

Reminiscences of a Department Chair

Becoming the department chair at the University of California, Santa Barbara (UCSB) in 1979 was unexpected on my part. I joined the faculty of electrical engineering at the University of California at Davis in January 1967. In late 1976, one of the professors in the Electrical Engineering and Computer Science Department at the Santa Barbara campus contacted me to find out whether I would be interested in transferring to UCSB. I had visited UCSB several times during my stay at Davis. I interviewed at UCSB in January 1977 and was very impressed by the vision of the chair of the department, Prof. Edwin B. Stear, and the enthusiasm of other faculty members of the department. The year before, Dr. Herbert Kroemer (Nobel Laureate, 2000) had joined the department. I felt that the department was on the right course and was going to become a leading electrical engineering department in the future. I accepted the offer to move to UCSB. Of course, the moderate round-the-year weather of Santa Barbara, the beauty of the city itself, and the ocean-facing location of the campus also influenced my decision to transfer. In this article, I recall some of my learning experiences as a department chair that led to successes of the department.

THE BEGINNING

I transferred to UCSB on July 1977 after 11 years at the Davis campus. Prof. Stear finished his five-year term of appointment as the department chair two years later. Around that time, the department was split into two departments: Computer Science and Electrical and Computer Engineering (ECE). It was an

honor for me to be the choice of my colleagues for the position of department chair for the newly formed ECE department. While I had not previously considered such a position, I felt it was my duty to accept the offer. Given the promise of the department, I was eager to take on the challenges of being department chair. However, research has always been my first and foremost joy and as such, I did not wish to stay as the chair for a complete five-year term; thus, I accepted a three-year term.

After becoming the chair, I decided that the department's major aim would be to move it to the top 20 electrical engineering departments in the country within five years. To this end, we needed to make sure we admitted very high-quality graduate students, offered small size classes in core courses, recruited the best person for each new faculty position, and increased the national visibility of the department. Moreover, as most of our graduates join industry, it was necessary to have closer interaction with industry. To achieve these goals we implemented a number of new programs and activities in the department, as described below. Ideas for some of these programs came from my visits to several departments at other University of California campuses, particularly, Berkeley and Los Angeles.

THE FIRST PROGRAM

Shortly after I became the department chair, Dr. E. Dale Wilmoth, who had just joined the local branch of the Delco Electronics of General Motors as the general manager, invited the chairs of all engineering departments at UCSB, the dean of engineering, and the vice chancellor for research at UCSB for an all-day

meeting to show us Delco's R&D activities. He also indicated his desire to strengthen ties between his company and UCSB. I met with him the following day and informed him that our department shared his vision for closer relations. In particular, the ECE Department wished to better serve the needs of local industry while simultaneously striving to become one of the leading electrical engineering departments in the country.

Being a relatively young ECE department in the University of California system, it was necessary to have an advisory

EDITOR'S INTRODUCTION

A conversation I had with Prof. Sanjit K. Mitra at ICASSP 2002, in which he recollected his experience as a department chair at UCSB, inspired me to initiate the special columns on "Leadership Reflections." Sanjit has made significant contributions to the areas of digital signal processing as well as image processing, and he has been recognized numerous times for his research and teaching. Most recently, he has been awarded the 2006 IEEE James M. Mulligan, Jr. Medal for Education. In this article, he reflects upon his experience as department chair. His main goal was to raise the department's ranking to the top 20 in five years and, remarkably, he and his colleagues achieved this goal. Sanjit implemented a number of new programs and activities to improve the quality of students, reduce class sizes, recruit top faculty, develop closer ties with industry, and increase the national visibility of the department. I hope this article will be an inspiration to others.

—Arye Nehorai
"Leadership Reflections"
Column Editor

board comprised of distinguished and visionary leaders of the profession to annually review the department's academic and research programs. We were fortunate to have an outstanding group of board members from leading companies, government organizations, and universities. This advisory board was instrumental in helping us shape the vision of the department and in constructing concrete methods by which to attain our goals.

CAPPING THE ENROLLMENT

After I transferred to the Santa Barbara campus, I was surprised to find that the engineering programs at UCSB did not have a cap on the enrollment, in contrast to the engineering programs at other UC campuses. As a result, the undergraduate enrollment was very high, with typically more than 200 students in required lecture courses and five to six students per bench in required laboratory courses. For a department with only 18 full-time faculty members, the large class sizes were particularly onerous for the faculty. The first action item in my agenda as department chair was to make ECE an impacted program so that the undergraduate enrollment could be reduced to a more manageable size, and after some effort we succeeded in doing so. Also, to reduce the class sizes, all undergraduate courses being offered by the department were made available only to declared majors. In addition, all required courses were offered in multiple sections so that the class size per section was smaller. To enable us to offer multiple lecture and laboratory sections and to cover many important graduate courses that were not being offered due to lack of faculty members, I succeeded in getting 6.5 temporary full-time faculty positions and six new teaching assistant positions from the dean of engineering. Needless to say, the temporary positions eventually became permanent after my tenure as the chair.

ACHIEVING WIDE EXPOSURE OF THE DEPARTMENT

To achieve national exposure of the department's teaching and research

activities, we started a newsletter that was published twice a year. It was mailed to all EE department heads, alumni, and anyone interested in receiving it. We also initiated a Distinguished Visitor Seminar Series program in which an internationally known researcher was invited every year to visit the department for a week and present a series of seminars. The two distinguished scientists who visited our department under this program during my tenure as chair were Prof. Brian D.O. Anderson of the Australian National University at Canberra and Dr. James W. Cooley of IBM Thomas J. Watson Research Center.

STRENGTHENING TIES WITH THE INDUSTRY

To expand and improve the quality of the department's program, it was clear to me that the department needed additional resources to supplement the department's resources allotted by the College of Engineering. To this end, we decided to set up an Industrial Affiliation Program in which companies joined as members by paying an annual fee. The funds generated by this program were to be used exclusively for three specific directions:

- *Development of courses and innovative programs*—Additional support was to be used to facilitate the development of new courses and permit the establishment of innovative programs, thus enabling the department to keep current with new advances in technology. Also, young faculty members were to be assisted with the initiation of research in their areas of specialization.
- *Development and upgrade of teaching laboratories*—One of the pressing needs of the department was to replace equipment as it grew obsolete and purchase additional equipment to ensure the laboratory facilities were more than adequate to train the electrical engineer or computer specialist.
- *Student financial aid*—The increasing enrollments and escalating costs eliminated many deserving students from the possibility of pursuing

advanced degrees. The aid was to be used to assist deserving students seeking higher education in electrical engineering.

As practical experience is a valuable component of an engineering education, we also set up an Internship-In-Industry (I³) Program to provide the students an opportunity to combine industrial experience with their academic studies. Students in this program worked at one of the participating companies for two or three summers. In addition to receiving financial compensation during their summer work assignments, the program gave the students an opportunity to relate the scientific and engineering principles discussed in class to important engineering problems in industry. The program also provided an early exposure to professional work in an industrial environment. The program was designed to enable an undergraduate student to receive his/her B.S. degree in electrical and computer engineering in less than the normal four years and a graduate student to receive his/her M.S. degree in one year. A faculty advisor was assigned to each participating company and served as a liaison between the department and the participating company. After completion of the summer assignment, the student prepared a written report on his/her project in accordance with the established procedures of the affiliated company and obtained a signed approval of the report along with an employer evaluation report from his/her project advisor. This report was then submitted to the student's faculty advisor for grading. To receive academic credit for successful completion of work assignment, the student registered formally as a student during summer session, paying the required tuition and other fees.

We also set up a Graduate Certificate Program directed towards engineers in local industry. Under this program, the engineer enrolled as a graduate student at our university and took five courses in three years out of a set of courses in various specific areas. After successful completion of these courses, the engineer received a certificate that showed the area in which he or she had special-

ized. After the receipt of two certificates, the engineer was eligible to receive an M.S. degree in electrical and computer engineering.

During the third year of my chairmanship, we initiated an Annual Research Review to provide an overview of the department's research activities and to communicate some of the research results, accomplishments, and interests. We believed such communication stimulated further dialogue between the department and interested individuals which, in turn, provided guidance and direction for future research endeavors. The first Annual Research Review was a tremendous success, with over 150 attendees from industry.

TIME TO EVALUATE

I stepped down as the chair of the department on 30 June 1982. In November of that year, in a survey published by the National Academy of Sciences, we were rated as the most improved EE department in the country, with our ranking moving to 18th. I hope I had some role in bringing our department to the top 20 for the first time in the department's history. I thank my colleagues in the department, in particular Prof. Kenneth Kotzebue who served as vice chair while I was the department chair, for their support and encouragement without which it would not have been possible to make our department one of the leading EE departments in the country. The three years I spent as the chair of our department was a truly valuable part of my professional career and I shall always remember it with great satisfaction.

AUTHOR

Sanjit K. Mitra is a professor of electrical and computer engineering at the University of California, Santa Barbara. He has served IEEE in various capacities, including president of the IEEE Circuits and Systems Society in 1986. He has held visiting appointments in Australia, Croatia, Finland, India, Japan, Singapore, Turkey, and the United Kingdom. He received the 1973 F.E. Terman Award and the 1985 AT&T Foundation Award of the American Society of Engineering

Education, the 1989 Education Award and the 2000 Mac Van Valkenburg Society Award of the IEEE Circuits and Systems Society, the Distinguished Senior U.S. Scientist Award from the Alexander von Humboldt Foundation of Germany in 1989, the 1996 Technical Achievement Award and the 2001 Society Award of the IEEE Signal Processing Society, the IEEE Millennium Medal in 2000, the McGraw-Hill/Jacob Millman Award of the IEEE Education Society in 2001, the 2002 Technical Achievement Award of the European Association for Signal Processing (EURASIP), and the 2005 Technical Achievement Award of SPIE, the International Society for Optical Engineering. He is the corecipient of the 2000 Blumlein-Browne-Willans Premium of the Institution of Electrical Engineers (London) and the 2001 IEEE Transactions on Circuits and Systems for Video Technology Best Paper Award. He has been awarded Doctor Honoris Causa from the Tampere University of Technology, Finland, and the Technical University of Bucharest, Romania, and the University Medal of the Technical University of Slovakia at Bratislava. He is an academician of the Academy of Finland, a member of the U.S. National Academy of Engineering, a member of the Norwegian Academy of Technological Sciences, a foreign member of the Croatian Academy of Sciences and Arts, and a foreign member of the Academy of Engineering of Mexico. He is a Fellow of the IEEE, AAAS, and SPIE.