

A NEW

INTERVIEWER:
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HAND AT NCE'S HELM

AN INTERVIEW WITH THOMAS R. BLAKE

NEWARK COLLEGE OF ENGINEERING (NCE), historically the flagship of NJIT's six schools, has a new dean at the academic helm. His name is Thomas R. Blake, and he comes to NJIT from the University of Massachusetts, Amherst. Blake assumed the responsibilities of NCE dean in 2003 from Angelo Perna, who became acting dean when S. T. Mau retired from that position in 2002. A noted mechanical engineer, Blake will have overall responsibility for programs enrolling more than 3,500 students.

Blake was appointed a professor of mechanical engineering at the University of Massachusetts in 1980 and became head of the Department of Mechanical Engineering in 1984. After founding the university's Center for Manufacturing Productivity in 1991, he served as the center's director until 1997. In 1996, he became associate dean of the College of Engineering, his last post in Massachusetts before coming to NJIT.

Blake's primary research interests include the mixing of particles and gases in chemical and mechanical processes, ranging from the combustion of solid fuel particles to the collection of pharmaceutical powders. His research has been funded by the U.S. Department of Energy, the National Science Foundation, the Office of Naval Research and various industry sponsors.

Blake received a bachelor's degree in mechanical engineering from Polytechnic Institute of Brooklyn, a master's in mechanical engineering from Rensselaer Polytechnic Institute, and both a master's of science and doctorate from Yale. Prior to joining the University of Massachusetts, he held positions at United Aircraft Corporation in Connecticut as well as at S-Cubed Inc. in California.

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Florida: I know you've only been here a short while, but what do you feel are the strengths of NCE?

Blake: I think the undergraduate programs here are very sound. I've been very impressed with the dedication of faculty and staff in providing excellent classroom experiences. The laboratories are also first rate. So I think students who choose Newark College of Engineering are making a wonderful choice. They'll have the opportunity to work with dedicated faculty, many of whom are well known in their professions either through research or professional practice, and the opportunity to work in laboratories that are in good shape in terms of equipment.

Florida: How do you think we're doing when it comes to research?

Blake: There's a core group of excellent faculty in a number of areas who are nationally known and have



established research programs that are very well respected. Going forward, it will be important to focus on investing in the most promising activities and providing the necessary equipment and infrastructure to support those activities. University resources today are finite and will continue to be finite. We are going to have to make investments based upon the work of people with proven track records for bringing in research and who are able to grow an area. We'll do our best to support them with new additions to faculty lines and with resources to grow their programs.

Florida: You came to NCE from the school of engineering at the University of Massachusetts. Is it larger or smaller than NCE?

Blake: At the College of Engineering of the University of Massachusetts, we had about 90 faculty and about a thousand undergraduates. NCE has some 125 faculty and several thousand students. There are also more departments at NCE, with big investments made in the last couple of years in departments such as biomedical engineering and areas such as engineered particulates and nanotechnology. These investments, together with the



It's possible that we may choose to build new research areas and hire prominent, established faculty from the outside, but again our bets would be made on people with proven records. To embellish that a bit, I tend to think of a dean's responsibilities as acquiring financial assets and making decisions about deploying them so as to grow educational and research programs. In a way, a dean is a venture capitalist and the faculty members are entrepreneurs. So I need to encourage investments in those faculty, in those entrepreneurs, who have a good business plan, either for research activities or for educational activities.

I'm delighted that Bob Altenkirch has initiated the strategic planning process for the entire university. I would be doing this in a more limited way as a new dean because I need to decide where to make my investments for NCE. I think the strategic planning process will allow us as a college, as faculty, to get an even better handle on those areas that have been outstanding and are deserving of future investment.

infusion of future institutional resources in such activities, will give us an interesting environment in which to grow.

Florida: What would you say to a high school student who is considering attending NCE, to influence him or her to choose NCE?

Blake: I'd say that NCE has excellent faculty and staff who are dedicated to the undergraduate experience. I believe that students coming here will get a great education that will prepare them for the workplace or for the best graduate schools. Among our alumni are some of the most prominent and successful citizens in the region and the nation. These dedicated alumni are interested in the success of the school and the success of the students. It would be wonderful for any undergraduate to become part of this community of faculty, students and alumni.

Florida: What do you like personally about engineering?

Blake: I think the terrific thing about engineering is that it is a problem-solving profession. If we

look at all the things that have made modern life better they are, in some way, a result of engineering — whether it's enjoying music, driving the right car or riding on good highways. Even good air quality is a function of engineers doing their job well. So I think engineering is a satisfying, challenging field in all aspects, one that allows the practitioner to contribute to society while, at the same time, offering the possibility of earning real money.

Engineering has been very good to me. My experiences have ranged from serving as a lieutenant in the U.S. Army Corps of Engineers to conducting research in a number of fields and working for large and small companies before coming to the academic world. All in all, I would say that I've been rewarded by choosing engineering, both personally and professionally.

Florida: Working for companies, big and small, what do you look back on most fondly?

Blake: I spent ten years in California in a consulting business, doing contract research. I was directing projects and marketing them, and handling just about every aspect of our projects as a profit center for a small company. I think that interacting with the team of people that I hired and with customers in an integrated fashion was one of my most rewarding experiences. Very intense, but very satisfying.

Florida: What was the nature of the work?

Blake: We dealt with a number of large projects, but most involved the modeling of chemical reactors for the purpose of energy conversion. As a result, we worked with the U.S. Department of Energy, utilities and oil companies, essentially to optimize reactor performance.

Florida: Is it this background, in business, that leads you to think in terms of venture capitalists and entrepreneurs even in the academic world?

Blake: In some ways, yes. I think that having spent time interacting with folks in the areas of entrepreneurship and venture capital, and dealing with related intellectual-property questions, has conditioned some of my thinking.

Two of the most important trends in university research today are industry sponsorship of work or federal sponsorship of large multi-disciplinary projects. The engagement of successful faculty in either is dependent on recognizing that such faculty are like entrepreneurs who own a small company.

If the sponsor's interest and that of the faculty entrepreneur coincide, then there can be a very productive engagement. It's like trying to get access to the president of a small company who is only interested in growing his or her business; there has to be a focus that will benefit both. The creation of such partnerships between faculty and outside sponsors is one of the challenges that I will engage in.

Florida: What would you consider to be some significant changes in the engineering field today, changes you've seen in your career?

Blake: That's a great question. If you think about engineering today, there's a spectrum of challenges ranging from the systems level — for example, work in the areas of infrastructure and transportation — down to problems at the micron and the submicron scale. Along this continuum from the very large to the very small, engineers are approaching the problems they encounter with advanced analytical tools and computer capabilities that didn't exist five, ten, fifteen years ago.

We're much better equipped to handle problems in a quantitative fashion. Also, engineers today are getting into areas that were the domain of physics, chemistry and biology a few decades ago. It's all part of the need to relate what happens on a small scale, at the submicron level, to the solutions to problems at the systems level.

Florida: What is your vision for NCE over the next five years?

Blake: I think there are two major objectives for Newark College of Engineering. On the education side, we need to enhance our undergraduate programs so that NCE will be increasingly the first choice of more students who plan to study engineering. On the research side, or the generation-of-knowledge side, we will grow research in a strategic way so that faculty have increasing dollars in their research budgets, larger numbers of PhD students, and increasing numbers of publications and citations.

All of this adds up to an environment which will, at some point, lead to higher rankings for both our undergraduate programs and our research and development activities. I'm optimistic that NCE and NJIT will follow the trajectory they've been on in terms of increasing stature. We'll build good programs and create a teaching and research environment of which we can all be proud. ■