Michael Kupferschmid

Extracurriculum Vitæ
life experiences that contributed indirectly to my professional competencies

Defense Contracting I expected to enlist in the Air Force upon graduation from high school so I joined the Civil Air Patrol, which at that time was a unit of the USAF Continental Air Command. There I learned about the military and aviation, became a radio operator, and attended summer encampment at Griffiss Air Force Base; as a technical sergeant I was a drill instructor and flight leader. A National Merit Scholarship allowed me to attend college, and at Rensselaer Polytechnic Institute I joined Air Force ROTC. During my sophomore year there I commanded the freshman drill team as a staff sergeant and was awarded the Chicago Tribune ROTC Medal. When I was admitted to a five-year Master's degree program I opted out of ROTC, but when I received my BS degree the Vietnam war was underway so I delayed graduate school and got a job at Sikorsky Aircraft. There I worked as a junior engineer on an Air Force contract, with periodic visits to Eglin Air Force Base and review by active-duty officers. During that time I held a Secret security clearance, and as a member of the autopilot design team I participated in 53 test flights. Years after the war was over I learned that the night rescue system I had worked on doubled the odds that a pilot shot down in combat would be rescued. Much later in my career I worked as a consultant for Knolls Atomic Power Laboratory on a Navy contract. These experiences familiarized me with military standards, the procurement process, and the defense research and development culture.

Practical Electronics I expected that in the Air Force I would be a technician, so in high school I studied the Radio Amateur's Handbook and worked in the repair shop of a local television store. A neighbor gave me the exam for a Novice class license; later I progressed to Technician class as WB2FYZ and finally, as WA1ARS, to the General Class license. I built my own equipment, and although that was mainly from kits it did help me learn the rudiments of radio communication and tube-based electronics. The autopilot system I worked on at Sikorsky was based on solid-state operational amplifiers, and the winch control system described under Technical Theatre below used a combination of analog and TTL digital circuitry. My participation in these activities gave me extensive hands-on experience with the construction and testing of electronic hardware.

Practical Computing My first programming course, in the spring of 1966, was about numerical methods in Fortran. In addition to learning the language I became an expert keypunch operator and prepared my own drum cards to speed my work. I used Fortran for my undergraduate courses and then for engineering calculations at work, on IBM 1620, IBM System/360, and Univac 1108 computers. My textbook *Classical Fortran* is now in its second edition (see the *Numerical Computing* section of this web page). In graduate school I learned System/360 MVS and its job control language, and used PL/1 and GPSS. At Rensselaer I became skilled in Pascal and IBM assembler language and contributed to the MTS development project (see `https://en.wikipedia.org/wiki/Michigan_Terminal_System`). In 1986 IBM gave me a contract to hand-code an assembler-language implementation of an optimization algorithm for their Engineering and Scientific Subroutine Library. In 1987 I began using Unix for my everyday work, and since 1999 I have been a daily user of Linux and shell programming (see the *programming* tab).

Technical Theatre   From eighth grade through high school and during college summers, I worked as a set carpenter, grip, flyman, followspot operator, electrician, lighting designer, technical director, stage manager, and occasional walk-on actor, for both amateur and professional theatre companies. I took several Shakespeare courses in college and read everything I could find about stage lighting. In 1972 and 1973 I was a student at the Yale School of Drama. As a teaching fellow there I designed and supervised a two-semester sequence of courses about the scientific foundations of theatrical production technology, and as a research assistant I worked in George Izenour's theatre engineering laboratory (see `https://en.wikipedia.org/wiki/George_Izenour`). When he offered me a full-time job I resigned from the MFA program, having by then participated in 65 productions of 71 plays by 15 different companies. In 1975 I published an article in Theatre Design and Technology (see the *research publications* tab of this web page) and at Devices, Inc. and J. R. Clancy I designed controls for variable-speed scenery winches (see the *curriculum vitae* tab of this web page).