

Obituaries

Robert Schulein (1942–2019)



Introduction

Bob Schulein, AES Fellow and past AES president, died on January 1, 2019, after a long battle with cancer. Bob was very active in the Audio Engineering Society both at the international and local level. He cochaired the AES Technical Council and led the Technical Committee on Hearing and Hearing Loss Prevention. He implemented the Richard C. Heyser Memorial Lecture series. He helped organize many AES conferences, most recently the international conferences on Music Induced Hearing Disorders held in Chicago and Denmark. He published many AES papers, both convention/conference papers and in the *Journal*. His AES awards include the Publications Award, Board of Governors

Award, and the Bronze Medal. He was a fixture at the local AES Chicago Section and could be found videotaping those meetings up until late 2018. Bob was so active in the AES we are certain to fail to mention all of his AES activities. It is hard to find another person more dedicated to the advancement of our Society.

Formative Years

Bob was raised in Rockford, Illinois. His father was a mechanical engineer and his family tells stories of how he encouraged Bob's curiosity to figure out how things work. Like many other budding electrical engineers of his age, Bob was fond of putting together Heathkit amplifiers and radios in junior high and high school. There is even an old photograph of him as a child playing in a mock TV studio with Bob behind the "camera."

Bob would find himself behind the camera again at the end of his career creating ImmersAV videos. Bob also loved music, although he was not a musician. We suspect his desire to be an audio engineer developed as it has for many of us audio engineers. He combined his love of music and an inquisitive mind to create a career so he could do both at the same time.

After high school, Bob ventured 70 miles north to study electrical engineering at the University of Wisconsin in Madison. There he received BSEE and MSEE degrees. He worked under Dick Greiner on his Master's thesis titled, "The Use of Silicon Semiconductor Piezoresistive Diaphragms as Acoustic Transducers." We believe Bob was the first of many graduate students who worked on audio projects with Professor Greiner.

Shure

Bob's first job after graduate school in 1966 was at Shure in Evanston, Illinois. He would spend the next thirty years of his career at his first employer. For most of that time he lived two blocks from work. Co-workers remember great barbecues and get-togethers in the Schuleins' backyard.

Bob began his career at Shure as a development engineer working on microphones. His first publication in the *Journal* was in 1970 on the development of a Shure dynamic cardioid microphone (SM53/54). During the 1970s he continued to work on microphones, leading the effort to create the company's first condenser microphone (SM81). He also turned his attention during this time to entire sound reinforcement systems (Pro-Master). He continued to publish in the *AES Journal* and received a Publication Award in 1977 for a paper on the equalization of sound reproduction systems. It was also during this period he received his first of 27 patents on an adjustable horn design (U.S. Patent 4,194,590), coinvented with Roger Anderson.

In the mid 1970s Bob was made a manager at Shure. It was at Shure where Bob developed his well-regarded organizational skills. He applied these skills on the job and also to the local audio engineering community as a president of the Chicago Audio and Acoustics Group (CAAG) and the Midwest Acoustics Conference (MAC), and vice president, Central Region of the AES. CAAG had monthly meetings typically at various restaurants around the city. Friends recall Bob rating each restaurant they would attend with the

highest ratings going to the restaurants with the cleanest bathrooms.

With the advent of CDs in the 1980s and consequent decline of the phono cartridge business, Shure was looking for new markets for audio technology. For Bob, this meant working on automatic microphone systems (AMS), culminating in co-inventing U.S. Patent 4,489,442. Steve Julstrom, as a new employee, began working with Bob on the AMS, which was the beginning of a 37-year collaboration.

Bob also worked with the first analog cellular phone system, AMPS, short for the Advanced Mobile Phone System. Part of this work involved him developing a hands-free microphone using his Cadillac with a trunk full of cellular radio electronics.

Perhaps the most significant work of his during this time was integrating video with multichannel surround audio. This culminated in the creation of Shure Home Theater Systems (HTS). Bob led this group at Shure which included Steve Julstrom, Mark Gilbert, and John Bullock, among others. Bob was an early advocate of using enhanced matrix decoding techniques in the home. Shure produced a complete line of consumer audio products for this purpose. The team also created a matrix-surround encoder that enabled some early broadcast television productions including Saturday Night Live, The Grammy Awards, and Super Bowl XXIV.

After Shure decided to leave the home theater business, Bob turned his attention to OEM products at Shure, in particular, working on hands-free technology in automobiles. This effort put Shure microphone technology into Ford, Jaguar, Mercedes, and other vehicles. Similar technology was also put to use as the front-end of speech-recognition systems.

Bob continued to be active in the AES during this time, serving in various roles in the Society. He attended most Audio Engineering Society conventions as he was active on one AES Committee or another. Being a former AES president, Bob would be invited to attend the President's Reception (hosted by the late Don Plunkett) party that would be held during one evening of the convention. Bob was gracious in letting his friends tag along with him to these parties giving us the opportunity to meet the leaders and celebrities of the Society.

Etymotic Research

After leaving Shure in 1996, Bob began

working at Etymotic Research in Elk Grove Village, Illinois. It was during this time that he turned his attention to hearing-related products that would make him a prolific inventor for the remainder of his career, at Etymotic, as well as with other companies as a consultant. Most of his patented inventions are in this area of technology. His further contributions included development of directional microphones for hearing aid applications, a fully-sealed, yet acoustically transparent wax guard, and, with Revitronix, the R-SPACETM sound system for evaluating hearing device performance in noisy environments. Bob, along with Steve Julstrom and Willem Soede, developed the Linkit, an over-the-ear, end-fire array microphone.

RBS Consulting, Sensaphonics and beyond

In the 2000s Bob became RBS Consultants and continued to work with Steve Julstrom, primarily with Sensaphonics. Starting in 2004, they were part of the team that developed the 3D Active Ambient in-ear monitor system (U.S. Patent 8,160,261), now used widely by many major artists. Bob's continuing contributions to their product line include the dB Check, a level/safety analyzer for in-ear monitors. His work at Sensaphonics was still ongoing at the time of his death.

It was during this time that Bob became extremely passionate about hearing health. In 2005, Dr. Michael Santucci of Sensaphonics and Bob formed and co-chaired the AES Technical Committee on Hearing and Hearing Loss Prevention. This committee organized three international conferences in 2012 and 2018 in Chicago, IL, and in 2015 in Aalborg, Denmark. Bob cochaired all three of these conferences.

Bob was not an early riser and we learned not to bother calling him before 10 am on most days. But he was a tireless worker and it was common to receive emails from him past midnight. We all hope to have his energy when we got to be his age. Being efficient with his time, Bob liked to organize meetings around lunch and dinner. He also had a thick head of hair. To keep it in shape he was known to travel 30 miles each way on a Saturday morning once a month to have his hair cut by his long-time (over forty years) barber in Evanston. Afterward, a lunch meeting would take place at a local sub shop.

ImmersAV

Bob loved audio. He loved it so much we are not certain he had any other hobbies. Perhaps his ImmersAV content production (combining binaural recordings with video) comes as close as it gets to an activity one could call a hobby for Bob. He loved being a music producer and engineer: finding talent to record, camera man, building custom microphones, experimenting with microphone positioning, YouTube uploading, website tweaking, setting up demonstrations at various conventions and trade shows, etc. Bob brought his well-honed organizational skills to bear working on ImmersAV projects. He assembled a volunteer staff who were happy to assist him setting up and tearing down and offering suggestions. One of his favorite places to record was the WBEZ studios in Chicago. His friend Adam Yoffe at WBEZ would open the studios for us on Sundays when it was not being used. Afterward, it was not unusual to have dinner at Bakers Square (we think he liked the pie).

Family

Bob loved his family. It was common to see his wife Joyce at his side at social engagements. They were married 53 years at the time of his death. He was very proud of the accomplishments of his daughters, Heather and Jennifer. He enjoyed being a mentor and teacher to his grandson, Max, and to his two nephews, Robert and Michael. It was also common to find Bob talking on the phone to his brother Tom. One could say Bob's life was family and audio.

Summary

Bob's curiosity, creativity, and work ethic defined his life, along with his seemingly limitless appetite for the next project, as long as it was interesting and could make a contribution. He dramatically enhanced the lives and careers of those who were privileged to have an association with him, as a mentor, a collaborator, and a friend. We hope this synopsis gives readers an appreciation of Bob's multifaceted career in audio. We miss Bob. In many ways it is difficult to believe he is gone. He will long be remembered as a friend, mentor, colleague, organizer, and prolific inventor with boundless energy. Rest in peace Bob.

**Dan Mapes-Riordan, Bill Bevan,
Steve Julstrom, Heather Schulein-Davis,
Michael Santucci**