

It is sad to hear of the passing of Don Davis. I have so many fond memories of my collaboration with Don and Carolyn and the Syn-Aud-Con community, who helped me share my research on reflection phase gratings and pioneer the sound diffusion industry with the founding of RPG Diffusor Systems, Inc. in 1983. This story begins in the Laboratory for the Structure of Matter at the Naval Research Laboratory in Washington, DC, where I was employed as a diffraction physicist examining the three-dimensional structure of matter in various phases, using electron and x-ray diffraction techniques. In October 1980, I came across an article in *Physics Today*, with a cover photo of Manfred Schroeder seated in an anechoic chamber, in which he described a new design called a reflection phase grating that uniformly diffused sound. These devices were in effect two-dimensional sonic crystals, which scatter sound in the same way that three-dimensional crystal lattices scatter electromagnetic waves. Since the diffraction theory employed in x-ray crystallographic studies was applicable to reflection phase gratings, it was straightforward to model and

design the diffusers. The article was of particular interest because I was renovating a private recording studio, using the novel design suggested by Don Davis called Live End Dead End (LEDE), which employed an absorptive front area surrounding the speakers and a diffusive rear. I began researching these new acoustical treatments and decided to present my research in October 1983 at the 74th AES Convention in New York where Manfred Schroeder was the invited lead speaker. Don and Carolyn were in attendance and invited me to present my research at an upcoming Syn-Aud-Con workshop at which the first TEF measurements of a QRD and PRD were performed.

I fondly remember a visit to the Farm for Don's retirement with several members of the Syn-Aud-Con family.

First LEDE & Studio Design Workshop

At the AES meeting, Peter met Don and Carolyn Davis who invited him to present his research at the LEDE & Studio Design Workshop at Dallas Sound Labs, Figure 1. Don Eger of Techron along with the class made the first ETC measurements and listening tests of a QRD

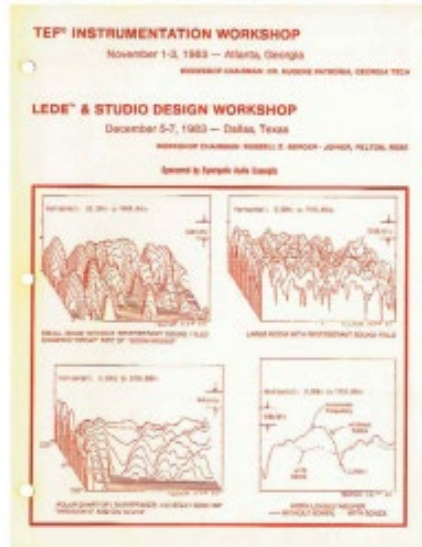


Figure 1. LEDE & Studio Design Workshop Announcement

and PRD in the Dallas Sound Lab control room, with the TEF-10 analyzer, Figure 2. The time response data clearly show the temporal distribution of the scattered sound from the diffusers, compared to the specular reflection from a flat board placed in front of the diffusers. Photos of the first QRD and PRD are shown in Figure 3. With the outdoor diffuse lighting, the well depth sequences are illustrated by the shadows.

SCHROEDER'S QUADRATIC-RESIDUE DIFFUSOR

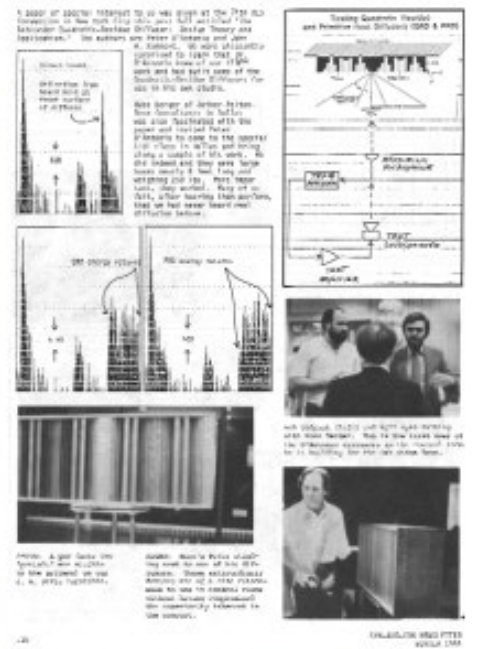


Figure 2. First TEF measurements of the time response for a QRD and PRD.

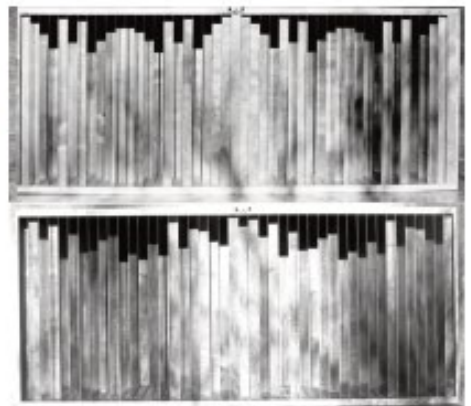


Figure 3. Top: First QRD based on a prime of 23; Bottom: First PRD based on a prime of 23. Shadow patterns illustrate the well depth sequences.



Some of our friends that helped us celebrate.

Photo by Mary Gruzka

I will be eternally grateful to Don and Carolyn for their encouragement and introducing me to so many interesting and creative people, as I participated in their traveling educational program. Rest in peace Don.