UCSC to Get Grades

Faculty members at the University of California at Santa Cruz voted 154 to 77 in late February to make letter grades mandatory for the first time in the campus's 35-year history, beginning with incoming freshmen in 2001. The faculty will vote at the end of May on whether—and in what form—to retain the current narrative evaluations system.

UCSC is one of just a handful of US institutions that use written evaluations to describe students' strengths and weaknesses and progress over a term. Some faculty and students fear that mandatory letter grades will shift the emphasis away from learning. The issue remains highly charged, and is likely to be revisited in a mail ballot to poll the more than half the academic senate who didn't vote.

Debate over whether to switch to a conventional grading system has come up periodically over the years. Proponents argue that UCSC graduates are at a disadvantage when applying for fellowships, entrance into graduate and professional schools, or industry jobs. They also worry about prospective students and their parents being turned off by the lack of grades. Not having grades gives the campus a "flaky, laid-back image," says physicist Bruce Rosenblum. "This not only hurts our recruitment, but much more important to me, it hurts the students we get."

To address such concerns, UCSC students have been able to opt to earn a grade point average since 1997. But it's not enough, proponents of mandatory grades argue. "Beginning students have little idea of what they will eventually do, and anyone encouraging them to opt for no letter grades can hurt them badly," says Rosenblum.

UCSC graduates are admitted to graduate school at a rate "second only to Berkeley within the UC system," notes physics chair George Brown. "The fact of the matter is that they are not handicapped [by not getting letter grades]." What's more, adds Brown, who also heads the campus committee on education policy, "UCSC gets plenty of highly qualified applicants."

For their part, UCSC students and alumni were overwhelmingly against mandatory letter grades. "I think it will change the nature of this learning environment," says Rachel Cannara, a senior physics major who spearheaded a letter-writing campaign against requiring grades. "Not having grades fosters collaboration, as opposed to negative competitive behavior among students." In physics, that can be especially important for women, she adds.

It's ironic to be moving to a more competitive structure at a time when teamwork is increasingly emphasized in the workplace, notes UCSC psychologist Barbara Rogoff. She is involved in developing plans for a system of streamlined narrative evaluations, intended to lighten the burden on professors, as well as make it easier for admissions committees and other outsiders to read UCSC transcripts. A lot of faculty members, even those who favor letter grades, want to have evaluations too. Says physicist Zack Schlesinger, "I am hoping we can keep positive aspects of our culture, in terms of how a class is taught, and how students learn. Students here never ask about grades or what is on the test. They are motivated by curiosity."

TONI FEDER

From Quarks to Squawks: Former Physicist Plays Avant-Garde Sax

At the tiny Museum of Contemporary Art in Washington, DC, John Butcher stood before his audience and introduced himself: "The pre-show publicity described my concert as freely improvised solo sax. That's usually guaranteed to keep people away in droves, so I'm glad you're all here!" Thus, one evening in February, did Butcher, free music improviser and former theoretical physicist, begin a performance of his characteristically unfettered, richly varied music.

Butcher, a native of London, first took up the saxophone in the 1970s while he was a physics undergraduate at the University of Surrey. After finishing his degree, he moved to London, where, as a graduate student at Imperial College, he continued to follow his interests in both physics and improvised music. Choosing quantum chromodynamics as his field, he worked on charmed quarks under the guidance of Hugh Jones. In his free time, he played saxophone in various avant-garde groups.

SUSAN O'CONNOR

But quarks and gluons weren't attractive enough to keep him in the world of physics. "I began to feel I wasn't making a difference," recounts Butcher. "I was just chipping away, filling in details." He also felt somewhat alienated from his fellow theorists. "At tea breaks no one seemed to talk much—they just sat there lost in their own worlds." In 1981, soon after earning his PhD, he became a professional musician.

Usually, saxophonists create notes by blowing over the single reed in the saxophone's mouthpiece. The reed, in turn, causes the column of air in the saxophone to vibrate at a fundamental frequency determined by fingering the saxophone's keys. With careful control of breath, lips and fingers, the saxophonist creates the warm, sweet tone characteristic of the instrument.

Although Butcher and other free improvisers don't completely eschew such nice notes, they strive instead to expand the variety of sound that can be produced with the instrument. At the Georgetown concert, Butcher's first piece (on soprano saxophone) opened with a sequence of piercing, simultaneously sounded overtones. At the start of his final piece (on tenor saxophone), the audience heard him blowing in such a way that the reed barely vibrated. The sound emerging from the horn resembled the washing back and forth of waves on a pebbly beach. To the listener, Butcher's solo improvisations unfold as a series of sonic episodes of strikingly different tone and rhythm.

Does a knowledge of physics help to make such sounds? "Not really," says Butcher, "but I do think more about the instrument as a tool for the

endless ways a column of air can be made to vibrate, rather than as a saxophone used to punch out discrete frequencies."

Though a minority taste—just 22 people turned up to hear Butcher in Georgetown—freely improvised music has enough fans worldwide to support a host of independent CD labels (including ACTA, which Butcher runs) and an extensive network of performance spaces and festivals, most of which are in Europe. Still, no one gets rich playing such esoteric music. To supplement his income, the London-based Butcher spends eight hours a week teaching high school students a subject he hasn't completely forgotten—physics.

To hear samples of Butcher's work and learn about his upcoming concerts, visit Peter Stubley's European Free Improvisation Web page at http://www.shef.ac.uk/misc/rec/ps/efi/eaudmp3.html.

CHARLES DAY

Ban on Nuclear Waste Transport Eased in Germany

Nuclear waste shipments will be allowed to resume in Germany as of August. They were banned there and in several other European countries in May 1998, when it emerged that there was too much radioactivity on the outer surfaces of the containers and vehicles used—and that for years the nuclear utility companies responsible had hidden those violations from their governments (see PHYSICS TODAY, July 1998, page 54). Shipments were allowed to resume in France and Switzerland after just a few months, but they are still banned in the Netherlands. In Germany, where the scandal prompted the greatest public outcry, resumption remains controversial.

Germany's nuclear utilities have been pressing their government to lift the ban, with some of them claiming they are running out of on-site storage space for spent fuel, and will have to close down reactors if the waste isn't moved out. Now, waste shipments to storage sites within Germany will resume, but only with advance approval by the government on a case-by-case basis. Shipments to and from reprocessing plants in France and the UK, however, have not been given the go-ahead.

The German government has laid out 60 conditions aimed at improving the cleaning and monitoring of nuclear waste cargo. But similar measures haven't solved the problem in France, where illegal amounts of radioactivity were found on the outer surfaces of 10 of the first 109 nuclear waste shipments made since the ban was lifted there, notes Susanne Ochse, an energy expert at Greenpeace. "The cause of the contamination has not been determined. Shipments should not start up again before the problem is understood." In allowing transports, she adds, the German government is putting "the interests of nuclear power plant operators before the safety of train workers, police, or residents along the transport route."

In Germany, the issue of nuclear waste transportation is entwined with the Social Democratic–Green coalition government's goal of phasing out nuclear power. On 26 January, in announcing the end of the ban, environment minister Jürgen Trittin warned that "if in the coming weeks the government and nuclear utilities do not reach an agreement about phasing out nuclear power, the discussion about waste transport is likely to heat up again. A technology that can be implemented only over the protests and disapproval of the majority of the population . . . hurts democracy."

TONI FEDER

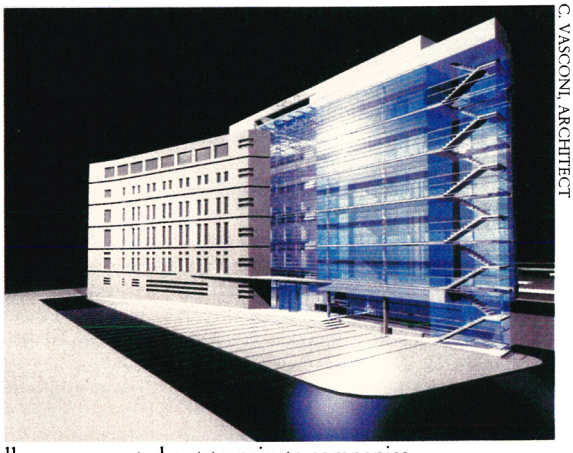
Cosmology Prize Starts with a Bang

The newly established Cosmology Prize of the Peter Gruber Foundation will carry a cash award of $150 000, and will be given annually "to an outstanding astronomer, cosmologist, physicist, or mathematician [to] recognize fundamental scientific advances that shape the way we see and comprehend the universe." Nominations are due by 31 May. The timeline is a bit tight, according to Larry E. Tise, the executive administrator for the foundation's awards, because "Peter Gruber wanted to establish and award the prize during the year 2000, as one more element of our observance of the millennium." Three more $150 000 Gruber awards are anticipated for 2001—in science, culture, and code of law.

Gruber was born in Hungary in 1929, and moved with his parents to Calcutta, India, at age ten. When World War II reached India, he was sent to a boarding school in the Himalayas. In 1951, he came to the US, where he served in the army and ultimately built a successful asset management business on Wall Street. In 1993, he started the Peter Gruber Foundation, which is known for its

Strasbourg Interdisciplinary Institute Gets Off the Ground

Exploring the interfaces among physics, chemistry, and biology, providing research autonomy for young scientists, and forging ties with industrial researchers are the core aims of the new Institute of Supramolecular Science and Engineering in Strasbourg, France. Says ISIS founder and chemistry Nobelist Jean-Marie Lehn, "The spirit of ISIS is to study complex matter seen from different points of view—it's ambitious."



C. VASCONI, ARCHITECT

The institute, which is part of Louis Pasteur University, will eventually have five departments led by senior scientists—so far, these are Lehn's own group studying supramolecular chemistry and a nanostructures and technology group under Thomas Ebbesen—and five headed up by junior researchers, as well as space rented out to private companies.

Says Lehn, who wants to break from the European tradition of investigators remaining for years under the thumb of a senior professor, "ISIS will offer young people independence and the possibility to do their own research." In addition, no more than half of the 120 or so staff positions will be permanent. "We want to have flux," says Ebbesen. "It refreshes us—and it's good for visiting scientists."

ISIS is still in temporary quarters, but work on a new building is expected to begin this summer (see architect's rendering), and it should be ready by 2002.

TONI FEDER