NSF Awards Columbia $2.9 Million to Train Next Generation of Elite Scientists

By Joseph Kennedy

Columbia University has won a highly competitive $2.9 million National Science Foundation (NSF) grant to establish an Integrative Graduate Education and Research Training (IGERT) program. Columbia will offer an interdisciplinary Ph.D. program in Applied Mathematics and the Earth & Environmental Sciences that draws upon the resources of 18 faculty and research scientists in five departments—Mathematics, Statistics, Applied Physics & Applied Mathematics, Earth & Environmental Sciences and Earth & Environmental Engineering—under the coordinating role of The Earth Institute.

Its aim is to train a new generation of scientists whose level of mathematical sophistication will be considerably higher than that of typical students currently graduating from earth and environmental science programs; and at the same time, whose familiarity with the important issues and major open research questions in the earth and environmental sciences will be much deeper than what is usually expected of students trained uniquely within applied mathematics departments.

"Earth sciences are replete with difficult scientific problems that have huge societal impact," says Professor Lorenzo M. Polvani, a principal investigator from The Fu Foundation School of Engineering & Applied Science who submitted the NSF proposal and who will guide the program. "Unfortunately, current graduate programs do not adequately prepare students to solve these problems. The aim of the new IGERT program is to equip students with both a very strong mathematical background and a deep understanding of the important issues affecting the future of our planet."

The new integrated curriculum will empower IGERT graduates to apply their advanced mathematical skills to a wide variety of earth science problems, including:

- Utilizing novel mathematical tools to model the tropospheric atmosphere, a region of crucial importance to the earth's climate
- Developing theoretical models of the dynamics and evolution of the earth's crust to improve our understanding of earthquakes
- Investigating the interaction of the water cycle with other geophysical processes to better predict floods and droughts
- Studying the ocean's currents and circulation to better understand their role in the global climate

Students may be registered in any of the five participating departments. They will take courses in several departments and conduct research in areas that cross the boundaries of any single traditional discipline.

The IGERT program was conceived and initiated by the NSF in 1997 "to catalyze a cultural change in graduate education by establishing innovative models for collaborative research that transcends traditional disciplinary boundaries and contributes to the development of a diverse, globally aware, science and engineering workforce."

There are approximately 100 IGERT programs nationally, which were selected in an annual competition. In addition to the $2.9 million to be received from the NSF, Columbia will invest approximately $1.5 million into the program over the next five years.

John Szwed Named Louis Armstrong Visiting Professor of Jazz Studies

John F. Szwed, John Muss- er Professor of Anthropology at Yale University, has been appointed the 2003-2004 Louis Armstrong Visiting Professor of Jazz Studies at Columbia. Szwed, who holds joint appointments in the departments of African American studies, Music, and American studies at Yale, will begin his appointment in September.

Szwed succeeds Robin Kelley and Stanley Crouch as the third Louis Armstrong Visiting Professor of Jazz Studies. This five-year, rotating appointment is supported by a grant from the Louis Armstrong Educational Foundation, which Armstrong founded to support jazz education in a variety of settings.

As Armstrong Visiting Professor, Szwed will teach two courses next year, including a graduate seminar, and give a public lecture as part of a lecture and concert series hosted by the Center for Jazz Studies at Columbia.

"Szwed is a phenomenal scholar and teacher," said Robert O'Meally, Zoë Neale Hurston Professor of American Literature and Director of Columbia's Center for Jazz Studies. "His books on Miles Davis and Sun Ra are beautifully written examples of jazz scholarship at its finest. They set the agenda for the next generation. We could not be more lucky that he will be our Armstrong Professor."

"Being at Columbia will offer an opportunity to learn more about an art I love, to discover and put in some kind of order materials on the early history of jazz that have not normally been recognized as part of its history," Szwed said. Szwed will also begin editing a series of books about jazz musicians who came of age in the 1960s and 1970s, including Ornette Coleman, Cecil Taylor, Carl Bley, and Anthony Braxton, among others.

Szwed has been at Yale since 1982, where he has served as director of Graduate Studies in Anthropology and Acting Chair of African-American Studies. In addition to serving on Yale's faculty, Szwed is president and producer for the non-profit production company Brilliant Corners, which is based in New York City. His current projects with Brilliant Corners include The Collected Recordings of Zora Neale Hurston and Tribute to the October Revolution in Jazz, both forthcoming on Evidence Records.

Szwed holds both an M.A. in Communications and a Ph.D. in Sociology and Anthropology from Ohio State. His research and teaching have garnered him national recognition, including fellowships from the Guggenheim and Rockefeller foundations. In addition to numerous publications ranging from anthropological studies of Newfoundland to liner notes for Impulse and Riverside Records, Szwed recently published two books on jazz. Space is the Place: Sun Ra's Life on Earth (1997) and So What: The Life of Miles Davis (2002).

Columbia, responding to a growing student demand, offers a range of jazz studies courses in the undergraduate and graduate curricula. This academic year, hundreds of students are taking courses ranging from an undergraduate jazz survey course, to two graduate seminars, and an upper-level undergraduate course on jazz in American culture. Introduction to Jazz, called simply "Jazz," boasts 230 registered students this spring, making it one of the largest classes at the University.

Physicist Robert Resnick Greets Students and Signs his Classic Work, Fundamentals of Physics

Physics students wait as physicist Robert Resnick signs Fundamentals of Physics, one of seven Resnick texts translated into more than 30 languages and studied by an estimated seven million students worldwide since first published in 1960. The youthful 80-year-old Resnick autographed books following his talk "So You Want to Write a Physics Textbook," sponsored by the Columbia Society of Physics Students. Currently a Professor Emeritus of physics and Hamilton Distinguished Professor of Science Education at Rensselaer Polytechnic Institute, Resnick has spent many years of his career, beginning as a lighthearted, behind-the-scenes account of the collaborative effort with David Halliday in writing Fundamentals of Physics, Fill-in-the-blank physics fliers followed as a kind of selected letters spouting both high praise and scathing criticism from readers around the world.

Resnick remarked: “Our success is due to the fact that we paid attention to the students. I really have to pay tribute to the students... From them I’ve learned a lot about physics and how to teach.”

Resnick Photo by Lalla Grimes