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The Joys of Leading an Academic Department

It is often said that being a professor is the best job and being a department head or chair is the toughest job in an academic institution. This observation stems from the fact that, particularly in U.S. research universities, faculty members have considerable freedom, outside of assigned teaching and service duties, to manage their own time and scholarly effort and directions. Meanwhile, department chairs operate in a buffer zone between deans and upper administration, faculty colleagues, students, and increasingly institutional and government regulators and alumni. This necessitates wearing many hats, as administrator, teacher, researcher, lawyer, entrepreneur, and juggling a multitude of responsibilities.

Life as a Chair

While managing the affairs of the department, most chairs continue to teach; many lead research programs and continue to serve their profession. This background begs the question why any sane, successful faculty member might pursue or accept such a position. The reasons are many and often personal. The opportunity to effect change in a program and its future is certainly a compelling one. Experience as a head or chair is also highly valuable for those aspiring to leadership positions as deans and academic administrative roles. Similarly, experience as a volunteer leader in a technical/professional organization, such

as the IEEE, is of great value to one with interest in heading an academic department. Five of the electrical engineering programs in the U.S. Big Ten universities are led by former volunteer leaders in the IEEE Signal Processing Society or other IEEE Societies that represent fields allied to signal processing.

University of Minnesota

I have had the good fortune of serving the Department of Electrical and Computer Engineering at the University of Minnesota since 1990. During this time, I have reported to four deans in our college and faced three challenging periods of budgetary retrenchments during economic slowdowns and several kinder financial periods during the tech boom, with the side effect of creating difficulties in faculty recruiting and retention. Our department first grew to 50 faculty members, shrunk to 39, and has stabilized around 45. Our undergraduate population followed the national trend of dropping precipitously during the early through mid 1990s and has increased in recent years, due to the introduction of a computer engineering degree, to a current size of around 760 to go along with some 470 graduate students.

Since 1990, we have established undergraduate and master's degree programs in computer engineering (jointly with our computer science and engineering department), changed our program from a quarter system to a semester one, and have

successfully undergone three rounds of accreditation (ABET) reviews and two examinations of our graduate programs. During this period, 24 faculty members were recruited, 28 were tenured, 23 were promoted to the rank of professor, and 17 were appointed to chairs and professorships. I have taught one lecture

Prof. Kaveh is well known for his leadership roles in both research and IEEE professional activities, as is evidenced by many prestigious awards. In this article, he describes his experience as the head of the Electrical and Computer Engineering Department at the University of Minnesota. As he says, the leader of an academic department operates in a buffer zone that separates higher university administration and external regulators and faculty, staff, students, alumni, and industry. This necessitates that the leader wear many hats. He highlights a number of challenges and opportunities faced in managing a well-functioning department and promoting excellence. He summarizes common responsibilities, ranging from developing a programmatic vision and faculty hiring to promoting interdisciplinary work, and provides examples of approaches for meeting these responsibilities. This is the first article we have by a department head in this column; I believe it will inspire many of you who strive for similar excellence in managing.

—Arye Nehorai
"Leadership Reflections" editor

course per year from sophomore to advanced graduate levels and have coordinated our senior honors program every year. My research, while reduced in size and scope, has continued with a small group of graduate students. I have enjoyed the ride, and I think have managed to keep a reasonable level of sanity, to a large extent due to our department's supportive environment.

Nurturing a Department

There are many approaches to leading a well-functioning program and to promoting excellence in the department's discharge of its primary functions of teaching, research and outreach, and engagement. Personal style clearly plays a major role. However, the institutional financial and governance structures and a department's traditions set the parameters that dictate the effectiveness of a particular style. To be effective, and to reduce frustration on both sides, it is critically important for an incoming department chair to have an appreciation of the match between his or her style and the above mentioned local parameters.

Regardless of leadership style and local constraints, there are some tasks and issues that require significant attention by the head and that are of foremost importance to the development and nurturing of a department. In the following I summarize these tasks and issues and explain my style and level of involvement in them. I should say that departments within our college are given considerable latitude in the distribution of allocated resources, the establishment of departmental strategic directions, and the hiring of faculty and staff.

Vision and Policies

It is of paramount importance for a department faculty and its leader to have a shared vision for the department, an understandable and rea-

sonable policy for teaching loads, and an equitable merit evaluation process and procedure. The vision should certainly be developed on the basis of where the department is and where it aspires to be and should include realistic goals for achieving its aspirations. Over the years, I have worked with our department's elected Faculty Consultative Committee to formulate our vision, a workload policy, and merit review guidelines. These plans have been discussed, modified, and approved by the faculty. Periodic reviews of our program provide chances for updating and modifying our policies and procedures. These policies form the basis for the assignment of duties and annual merit reviews and, together with university-wide promotion and tenure regulations, provide guidelines for consideration of such recognition of faculty accomplishments and contributions.

Faculty Recruitment

I consider the most important parameter in determining the quality of a program to be its faculty. Faculty members create the academic program and the quality of instruction, establish the research agenda, and attract the students and resources for a vibrant scholarly enterprise. I have always been intimately involved in our faculty recruiting efforts. In addition to meetings with faculty candidates, I review each application before detailed evaluation by our faculty recruiting committee. This has provided me with a sense of the caliber of the applicants, the status of specialties in electrical and computer engineering and allied fields, and the pool of candidates within such specialties. It has also provided opportunities, where possible, to work on advocating at the college and university level for hiring based on special opportunities.

Faculty Mentorship and Support

When faculty members are recruited, every attempt should be made, within available resources, to set them up for success. Given the multifaceted responsibilities of a faculty member, particularly in a research-intensive program, this usually implies initially reduced teaching and service duties; mentorship and advice on teaching by senior faculty, the chair, and institutional teaching development programs; startup packages and laboratory space; and familiarization with external and internal funding opportunities for the initiation of research. Take advantage of local and national opportunities for recognizing faculty excellence in their formative years. It is paramount that the chair's interest in faculty development and professional well being is articulated and demonstrated. This necessitates awareness of faculty activities and, in my case, direct involvement in the mentorship process.

Merit Evaluation and Promotion

Another critical responsibility of a department head is the annual evaluation of faculty performance and promotion and tenure. There are a variety of assessment approaches and criteria for both annual and promotion evaluations that are dictated by institutional traditions and structures. In nearly all instances, the department chair has a major say in the outcome of such reviews. My approach to merit evaluations and promotions is very hands on. Together with the faculty we have developed expectations, criteria, and guidelines for merit evaluation, with faculty-approved latitude given to me for recognizing extraordinary contributions to different aspects of our duties. I am also a proponent of advocating promotions based on performance, rather than years of service, and actively work with a faculty

member and his/her advocate in the preparation of the promotion dossier.

Keeping up with Colleagues and Students

Realization of the vision of a program and execution of its strategic plans require the chair's awareness of the research and instructional activities in the department. The size of a program and its diversity can certainly place limitations on currency of such knowledge by one person. In my case, I have found it manageable to follow the developments in our instructional and research activities by participating in the relevant administrative and operational sides of these activities. In addition to teaching one course per year, I periodically serve on the curriculum committee and work with colleagues in the signal processing and communications area on course planning and modification. I have also participated in our efforts in the transition from a quarter to a semester system of instruction and in preparation and evaluation aspects of ABET reviews.

Since 1990, I have served as the coordinator of our senior honors program. I oversee research projects of 15–20 final year honors students. These students are placed in faculty members' research teams and work on projects that are directly related to the department's research. Their oral and written reports provide me with a sense of many of our research projects and at the same time provide a gauge of the quality of at least the best of our graduating seniors. I work on motivating these students for graduate work and provide guidance about applying to graduate schools and obtaining financial support. This also gives me an idea of our students' placement in graduate programs around the country.

Finally, I have tried, to the extent possible, to maintain an active research program, including writing

proposals, publishing papers, reviewing and participating in meetings, and other activities of our profession. I have benefited greatly from research interactions and collaborations with colleagues and their graduate students who have helped keep me aware of the many developments in our field. Besides inherent intellectual stimulation and preparations for life after headship, such activities have provided me with a first-hand sense of the opportunities and challenges faced by my colleagues in such arenas as dissemination of their results and attraction of research funds.

Developing Leaders

As in any organization, it is important for a department to develop and nurture a cadre of leaders on its staff. This often requires the head to recognize and support faculty interested in assuming leadership in administrative and committee assignments at departmental, collegiate, university, and/or professional levels. Delegation of responsibility on such matters as management of undergraduate and graduate affairs, promotion and tenure review, faculty recruiting, and major planning exercises are good vehicles for developing departmental leaders, as they provide them with program-wide perspective and ownership.

External Engagement

Increasingly, department heads must build relationships with alumni, establish industrial partners, and raise endowment funds. Effective communication and stewardship of the endowments are keys to these efforts. While I interact with many companies on recruiting and research support initiatives, the formal vehicle for bringing industrial perspective to our educational, research, and administrative efforts is through our Industrial Advisory Council, representatives from 22 local and national industries. Our

communication with alumni and friends is through a newsletter and our Web site. I also work closely with the college development staff and often meet with alumni and past and potential donors.

Cross Fertilization

Many exciting scientific and engineering developments take place at the boundaries of disciplines and challenge traditional departmental parochialism. Cross-disciplinary enterprises must be encouraged and supported. This may require the relaxation of disciplinary course requirements, particularly at the graduate level, and the recognition of faculty effort in advising students outside of the major. There is an unfortunate barrier to cross-departmental activities in that productivity in funding and degree generation is often attributed to departments for the purposes of resource allocation and/or program rating. These artificial barriers must be removed or circumvented. In planning and promoting such activities, I have found it beneficial to have good working relationships with leaders of other science and engineering programs on campus. I also encourage courtesy appointments (in our university, graduate appointments) of faculty from other programs in our program and vice versa.

Summary

The core mission of a university is carried out by its departments. Leading an academic department is challenging, but with the right attitude the rewards can be many. Most rewards come vicariously through the accomplishments of the faculty, students, alumni, and staff. In turn, these accomplishments are central to raising the level and reputation of the program. The chair can play a critical role in setting the

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area is Notre Dame Cathedral, which rivals any of the world's churches in splendor. The port area also has many other activities.

Montreal is named after the mountain located just north of downtown, less than a kilometer from the ICASSP site. Mount Royal is a large city park, with many miles of walking trails. See nature come to life again there after its winter slumber. Just west of the park and visible for many miles in all directions from Montreal, we find the Oratory, a large church dedicated to Brother Andre. Many sick people have found solace and cure here, as the testimony of a large number of crutches discarded by the healed can attest.

For easy access from around the world, it is hard to beat Montreal. It is the closest major North American city to all of Europe and welcomes nonstop flights daily from many cities including Amsterdam, Frankfurt, Paris, London, Zurich, and Los Angeles, with several daily nonstops from cities such as Boston, Chicago, Cincinnati, Cleveland, New York, Philadelphia, Toronto, Vancouver, and Washington. From the Orient, there are convenient one-connection flights (through New York, Boston, Toronto, Los

Angeles, or Vancouver). Similarly one can fly to Montreal from almost anywhere in the United States with no more than one connecting flight. The recently renamed Dorval Airport is located just 12 miles from downtown (about a 15-minute taxi or limousine ride, direct to the ICASSP hotel). As a third of the flights to Montreal are international, we have a simple and experienced customs clearance procedure. In addition, for those returning to the United States after the conference, one clears U.S. customs right here in Montreal at departure time (thus facilitating any later U.S. connections).

Montreal is a popular tourist city, and by visiting in May one avoids the summer crowds. It is a very cosmopolitan city—one of the most diverse in North America, with people of many different cultures. As in all of Quebec, most people speak French, but English is spoken easily. It is in Montreal where English and French Canada truly meet; thus a large majority of Montrealers are bilingual, with many being trilingual as well. Certainly one has no problem at all speaking English in all commercial establishments (indeed about 40% of Montrealers learn English before French).

Visiting costs are affordable, as the current exchange rate has US\$1 = \$1.35 Canadian. Montreal has many museums (including an excellent Fine Arts Museum), many historic churches, including the magnificent Notre Dame Cathedral, Mary Queen of the World (right next to the ICASSP site), and the Oratory. Other attractions include a world-class casino, the Biodome (with multiple interior environments for flora and fauna), the Insectarium, the Botanical Gardens, and the 1976 Olympic Stadium. In this last venue, major league baseball is still played (the Montreal Expos)—take in a game after the conference in what may well be the final year before they move elsewhere. We also have a theme park, Six Flags La Ronde, that has one of the world's best wooden roller coasters—a dual-track one; the park is open weekends in May. If the Montreal Canadians (an NHL hockey team) make the playoffs, we may well have Stanley Cup hockey in town the week of ICASSP. Finally, early visitors to ICASSP might even find late-spring downhill skiing a two-hour drive away.

We hope to see you all at ICASSP'04 in May in Montreal. A bientot (see you soon).

leadership **reflections** *continued from page 10*

strategic directions and helping realize the department's educational and scholarly goals. Much of the chair's effort is in attracting and managing department resources; the recruitment, support, development and recognition of the faculty; and interfacing with university administration and external constituents. Ultimately, leadership is the business of people and a mutual sense of trust, fairness, and belief in the common good among the chair, faculty, and staff is crucial for the development and effective operation of the department.

Acknowledgments

Thank you to my faculty colleagues and staff for their tremendous support and collegiality during my terms as head of the department. I also thank Arye Nehorai for inviting me to share some of my experiences and thoughts on leading an academic department.

Mos Kaveh is the Centennial Professor and, since 1990, the head of the Department of Electrical and Computer Engineering at the University of Minnesota. He has served the IEEE Signal Processing Society



in a number of capacities including a member of the Board of Governors, as the vice-president for Publications, and as the general chair of ICASSP'93. He is

a Fellow of IEEE and has received the 1988 ASSP Meritorious Service Award, the 2000 Society Award from the IEEE Signal Processing Society, and a 2002 Outstanding Electrical and Computer Engineer Award from Purdue University.