CNS JAMES MARTIN CENTER FOR NONPROLIFERATION STUDIES
Twentieth Anniversary Celebration: The Power and Promise of Nonproliferation Education and Training
December 3-5, 2009

The Why, Who, What, and How of Nonproliferation Education

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On the occasion of the twentieth anniversary of the James Martin Center for Nonproliferation Studies (CNS), I will address four key questions about nonproliferation education today—why, who, what, and how.

Why?

Why should we teach courses on nonproliferation? While a better-informed citizenry is generally a good thing, the main purpose is to obtain better nonproliferation policy decisions, which will make the world a safer place. The theory is that policy makers informed by knowledge of underlying realities and concepts will, more often than not, make better decisions.

Who?

If the primary objective is to inform better nonproliferation policy decisions, then the primary audience we should be trying to educate is the people who will go on to become nonproliferation policy makers. Some students already know that they intend to spend their careers on nonproliferation and can be educated at a place like CNS, where they can pursue a master's degree on the subject. But the reality is that most officials making nonproliferation policy decisions will not have had more than one or at most two courses on nonproliferation matters (if any) during their formal education. Hence, a key issue for nonproliferation education is *defining what core knowledge can be taught in a single semester* that will contribute to better decisions.

Of course, one-semester courses are not the only type of nonproliferation education we should be pursuing. Fellowship programs—which allow junior experts to spend a year or more on in-depth research, informed and advised by being part of a community of people pursuing similar topics—are a critical part of training the next generation of nuclear policy experts and helping that generation get a start on their careers. (Truth in advertising: my program, the Project on Managing the Atom, at the John F. Kennedy School of Government at Harvard, manages one of the largest nonproliferation fellowship programs in the world, so I am biased on that topic.)

Because many future nonproliferation policy makers do not yet realize they will be working on nonproliferation, and may not take nonproliferation-specific courses, it is also crucial to integrate nonproliferation issues into broader courses on security and international affairs, to reach a broader audience. It is especially important to incorporate at least some education about nonproliferation in the education of nuclear engineers, chemical engineers, and biologists—that is, people whose technical skills could contribute to controlling nuclear, chemical, and biological weapons, and whose skills might also pose a risk of contributing to nuclear, chemical, or biological weapons programs (either inadvertently or on purpose). Of course, incorporating nonproliferation into broader courses raises even more difficult questions about how to incorporate sufficient insight to enable better future decisions into just a unit or two. Another key area that deserves more attention than it has received so far is executive programs for people in governments or corporations whose supervisors are willing to pay for them to have a few days or a few weeks of intensive nonproliferation education; if their organizations are willing to pay, this suggests that these people are indeed a high-priority target audience, involved in making important nonproliferation policy decisions.

What?

What is the core knowledge that students must gain if they are then to make better nonproliferation policy choices? The purpose of nonproliferation policy is to *reduce risk* to national and global security. Hence, we need to help students assess policy choices in a risk-based framework, assessing the *probabilities* and *consequences* of different outcomes of policy options. What's legal, what's fair, what's ethical, is important *insofar as it contributes to reducing risk.*

To be able to make reasonable risk-based assessments of nonproliferation policy choices requires, it seems to me, three core areas of knowledge. First, we need to give students at least a basic technical background in proliferation—what factors make it difficult to make a nuclear bomb, what key indicators might be that a country was working on nuclear weapons, and so on. They need to know, for example, differences in exporting a light water reactor versus exporting an enrichment plant.

Second, students need to understand the range of available policy tools—treaties, sanctions, safeguards, various forms of formal and informal cooperation, the use of force—and their strengths and weaknesses, including when they tend to work and when they tend to fail.

Third, they need to understand something about state behavior, to help make judgments about how states are likely to react to particular proposals or situations. To some extent, how states behave can be covered in other parts of a broader international relations or international security curriculum, but it is important to incorporate examples in teaching on nonproliferation as well.

Conveying the second two of these three core areas of knowledge inevitably means covering some of the history of the nonproliferation regime as well—what has worked, what hasn't, what have the politics been and how have they changed, and so on.

How?

How should we teach nonproliferation? First, lectures are not enough. We need to *engage* students in thinking through the problems. We need to *confront* them with issues that require hard choices and difficult tradeoffs. We need to require them to assess and make recommendations on difficult nonproliferation policy problems. We need to get them working and debating in groups, modeling how real decisions are made in most governments and international agencies. Simulations of real decision making, and of negotiations, are a particularly effective tool for nonproliferation education, often rated by students as among the elements of a course that help them learn the most.

Another, potentially complementary, approach is to give students a large problem to think through during the course of an entire semester or even a year, and educate them about nonproliferation as part of working through that problem. At Princeton University's Woodrow Wilson School of Public and International Affairs, for example, they take this approach to a wide range of policy subjects, including nonproliferation, and in the course of working through the assigned problem students even travel abroad and interview foreign officials and experts. This process has produced high-quality papers by teams of students, on topics ranging from limiting the spread of uranium enrichment facilities to strengthening implementation of UN Security Council Resolution 1540.

Ken Bain, the author of *What the Best College Teachers Do*—which I highly recommend—argues that teachers need to force students into situations where their faulty preconceived models of the subject don't work, to allow those models to be undermined and replaced with models informed by current knowledge the teacher is trying to convey. Being led into a situation your pre-existing beliefs cannot explain or cope with can be a powerful and troubling experience.

Let me offer a few contrarian thoughts on models that many students have in their heads that need to be challenged. First, the notion that states act like unitary rational actors. In many, many cases—including on decisions whether or not to pursue nuclear weapons—this just does not appear to be so.

Second, and related, that increasing costs through sanctions is likely to be a highly effective strategy for getting states to decide rationally to change course. The data simply do not support this view. And there are many plausible reasons why states might react in other ways to sanctions: sanctions may provoke anger, making negotiated resolutions more difficult; sanctions may reinforce perceptions of unrelenting hostility; and sanctions may allow regimes to rally their populations to support their government against a foreign threat.

Third, that proliferation is driven entirely by response to national security threats. This view, still remarkably widespread, again does not appear to be well-supported by the available data.

Fourth, that treaties can only be effective if they have stringent verification and enforcement. For most of its life, the Treaty on the Non-Proliferation of Nuclear Weapons has had no enforcement and weak verification, yet it appears to have been remarkably effective; there must be something else going on.

Ultimately, the goal is to help students not only "know about" but "be able," in the sense of being able to contribute to sensible nonproliferation decisions, even when choices are hard and uncertainty is large. Teaching methods should be structured with the goal in mind of preparing students to function in the real professional environment of nonproliferation decision making.

Conclusion

Teaching nonproliferation is still an evolving field of practice. We should constantly be striving to teach better than we did the year before. We should keep in touch with students enough to *try* to do results-based assessment of how well our teaching is working. Unfortunately, however, the measures for judging results are by no means obvious.

Today, there are only a few of us who teach nonproliferation. There are a limited number of courses at a limited number of universities in the United States, and fewer in other countries. And only a fraction of those could realistically be assessed as providing the kind of high-quality education that will lead the students who received it to make better nonproliferation policy decisions as a result. But as each of us learns more and more about how to teach, and as nonproliferation education slowly spreads, the situation is getting better. My hope is that by the center's thirtieth anniversary, we will be able to report that overall, better nonproliferation decisions are being made around the world because most officials making them have had the training allowing them to understand these issues in a subtle and careful way.