

## News Focus

CHINESE UNIVERSITIES:

### Engineers Aim for a Quality Boost

Dennis Normile and Hao Xin  
Back to the drawing board.

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The phenomenal numbers of scientists and engineers churned out by China's universities has prompted much hand-wringing in the West. Three years ago, for example, when the U.S. National Academies called for a broad federal effort "to create new, high-quality jobs for all Americans," a draft report echoed some widely used, scary numbers: In 2004, the United States produced roughly 70,000 bachelor's-trained engineers versus China's 600,000 and India's 350,000.

Such statistics are misleading, claims a team led by Gary Gereffi and Vivek Wadhwa, both of Duke University in Durham, North Carolina. Each country, they note, uses differing methodologies and different definitions of "engineer." China's figures include graduates from 2- and 3-year programs and vocational fields such as car repair. U.S. numbers, in contrast, exclude computer science and information technology majors, which Gereffi and Wadhwa argue should fall under a broad definition of engineering. Their reanalysis of the 2004 numbers found that 137,000 students graduated from rigorous 4-year engineering programs in the United States compared with 351,000 in China and 112,000 in India.

Just how talented are the droves of overseas engineers? "The bottom line is that the Chinese increased quantity at the cost of quality," says Wadhwa, whose team examined this topic in the January 2008 issue of the *Journal of Engineering Education*. Interviews with companies in China indicate that although top Chinese universities produce solid engineers, the quality of graduates of most universities is poor, Wadhwa says.

The Chinese government has recognized the quality gap. Last September, it launched a pilot program on engineering education reform to raise quality at 10 top Chinese universities, including Tsinghua. For Tsinghua and the handful of other institutions that attract the best students, says Yingyi Qian, who heads Tsinghua's School of Economics and Management, "if I cannot turn them out to be competitive on the global stage, that's a failure."