Popular Lecturer Wins Grammy
Princeton faculty may be better known for winning Nobel prizes, but Phil Schaap's students couldn't have been more excited when the visiting scholar received a Grammy Award in Los Angeles in February. Schaap was honored for his work as producer of Louis Armstrong: The Complete Hot Five and Hot Seven Recordings (Columbia/Legacy Records) which was named best historical album of the year.

A well-known jazz expert and radio commentator, Schaap has taught annually in Princeton's American Studies Program since 1994. Last semester, his course centered on Louis Armstrong's life and art. Next fall, he plans to focus on bebop.

This was Schaap's seventh Grammy Award, but he downplays the significance of the acclaim he's received. "I think teaching jazz at Princeton is just as rewarding," he says. "I would equal that to a Grammy."

USA Today Honors Pierce '02
Many Princeton students juggle academics with work in the arts, athletics or community service, but few do it better than junior Lillian B. Pierce '02, who was one of 20 students recently named by USA Today to its All-USA College Academic First Team for outstanding intellectual achievement and leadership. She was chosen from 682 nominees from 49 states and the District of Columbia.

A mathematician who maintains an above-4.0 average while tutoring as a peer instructor in math and chemistry, Pierce is also a highly accomplished concert violinist who serves as co-concertmaster of the Princeton University Orchestra, co-chair of the Orchestra Committee and founder of the Nassau String Quartet, a student ensemble. In her spare time, she works as a nurse assistant at the McCosh Health Center — and she is writing a play.

Pierce, along with her younger brother and four other students, was educated at home, in a private school run by her mother. But she has enjoyed Princeton's traditional college setting so much, she says, that she now plans on making a career in academia.

Ruby Lee Defines New Computer Paradigms
Computer architect brings real-world experience to the classroom and the lab.

C an your TV dispense cash? Does your hat transmit live images? They soon will, according to computer architect Ruby B. Lee. She believes that what she calls “teleputers” — integrated information appliances that will merge the functions of telephones, television and computers — will become “the ubiquitous devices of the 21st century.”

Wearing a teleputer, say, on a wristband, you will instantly be able to compare the price of an item in a store with the price for that item locally or globally,” says Lee, who is Princeton’s Forrest G. Hamrick Professor in Engineering and Professor of Electrical Engineering. “This will significantly impact the way people buy goods.” A teleputer could also be used as a personal automated teller machine for e-cash, or as a credit or debit card. A more advanced teleputer with camera input, embedded in a cap, could allow parents to transmit their daughter’s soccer game in real time to a large display window built into the wall of her grandparents’ home in another country. On a broader level, teleputers could be used to keep politicians honest by testing the veracity of their statements as they speak.

At PALMS, the Princeton Architecture Lab for Multimedia and Security, Lee and her graduate students are researching the technology needed to turn such scenarios into everyday reality. In the classroom, the under-graduate students in computer architecture know that along with theory, they are getting the down-to-earth perspective of a pioneering architect of the computer industry.

Shortly after earning her Ph.D. in electrical engineering from Stanford, where she was one of two female graduate students in the engineering school, Lee was hired by Hewlett-Packard to be part of a select team charged with devising a major new architecture that would unify the company’s top three computer product lines — a rare opportunity for any computer architect, and especially for a fresh minded one. She went on to spend the next 17 years at HP where she served as chief architect of both the multimedia and security architecture teams. She was responsible for some of the most widely used advanced business computers and technical workstations, and she currently holds 88 U.S. and international patents.

“What's fun about working with Ruby is that she has both extraordinary technical competency and a philosophical perspective on technology,” says Stuart C. Schwartz, professor of electrical engineering.

Both sides come into play in Lee’s intense focus on secure information processing. A hallmark of her work is her insistence on “pervasive security” — security that can be built into a system’s core hardware and software, rather than added as an afterthought.

“The Internet is a disaster waiting to happen,” she says. “It wasn’t designed for e-commerce and private data, but rather for the free exchange of information between scholarly institutions. You can try to retrofit such a system, but it will always be vulnerable at its core. You have to build security and trust from the ground up.”

Lee believes that ideally, values, too, should be incorporated into the hardware and software of the future — otherwise, society will get values by default. “For example, if we had built in a tiny, convenient e-cash deduction — say a fraction of a cent — each time an MP3 music file was downloaded, people might be encouraged to pay for the music, rather than expecting it to be free,” she says.

In fact, Lee would like to mobilize social scientists, humanities and engineers to begin to pinpoint the values that ought to be considered cyber rights and responsibilities — a process that will become far more complex as networking increases among diverse cultures.

“Princeton, with its focus on values, interdisciplinary collaboration and service to all nations is an ideal place for such dialogues,” says Lee.