I can't reciprocate. I have to give another really amusing expert opinion in a patent case. I'll tell you about it when next we see each other.

At the moment I'm working rather moderately; so I'm feeling quite well, living in tranquil contemplation without any discord. In gravitation, I'm looking for the boundary conditions at infinity. But it's interesting to consider to what extent a *finite* universe exists, that is, a universe of naturally measured finite extension, in which all inertia is relative. Today was the funeral of Schwarzschild, the director of the Potsdam Observatory. Surely I've told you about him; it's a sad loss.³ Had he been as decent [*anständig*] as he was clever [*gescheit*], he would have been a pearl.

. . . . I've found a cute simplification for the thermodynamic derivation of the photochemical $\hbar\nu$ [equivalence] law, somewhat in the style of [Jacobus] van't Hoff. . . . Soon I'll be able to send you the extensive paper on gravitation in which everything is explicitly calculated.

Greeting to you, Anna, and Vero, from your

Albert

The private reservations about Schwarzschild expressed in this letter reflect the different attitudes of the two men toward Germany's war effort. Whereas Einstein was a well-known opponent of the war, Schwarzschild, despite his age and directorship of Germany's premier observatory, volunteered for the army in 1914. He served as a headquarters artillery officer behind the Russian front, mostly doing ballistics calculations for long-range guns. In his spare time, he made his contributions to general relativity. Early in 1916, he was sent home with pemphigus, the autoimmune skin disease of which he died in May.

References

1. *The Collected Papers of Albert Einstein*, vol. 8, part A, R. Schulmann, A. Kox, M. Jannsen, J. Illy, eds., Princeton U. Press, Princeton, NJ (1998), p. 286. Letter © The Hebrew University, Jerusalem.
2. The reference is to Lawrence Sterne's 18th century English novel *The Life and Opinions of Tristram Shandy, Gentleman*, a favorite of both Einstein and Besso.
3. Einstein's June 1916 Schwarzschild memorial lecture before the Prussian Academy of Sciences is reproduced in *The Collected Papers of Albert Einstein*, vol. 6, A. Kox, M. Klein, R. Schulmann, eds., Princeton U. Press, Princeton, NJ (1998), p. 358.

graduate students and postdocs on some campuses.

Although significant actions may be taken and improvements made with respect to the relatively rare conventional unethical behaviors, I doubt that anything significant will happen to ameliorate the abuse and exploitation that the junior members of our profession so eloquently describe. "Business as usual" is, as a physicist might describe it, a stable configuration.

And in case anyone is wondering, I'm 55 years old, a PhD, and a senior staff physicist in a corporation.

Jeffrey Marke

(jjmarque@verizon.net)
 San Mateo, California

About a decade ago, my colleague Bonnie Wylo and I¹ surveyed a subpopulation of the physics community to determine if there was support for courses dealing with ethics

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 non-academic 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 administra-

tors, 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

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