Bridging the Gap between Industry and Academia

Dennis J Frailey was a pioneer in the field of computing. Starting in 1962, he advanced from a simple Fortran programming job in the days of vacuum-tube computers (IBM 650 and 704) to his current position as Principal Fellow in the Network Centric Systems division of Raytheon Corporation. Along the way he designed and developed compilers, computers, operating systems, user interfaces, expert systems, simulators, and numerous application systems. He also spent most of these years as a college professor, starting as a full-time faculty member and later transitioning to the role of adjunct (part-time) professor.

Ever since his senior year in high school, Dennis has had one foot in industry and the other in academics. His college years included summer work as a software developer for the Ford Motor Company's Scientific Research Laboratory in Dearborn, Michigan and part time software development in University computer centers at Notre Dame and Purdue. After earning his PhD in computer science in 1971 (he was one of the first 50 in the US to do so), he took a faculty position at Southern Methodist University to help grow its fledgeling computer science program. But he was soon working part time at Texas Instruments, building a real-time operating system for marine navigation, simulation studies for seismic data processing systems and an Algol compiler for the Advanced Scientific Computer. In 1977 his roles reversed as he switched to full-time employee at TI and adjunct faculty member at SMU. His career advanced over the next 25+ years, but he always found time to teach part time at SMU, The University of Texas, UCLA, and National Technological University.

Dennis brings the realities of the workplace to his university courses. "He's actually done it," was one student's reason for selecting Frailey's section of a computer architecture class. A typical assignment requires the student to analyze a difficult problem, propose a solution, and prepare an executive summary, convincing upper management to support the proposal. Dennis builds bridges between industry and academia by serving on industry advisory boards, sponsoring university research programs, and giving technical talks to support recruiting efforts. Both the Association for Computing Machinery and the Institute for Electrical and Electronic Engineers have selected Dennis to be a speaker in their Distinguished Lecturer programs – he's given hundreds of technical talks to both professional and academic groups over the years. He also finds opportunities to teach as part of his regular work duties – in addition to informal "brown bag" seminars, Dennis teaches portions of the Raytheon Principles of Program Leadership course and he's a

master instructor for the Raytheon-wide software project management course. He also heads up the Advanced Studies and Strategic Education committees for Raytheon in the North Texas area.

"Good education must be founded in real experience," says Frailey, noting that his "real jobs" over the years have included computer design, software design, project management, process improvement, proposal writing, and even writing speeches (for the chairman of the board of Texas Instruments back in the late 1970's). Students in Raytheon and the universities mention his many "war stories" as a valuable element of his classes. But he also finds value for industry in the longer horizons that academic researchers are able to explore. "We can get too focused on today's problems and lose sight of the big picture," says Frailey.

One of Dennis' most popular lecture topics in both the universities and at Raytheon is how to have a successful career. He mentors colleagues at work, is actively involved in the Technical Honors selection process (by which the most outstanding technical contributors are given special awards), and lectures to college students about how to have a successful career. Curiously, when asked what single factor makes the biggest difference in one's prospects, he doesn't cite any technical skill or knowledge. Instead, he observes the strong correlation between career success and the ability to read, write, and give an effective presentation. "You can be the most brilliant technical expert in the world, but if you can't convince others to accept your ideas, your career will plateau."