

# **Introduction to Special Edition on University Nonproliferation Education and Training**

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Nonproliferation, like many aspects of security, has not played out as many expected following the end of the cold war. There was a time when it was not all that unusual to think that the world would actually become a safer and more secure place as weapons stockpiles were reduced and a peace dividend resulting from the shift of resources away from armaments lead to an increase in the standard of living and a reduction in tensions across the globe. Nuclear weapons would lose their salience as markers of elite status among nations along with pressures to acquire them.

For many reasons the world has not become a safer place but has become more dangerous. The drive to acquire nuclear weapons has not diminished, and the threat of proliferation has increased. At the level of the nation state, the NPT itself is under pressure as more nations acquire nuclear weapons, weapons states on the outside fail to join, and nations that want to acquire them leave or threaten to leave. At the sub-state level, the convergence of terrorism and weapons of mass destruction has introduced an element of uncertainty into nonproliferation that is unprecedented.

Another feature of the post-cold war era that has taken people by surprise is the absence of a corresponding peace dividend directed at the need for trained specialists in nonproliferation and nuclear materials management. Contained within the notion of disarmament and lessening of the strategic importance of nuclear weapons was the expectation of a diminishing workforce of trained nonproliferation and nuclear materials specialists. Events have overtaken this assumption. One need only look at national laboratories and the graying of its workforce to realize that the supply of trained specialists is not keeping pace with the demand for technical, policy and managerial expertise.

The response among industrialized nations to this deficit of trained specialists has been sporadic. Speaking only of the United States, programmatically a distinction is made between academic nonproliferation education and nonproliferation workforce training. Workforce training is the prerogative of the Department of Energy. The goal of workforce training is the retention of knowledge by current staff employed throughout the Department of Energy's some thirty-eight sites. This training occurs at the Nonproliferation and National Security Institute (NNS)/National Training Institute, which offers over 130 courses in areas of Information Security, Materials Control and Accountability, Personnel Security, Program and Planning Management, and Protection Program Operations. Many courses are accredited and may be applied to a college degree. Through collaboration with the Training Institute universities may incorporate training courses into their curriculum.

University-based nonproliferation education in the United States is more catch-as-catch-can. According to a 2002 national study of undergraduate WMD-related education conducted by the Monterey Institute Center for Nonproliferation Studies, there is a virtual absence of US university curricula in the field of non-proliferation, even after the shock of 9-11. The study found that ten undergraduate programs offer more than one course on WMD.

In the United States, virtually all colleges and universities offer a general curriculum in international relations, typically within departments of political science. A subset of universities offer a specialized curriculum in diplomacy and/or security studies. These schools are often affiliated with the Association of Professional Schools of International Affairs (29 worldwide; 20 in the US) and also include the mid-career military service schools (Army War College, Air War College, National Defense University, and Naval War College).

A select set of universities offer courses or programs that specialize in WMD nonproliferation. These may be divided into three groups: the Monterey Institute of International Studies (MIIS), which is in a class of its own with its robust stand-alone

nonproliferation program; private schools, and public schools, the latter typically land grant colleges. Among the more prominent private school programs are the International Studies Program at MIT; the International Security Program at Harvard; and the Center for International Security and Cooperation at Stanford, and Georgetown University Walsh School of Foreign Service. Among the more prominent public school programs are the Center for International Trade and Security at the University of Georgia; the Institute for Global and Regional Security Studies at the University of Washington; and the Nuclear Nonproliferation and International Security Program at Texas A&M. Of all these programs, two offer a certificate or degree in nonproliferation. The Center for Nonproliferation Studies at the Monterey Institute of International Studies offers a certificate; the Nuclear Nonproliferation and International Security Program at Texas A&M offers a Masters of Science.

The US programs featured in this special edition of the INMM Journal on nonproliferation education and training all fall within the public school category, along with two specialized international education programs offered by the Monterey Institute and the Open World Leadership Program of the Library of Congress. The three US programs are each remarkable in their own way. The Center for International Trade and Security is a policy oriented program with a focus on leadership and professional training. The Institute for Global and Regional Security Studies (IGRSS) at the UW and Nuclear Nonproliferation and International Security Program at TAMU are both closely affiliated with a national laboratory, the Pacific Northwest National Laboratory and Los Alamos National Laboratory, respectively. IGRSS is a policy oriented program with four nonproliferation courses offered through the Jackson School of International Studies. The program at TAMU is technically oriented with four nonproliferation courses offered through the Nuclear Engineering Department.

Two new programs are directed at some of the special challenges and needs associated with nonproliferation education. The Center for Nonproliferation Studies at MIIS is pioneering a new program directed at training those who teach nonproliferation. This is a direct approach to addressing the gap in nonproliferation education on an international

basis. The Open World Nonproliferation Visitors Program brings young Russian professionals, many from closed cities, to the US to learn about the US approach to nonproliferation. They are introduced to the several elements of the US nonproliferation sector, including university education.

Five non-US nonproliferation education and training programs are featured in this special edition. All five programs are at the forefront of nonproliferation education and training efforts in their respective countries and regions. Four are more technical in orientation, while a fifth has a more policy focus.

The technically oriented programs are in the Russian Federation, Japan, and the European Union. In Russia, the Moscow Engineering Physics Institute (MEPhI) is developing a Master of Science graduate program in nonproliferation and international security to accompany its Master of Science graduate program in MPC&A, nuclear material safe management, and radiation safety and security. In Obninsk, the State Technical University for Nuclear Power Engineering is developing a new Masters level program on Nonproliferation and International Security. Through practical field experience students will learn about critical areas of the nuclear fuel cycle and the design and operation of proliferation resistant nuclear engineering. In Japan, the University of Tokyo and the Japan Atomic Energy Agency are collaborating in a new program to build human capacity in technical and policy areas of nuclear nonproliferation. In the European Union, ESARDA, the European Safeguards Research and Development Association, is developing a new European curriculum to raise awareness and train the younger generation about the problems and methodologies associated with Nuclear Safeguards and Nonproliferation.

The Program on Arms Control and Regional Security (PARCS) at Fudan University in China has a more policy focus. PARCS is China's preeminent program in nonproliferation and security studies. It conducts research and offers graduate level courses in areas of international security, regional security, nonproliferation and

international security, science and technology of national security, US defense policy, EU common security policy, contemporary America, and China and the world.

In considering university-based nonproliferation education programs, some interesting questions come to mind about the factors and conditions that are conducive to their development. Among them:

- It doesn't appear that nonproliferation education programs are constituency driven. That is, university administrators do not appear to take the lead in developing them in response to pressures from outside constituencies or some larger perception of the public mandate. In that regard, to what extent does their development depend on the emergence of a faculty champion?
- What role do associations with institutions outside of the university play in their development? How central, for instance, is an association, collaboration or partnership with a national laboratory?
- Can universities realistically expect to provide an education on a subject as complex and multi-disciplinary as nonproliferation through faculty lines or must they of necessity rely on adjunct and part-time faculty to build a curriculum?
- How should one think about or approach the role of policy and technology in building a program? Should technical programs incorporate a policy dimension, or is policy something that is learned on-the-job and in practice? Must policy-oriented programs include a technical component to be considered credible? Is there an essential balance between the two or can the two be either/or?
- Should universities be doing more to build programs in what is arguably an increasingly vital element of security?

- Should professional organizations like INMM play a role in the development of university-based nonproliferation curriculum?

Finally, what can one say about the study of nonproliferation itself? One may say that in practice, the global non-proliferation system is based on cooperation of the US, the Russian Federation, the EU states, Japan, China and other nuclear-capable states. The teaching of non-proliferation requires concepts of how states, alliances and international agencies address the relationships linking national security, nuclear technology, energy issues and international politics at the state and sub-state levels.

Critical issues for study include but are not limited to: the present global distribution of nuclear weapons arsenals and delivery systems at the levels of states and alliances; the overlapping systems of global and regional treaties limiting nuclear weapons proliferation; the development of national scientific-technological-economic capabilities to produce fissile materials; corresponding national capabilities for civilian nuclear power facilities; safeguard systems aimed at preventing nuclear terrorism by non-state actors; proliferation issues involving the nuclear fuel cycle, and the technologies and protocols of verification.

This is an exciting and important issue of the INMM Journal. To my knowledge no where prior to this has such a global representation of nonproliferation education programs been profiled in one place. Hopefully this will contribute to the development of future nonproliferation education programs.

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