

IIT'S WORKSHOPS FOR INTEGRATING ETHICS INTO TECHNICAL COURSES: SOME LESSONS LEARNED¹

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“The wise learn from the mistakes of others; the fool, not even from his own.” — Unknown

In 1990, IIT's Center for the Study of Ethics in the Professions received a grant of more than \$210,000 from the National Science Foundation to try a campus-wide approach to integrating professional ethics into its technical curriculum; in 1996, the Center received another \$100,000 to continue the project, with the emphasis on passing along to other institutions what was learned at IIT; and, in 2000, the Center received a third grant for three years, with the same emphasis, for \$244,000.² Between 1990 and 2004, more than 160 faculty “graduated” from the workshop and another dozen or so attended as unofficial volunteers. I was the principal investigator under all three grants, but shared the work with three co-PIs, the “we” in what follows.

Though I generally prefer to emphasize what we did right, emphasizing what I now think we should have done differently should be more helpful here. There are at least three reasons why that should be so. First, I have already made many presentations, including several in Japan, arguing the (very real) merits of what we did.³ While repetition can help to make a point, sooner or later, though usually sooner, the effect of repetition ceases to repay the effort. I fear I may have reached that point. Second, I have nowhere before said much about what now seem mistakes — or, at least, lost opportunities. Discussing them here should add to what is known about ethics workshops. Adding to that knowledge seems worthy in itself. Third, you are already committed to ethics across the curriculum. The question before you now is how to carry out that commitment. I believe there is much to learn from our mistakes. We cer-

tainly learned much from the mistakes of those whose workshops we studied before undertaking our own.

Running that workshop included the following activities: recruiting, scheduling, content, and research. For each activity, I will first briefly explain what we did and then what I now think we should have done.

RECRUITMENT

Whom should you recruit? For the entire career of our workshop, we recruited “faculty” generally, especially those in engineering and the sciences. We never reflected on whether we could be *more* effective recruiting administrators, faculty teaching large sections, or any other strategically placed group. I now think we might have substantially increased the long-term effect of each workshop had we narrowly targeted some of them. There are at least three quite-different targeted workshops I would now like to suggest — as well as another sort of targeting I will mention later.

First, I wish we had tried a workshop for department chairs and senior administrators. Training ordinary faculty tends to change programs, departments, or institutions piecemeal. The typical faculty member takes the workshop, goes home, integrates ethics into a few classes, and urges a few colleagues to do the same. A few classes, such as a first-year required introduction to computing, may have institution-wide impact, but most classes most of us teach do not. Of course, a few faculty have found ways to have institutional impact. For example, one of our graduates, Marilyn Dyrud, eventually developed a workshop much like ours for her home institution, the Oregon Institute of Technology.⁴ Though trained in technical writing, she was able to work successfully across the curriculum. She is, however, one of those exceptions that “prove the rule”. She was able to do what she did in part because she had a very energetic dean who found funds to support the workshop, urged faculty to attend, and rewarded those who did. An administrator can do much to help ethics across the curriculum. Another example is a young civil engineer, Jamshid Mohammadi, who took our first workshop in 1991. After almost a decade of including ethics in his courses and urging colleagues to do the same, he became chair of IIT’s Department of Civil and Architectural Engineering and soon had its curriculum committee systematically integrating ethics throughout the program. While few administrators can force faculty to do much, most administrators are in a better position than most faculty to reach large numbers of faculty, to

inspire them, and to provide them with the resources they need to do what they have been inspired to do. So, I think it would have been a good idea to give more emphasis to educating the “top” as well as the “bottom”.

Second, I wish we had thought about the central place of textbooks in determining what faculty teach. This is so obvious a point that I would be embarrassed to make it — had we not in fact overlooked it. We taught faculty how to rewrite problems in the textbooks they used to bring out the ethical issues. We even had one engineer, Aarne Vesilind, take the workshop and then develop a textbook for environmental engineering with some ethics issues included in almost every problem set.⁵ Had we had more workshop participants like Vesilind, we might have done much more to integrate ethics into technical courses than we have. So, I recommend devoting at least one workshop to helping writers of textbooks insert ethical issues into their problem sets — and otherwise integrate ethics into every chapter. Faculty tend to follow texts.

Third, we entirely overlooked graduate students (except for urging our graduate assistants to attend the workshops they were assisting with). Yet, there is now at least one model suggesting what we might have done instead. From 1996 through 2001, the Association for Practical and Professional Ethics (APPE) ran a workshop each summer at the University of Indiana for graduate students in science and engineering from around the country. In most ways, these workshops were a conventional five-day introduction to issues in research ethics. But, in one respect, they were different. Each graduate-student participant had to write a “case study” and commentary. Generally, the graduate students drew on their own experience of graduate education for their cases — with the result that many of their cases were quite unlike anything then in the literature. The workshop faculty also wrote commentaries on the cases. The cases and commentaries, published in six volumes, provide a new resource for teaching research ethics.⁶ Perhaps graduate students could be used in some such way as this to provide more problem sets for various texts. I wish we had thought more about that possibility.

During the first three years of the workshop (1991-93), we were recruiting only IIT faculty. Recruitment was easy. We used campus mail to send a notice to each faculty member, using IIT's official list, about 300 names. But when, in the fourth year of the grant, we were planning our first national workshop, we suddenly had a new problem, *viz.*, how to reach the appropriate faculty in several thousand institutions of higher learning. While mailing lists for all faculty did exist, we could not afford

the postage or the staffing necessary to prepare the letter for mailing. E-mail directories did not then exist or, if they did, we knew nothing of them. We therefore decided to look for less direct ways to reach the faculty we wanted. We took two approaches. One was “top down”. We obtained mailing labels for all chairs and deans of engineering schools and for chairs of science departments, about 5000 addresses in all. We prepared two versions of a single form letter explaining the workshop. One began “Dear Chair”; the other, “Dear Dean”. The first few years we did the entire mailing at the Center’s office, relying on our administrative assistant and her student helpers. It was a huge job, taking several weeks to complete. Then, at the administrative assistant’s suggestion, we inquired of IIT’s office services what they would charge to do such a mailing. We soon learned that office services did not consider a mailing of 5000 “huge”; they had machines to print the letters, stuff the envelopes, and so on. In a day or two, they could do what we needed for only a few hundred dollars. For the next few years, the mailing was no longer a problem.

The other approach we took to announcing the workshop might be described as “bottom up”. We identified journals, such as IEEE’s *Technology and Society Magazine*, that would carry an announcement of the workshop free. These announcements reached faculty directly, compensating in part for deans and chairs who ignored our mailing or for some other reason did not pass them on. There were at least two reasons, besides disinterest, why deans and chairs might not pass on our mass mailing. First, of the 5000 envelopes we sent out each year, several dozen would return stamped “no such address” or “addressee unknown”. Sometimes this was because of an error in the mailing list; sometimes, an error at the post office; and sometimes because the chair or dean in question had died or left the institution. Second, some science and engineering programs are tucked away in entities those who produce mailing lists do not suppose to have programs in science or engineering. For example, many programs in information systems, a kind of computer science, are in a business school. You need to keep in mind how rough the categories of bulk mailers are.

The first year we recruited outside IIT, we had more than ninety complete applications from faculty who seemed to be fully qualified — as well as a dozen more applications that were incomplete or otherwise unsatisfactory. We had a very hard four-hour meeting in which we tried to find reasons to cull twenty deserving applicants for whom we had space in the workshop from the seventy others who seemed to us (more

or less) equally deserving. Although our primary rejection letter made it clear that we were not happy rejecting any of the ninety and urged recipients to apply again, only a few did. We never again heard from most of those we rejected. After that first year, applications never exceeded thirty. There are at least three lessons that can be drawn from this experience. They are not mutually exclusive.

First, we may have made a mistake broadcasting our first workshop announcement so widely. I have come to think that deans and chairs are most likely to react favorably to an announcement the first time they receive it. The next time they receive it, they will be less likely to do anything. Though this explanation seems plausible, it is, of course, only a good guess. But this guess at least suggests we would have done better targeting our announcements more narrowly, harvesting one sort of applicant, say, chemical engineers, for one workshop and biologists for another.

I might add that I actually think targeting by discipline is not a good idea. I thought the workshop benefited from the mix of disciplines, both because of how often faculty in widely different fields found themselves facing similar problems in teaching and also how often faculty in adjacent fields (say, chemistry and chemical engineering) were surprised by differences in their professional standards. Faculty in our workshops left with a better sense of how to help faculty in other disciplines integrate ethics into their courses than they could have had if all participants had been in one discipline — or so it seems to me. I would therefore recommend general *regional* workshops rather than discipline-specific national workshops as a better way to target announcements and postpone the diminishing effectiveness of repeat announcements.

Second, because so few of those we rejected reapplied, I now think we should have found a way to accept all qualified applicants that first year. Of course, we did not have funding from NSF to do more than one workshop of twenty that year, but perhaps we could have found some other source of funds to run three more that summer. In any case, you can now plan for what to do if your expectations are exceeded in the way that ours were in 1994. Remember the proverb: “Strike while the iron is hot.” Few faculty will apply more than once.

As the yield from magazine announcements and the mass mailing declined, we began looking for other means of recruitment. By the late 1990s, we were using the web pages of various technical societies to announce the workshop. Announcements through the web were a natural extension of announcements in society magazines. For the last few

years, we also substituted a mass e-mailing for the mass (classic) mailing. For much less than we used to spend on mailing deans and chairs, we could e-mail them and many faculty on association e-mail lists as well. E-mail proved successful for several years, but the last year we received several responses claiming that we were *unethically* “spamming”. The current epidemic of commercial broadcast e-mail may have drastically limited the usefulness of e-mail for reaching potential applicants to workshops like ours. That is something to keep in mind as you think about how to recruit.

Third, the change in rate of application may have had an entirely different cause. The yield of 90 applications occurred under our first grant. Under that grant, NSF paid faculty participants a stipend of \$2000 (as well as paying all expenses). Under our second and third grant, NSF paid only \$1500. Under the second, \$1500 was the entire stipend. Under the third, the applicant’s institution had to contribute another \$500 (returning the total stipend paid to \$2000). Though much lower than under the first grant, applications under the second were still in the high twenties both years. Applications under the third grant were lower than under the second (that is, in low twenties). What happened?

At the time, we believed that applications dropped between the first grant and the second because of the lower stipend. That was why we returned the stipend to \$2000 under the third grant. We may have been right, but the institutional contribution in the third grant made it hard to tell. Applications under the third grant may have dropped because potential applicants could not get their institutions to contribute \$500. We made special arrangements for a number of faculty who informed us of institutional rules that, for example, allowed the dean to pay for travel to the workshop but not a stipend for attending. We suspect that many more potential participants did not apply because they assumed that we could not bend our rules, for example, by accepting about \$500 in travel money in place of the \$500 share of the stipend as proof of institutional commitment. And, of course, many did not apply because their dean or chair did not have \$500 to spare — or they simply supposed that was so. The first years of the twenty-first century were not a good time for the finances of most American institutions of higher learning. In 2000, I even had one accepted applicant offer to withdraw after the state legislature revised the 2000 budget half-way through the year, seizing all university money committed but not actually spent. After checking with NSF, we eventually accepted the dean’s (very apologetic) letter of explanation in place of the \$500 he had earlier promised.

We changed what we originally asked the applicant's institution to contribute because NSF wanted both to cut the cost of the workshop and to have better evidence of "institutional buy in" than presented by a letter from the dean endorsing the application and promising to use what the applicant learned (which was all we required in 1994). We never tried to go back to NSF paying the entire cost because we feared we might again have to turn down far more applicants than we accepted, as we had the first year we did the national workshop.

That fear suggests that we thought the amount of the stipend mattered. We did. Here, perhaps, is the place to explain why. Ideally, such a stipend should not be necessary. Faculty should flock to the workshop for the sheer joy of learning or because they recognize a duty to teach ethics they cannot satisfy without special training. We nonetheless think that faculty should be paid a substantial stipend to attend the workshop. There are at least four reasons: First, attendance at a summer workshop is outside the normal academic year. Unlike sitting on another committee, it is an additional responsibility deserving additional compensation. Second, paying workshop participants makes clear the priority the workshop has in the economy of the university. Money generally goes to what administrators think important. Third, the workshop demands a genuine commitment. Participants have the same strict obligation to prepare for the workshop as for a class they teach. The stipend seals the obligation. The workshop is in this respect like teaching a summer class in addition to the classes taught during the academic year. And fourth, faculty always have deserving alternatives, most of which pay at least as well. Unless you want to reach only those already committed to teaching ethics, you must put ethics on a par with its competitors (teaching, research, and consultation). The stipend is an important means of outreach — especially if it is calculated to compensate faculty for what they lose by not engaging in a competing activity, such as research or summer teaching.

While I still find these reasons convincing, I no longer find them as convincing as I once did. Over the last decade, there have developed around the United States a number of ethics workshops that charge fees. For example, the Poynter Center at the University of Indiana has an annual four-day workshop on teaching research ethics for which it *charges* each participant \$650 (out of which it pays for food and housing as well as for the workshop itself). The existence of such workshops at least suggests that one like ours could also charge participants rather than pay them. While I think that suggestion cannot be dismissed, there are at least two reasons not to embrace it.

One reason is that all fee-charging workshops seem to focus on substance rather than pedagogy (as ours does). For example, the topics for the Poynter Center's workshop are: Ethical Issues in Using Animal Subjects in Research; Ethical Issues in Research with Human Subjects in Social, Behavioral, and Humanistic Research; and so on.

The other reason not to suppose that a workshop like ours can pay its own way is that no such fee-charging workshop has developed for engineering or even for the physical sciences outside biomedical research. Biomedical research was, and apparently remains, a special case. Of course, if conditions seem different in Japan, you might want to experiment with a fee-charging workshop. If it succeeds, you have greatly enhanced your resources. And even if it fails, you'll have learned something useful.

WORKSHOP MECHANICS

I now want to say something about the timing of workshops, the number of participants, and the length of the workshop. What I have to say now is far less definite than it would have been ten or even five years ago. Experience has taught me that, in this respect at least, there are many formulas for success — and even several definitions of it.

Because our workshop was seven days long, we supposed we could only get a reasonable number of participants if we held it during the summer when most faculty are not teaching. The first year we gave the workshop (for IIT faculty), we tried to schedule it to avoid all important national meetings. We chose the first week of June. We soon learned from faculty — who said they would have applied had the dates been different — that there were far more important national meetings than we had supposed. The next summer we scheduled the workshop several weeks later and again learned of important meetings we had known nothing of. And so it has gone every year since. The only lesson I took from this experience is not to offer the workshop at the same time year after year. There is no time good for everyone.

What is a good number of participants? We have come to think 20 is about right. But our reasons for that conclusion at least suggest that, with somewhat different arrangements, a much larger or smaller number would be just as good. We like 20 because of one feature of our workshop, what has come to seem to us its best part, the two-day conclusion when the participants apply what they have been learning, trying out in the workshop what they hope to do in the fall. The first of these two days

is for something to be done in class and the second for a graded assignment. Each presentation takes about 15 minutes. Following each presentation, there are questions, general discussion, and a critique by the presiding workshop leader, another 15 minutes or so. At about a half hour per participant, 10 faculty presentations (with questions, discussion, and critique) will fill five hours, enough for one day (with breaks and lunch adding another hour or so). Because our workshops always had two leaders, we could break our 20 participants into two groups of 10 and do 20 presentations in one day. If we had had four leaders, we could have done 40 in one day; if we had had only one leader, only 10 or so in one day. For the presentation part of the workshop, there is no particular reason why the workshop should not have 100 participants rather than 10; the limiting factor is the number of workshop leaders available to sit through the presentations.

Is there any other reason to have a certain number of participants? A decade ago I would have said, "Yes, of course, 15-20 is the traditional number for a good seminar." The reason I no longer give that answer — or, at least, no longer give it with much assurance — is that over the last decade I have been invited to give variations of the workshop on other campuses. The largest group I ever worked with was a bit over 40. Because that workshop had only a half day of participant presentations before the entire group, most participants made no presentation. Yet, the evaluations participants in that workshop filled out indicated that they had found the workshop very helpful. No one complained that 40 was too large for the sort of discussion 15 or 20 would have allowed — or that not all participants had a chance to try out what they would do in class (although many did not have a chance). Absent another way to gauge the effectiveness of that workshop, for example, checking to see what participants later did in class, I must conclude that 40 is not as bad a number of participants as I had thought.

My advice on length of the workshop is similar. Our workshop was seven days long, the majority half-day sessions with the remainder of the day to be used for preparing the next day's assignment (usually several articles to read). We had good reasons for everything we did in those seven days — and almost everyone who took the workshop thought we had used all seven days well. We only made two major changes in the schedule during the whole history of the workshop. The first was a necessity. When the workshop was for IIT faculty, we allowed several weeks between the first five days and the first presentation day and another week or two between the first presentation and the second. That

allowed faculty plenty of time to prepare their presentations. We thought they would need it. I now think they did not.

Once we began giving the workshop to a national audience, we had to do away with the long period between the main workshop and the first presentation. (We could not afford to bring participants back to Chicago.) We therefore tried to fit the entire workshop into six days, with the last two for presentations. Though the overall evaluations of that first national workshop were quite good, there was one strong negative. We had, many participants complained, tried to fit too much into the first four days. That led to our second major change in the workshop. The next time we offered it, we reverted to our original seven-day schedule, with a weekend separating the first five days from the last two. We no longer heard complaints about trying to do too much. We never saw anything to make us think that doing away with the weeks of gestation between the end of the first five days and the first presentations had any effect on the quality of the presentations.

The conclusion to draw from this is not, I think, that any workshop less than seven days will not work. All the workshops I have offered on other campuses have been abbreviated. No one who invited me ever agreed to a workshop of more than five days. Much more common have been three-day workshops. The shortest I have done is one day. Judging from participant evaluations, even a one-day workshop “works”; that is, participants claim to have gained what they consider useful ideas for integrating ethics into their classes. The question you need to address, then, is what you want participants to take from the workshop (beyond the basics of how to integrate ethics into their courses). There may be a “Honda Civic” version of the workshop as well as a “Lexus”. That raises the question, “What is the minimum content?” (What must even a Honda Civic have?). I think at least the following four things are necessary:

First, the workshop should *explain what teaching ethics, especially, professional ethics, is*. The explanation we give comes as a relief to many faculty. They can see how teaching professional ethics is consistent with what they already teach, not a separate discipline about which they know little or nothing. The minimum objectives for teaching ethics should be: raising ethical *sensitivity* (increasing the ability of students to identify ethical issues), enhancing ethical *knowledge* (for example, giving students familiarity with relevant codes of ethics), and improving ethical *judgment* (the ability to make a good choice for good reasons).

Second, the workshop should include *examples* of what I call “micro-insertion”. Most participants in the workshop come with some idea of how to devote a day or two to professional ethics. Their problem is generally that they do not know what *technical* material to sacrifice in order to find that much time in a bulging syllabus. So, to be effective, the workshop should emphasize ways to insert ethics into the course without changing the syllabus, small amounts of ethics here and there rather than one or two impossibly big “ethics events”. A few examples of micro-insertion seem to be enough to give faculty the general idea. Once they have the general idea, most can come up with something suitable on their own. My impression is that the longer the workshop, the easier it is for faculty to come up with something, and the more variety in what they come up with. But that is only an impression.

Third, I think as many participants as possible should *leave the workshop with a micro-insertion they developed* for one of their classes — and that the remainder should have seen what their colleagues could come up with in the time allotted. Seeing colleagues come up with interesting things to do in class, even if the colleagues are in quite different fields, assures those who do not come up with something during the workshop that they too can do it. Each example is worth thousands of words of explanation.

Fourth, the workshop should provide some *help with testing and grading*, that is, show faculty how to test for what they might teach about ethics and how to grade the answers their students give in response to the tests. That can be done in less than an hour. Though easy to do, help with testing and grading is crucial to a successful workshop. Most faculty will not teach what they cannot test and grade. And most faculty in engineering and science have little or no idea how to test or grade the ethics we are asking them to teach.

USING THE WORKSHOP FOR RESEARCH

When we planned our first workshop, we gave no thought whatever to using it for research. We did, however, carry out two surveys which we found useful enough to repeat. The first survey — given at the end of the workshop — simply asked participants to evaluate the workshop. The other, given to the students of each workshop participant in the Fall, asked them to evaluate the ethics that the participant did in class. Both surveys used a combination of yes/no and open-ended questions. Were we to design those surveys now, we would replace the yes/no questions

with a more finely-grained scale, say, five choices: strongly positive, positive, neutral, negative, and strongly negative.

The first survey has worked much as would any course evaluation, but the second has proved something more. As results came in year after year, it became clear that students across disciplines and across the country all reacted more or less the same way to the introduction of professional ethics into their technical courses. They were overwhelmingly in favor of what they saw. This came as a surprise to almost everyone involved in the workshop, both leaders and participants. The literature we surveyed reported a good deal of student resistance to being taught ethics — and almost everyone had heard stories that seemed to confirm that literature. I now think both that the literature and the stories are to be explained, in part at least, as the result of *requiring* students to take a free-standing ethics course and perhaps too of early attempts to do too much or the wrong kind of material under the label “ethics”.

At first, the survey of students seemed only an important way to ensure that faculty who had taught ethics once would continue to do it. Faculty are much more willing to do ethics once they know students think it worth doing. Then, as the total number of student surveys entered into our database passed into the hundreds, we could see that the survey also provided strong evidence against a cynical view of our students, an important piece of sociological research. Students were much less ambivalent about professional ethics than commonly supposed. If you begin to plan for such research from the beginning, you should be able to get even more interesting results.

There are two other research projects I would recommend. One is a follow-up survey of workshop graduates every five years or so to see whether they are doing the same amount of ethics in class, less, or more than last time. We did such a survey of IIT faculty once. Of those who responded, most reported doing about the same amount of ethics as they did the first year after the workshop, but a good number were doing more, and only a few less. That was one piece of evidence that our workshop had a long-term effect. I wish we had collected more evidence of that.

The other research I wish we had done was assessment of what students actually learn from our graduates. Student belief that they have learned is pretty good evidence that they have learned but is not nearly as good evidence as success on tests of actual achievement. We did not undertake any research to test actual achievement. I now wish we had done at least two forms of assessment. First, I wish we had used the DIT

(Defining Issues Test). Though the DIT tests only for improved *moral* judgment, not for improved *professional* judgment, it might have provided some evidence that the teaching had a positive effect — and it does seem reasonable that professional judgment should benefit from improved moral judgment. Second, I wish we had used old ethics questions from the national test for licensing engineers to do before-and-after testing of engineering students both in a “control group” and in classes our graduates taught, to see whether the students had learned anything from the ethics taught in class (and more than the control). Even limited to engineering students, such tests would have provided some evidence of effectiveness we do not now have.⁷ The more evidence of that sort you can figure out how to collect, the more we will learn about the effect our teaching of ethics actually has. Insofar as science and engineering programs in Japan are more standardized nationally than in the U.S., you are in a better position than we are to assess learning on a scale large enough to produce meaningful results. I look forward to seeing what you can do.⁸

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NOTES

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² Grant #EVS-9014220, #EHR-9601905, and SES-9985813.

³ See: “Ethics Across the Curriculum: Teaching Professional Responsibility in Technical Courses”, *Teaching Philosophy* 16 (September 1993): 205-235; “Ethics Across the Curriculum at IIT”, *Perspectives on the Professions* 13 (February 1994): 1-2; “Integrating Ethics into an Undergraduate Research Experience” (with Muchund Acharya and Vivian Weil), *Journal of Engineering Education* 84 (April 1995): 129-132; “Developing and Using Cases to Teach Practical Ethics”, *Teaching Philosophy* 20 (December 1997): 353-385; “Ethics Across the Curriculum: The Second Decade”, *Perspectives on the Professions* 17 (Spring 1998): 1-3; and “Five Kinds of Ethics Across the Curriculum: An Introduction to Four Experiments with One Kind”, *Teaching Ethics* 4 (Spring 2004): 1-14. Issues of *Perspectives* are available on line at: <http://www.iit.edu/departments/csep/perspective/index.html>. Both issues cited here include four articles of workshop graduates reporting what they did, a good source of ideas.

⁴ Marilyn A. Dyrud, "Life after the Ethics Seminar", *Perspectives on the Professions* 17 (Spring 1998): 7-9.

⁵ P. Aarne Vesilind and Susan M. Morgan, *Introduction to Environmental Engineering, 2nd* (Thomson-Engineering: Toronto, Canada, 2003).

⁶ For details, see APPE website "Research Ethics: Cases and Commentaries", <http://www.indiana.edu/~appe/cases.html> (February 7, 2005).

⁷ I do not recommend designing the ethics inserted in the curriculum to suit the licensing test. Yet, while I (a philosopher) dislike teaching to a test, I recognize that there may be a point to doing it in some professional programs.

⁸ For a good idea of the present statement of ethics assessment in the U.S., see Board on Health Sciences Policy, Institute of Medicine, *Integrity in Scientific Research: Creating an Environment that Promotes Responsible Conduct* (2002), especially, Chapter 5 and Appendix B. A summary (and order form) are available at: <http://www.nap.edu/books/0309084792/html/>.