Sounds

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A Newsletter from ***Stewart Acoustical Consultants*** *Our 26th Year*

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Welcome - to what we hope will become a more frequent, though shorter and less formal newsletter. We hope to make you aware of changes in our business, our activities, opportunities available for learning, and some technical matters you should be considering in your work.

New Office – New Address – New Phone and Fax – New Staff - New Capabilities

At the beginning of this year we moved into new offices (requiring new phone and fax numbers), hired a new acoustician, and acquired major new software for analysis of room acoustics.

7406 L Chapel Hill Road, Raleigh, NC 27607 – our new address. Now that says Raleigh, but we are actually in Cary by a few hundred feet. We are conveniently located at Exit 290 on I-40, first drive on the right after you exit and turn toward Cary on NC 54 which is Chapel Hill Road. We are upstairs on the far end of the row of townhouses on your left after you turn from Chapel Hill Road. We will be discontinuing our P. O. Box, so please change our address in your files.

While you are changing things, please also change our phone and fax numbers.

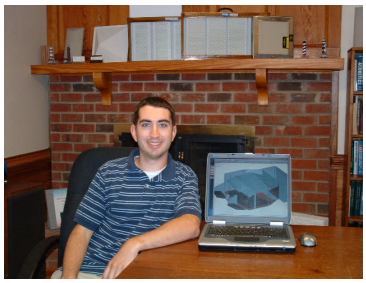
Phone 919-858-0899 Fax 919-858-0878

Our old phone number is temporarily forwarded, but we cannot receive faxes on it.

When you call, you will now encounter a recorded message asking you to dial an extension. After dialing the extension, you must press the # key that is to the right of 0 on most phones. For the first available person, you can press 0#, but to reach one of us specifically, press our extension as follows:

Noral Stewart **1#**

Joe Bridger **2#**



Aaron Farbo **3#**

Oh yes, Aaron.

Aaron Farbo joined us in January. He is originally from Lancaster, PA, and is a spring 2003 graduate cum laude of the acoustics program in the Department of Mechanical Engineering at the University of Hartford. This is the only specifically accredited undergraduate engineering degree program in acoustics in the US, though a few other schools (notably Architectural Engineering at the University of Kansas) provide similar training through electives. The Hartford program also includes co-op experience and consulting assignments. Aaron did his co-op work in the acoustics lab of an aircraft engine manufacturer, and did consulting projects related to hearing aid-design and conversion of an auditorium into a practice space for a symphony orchestra. Before joining us, he worked a summer for the hearing aid manufacturer, and started his MS in the Acoustical Engineering Department at Penn State, also working in a laboratory there. The Penn State graduate program in acoustics is the most comprehensive in the US with extensive correspondence and summer school options that should allow him to complete his degree with minimal further time on campus. Aaron's computer skills have proven particularly helpful as we have moved to implement new computer capabilities.

And those computer capabilities

We have enhanced our abilities in the analysis of room acoustics with the use of the EASE computer program including the AURA routines and Auralization. EASE was introduced many years ago primarily as a tool for sound system design. It did include basic room acoustics analysis similar to what we have always done. The program itself in the hands of someone not knowledgeable in acoustics can produce misleading results.

What has made it attractive to us is the addition of the AURA routines and auralization. The AURA package is a method of computing the room behavior based on the tracing of sound rays as they emit from a source and bounce around the room. This generates not just a steady state result for the sound, but the variation with time. By introducing a sound pulse as the source, the decay with time can be simulated and the reverberation time obtained. We also generate what is called the impulse response for the room. The auralization capability takes everything to a whole new level, using this impulse response to simulate what speech or music will sound like in the room before it is built. We not only get a feel for the general reverberation in the room, but also the effects of specific reflections heard as echoes or degradation of speech. We have observed cases where we could hear a problem in the simulation that was not evident just looking at the plans. We then can go back and search for the source of the bad reflection and test solutions. We also see cases where we can aurally demonstrate the effect of design options to clients. As a side effect, we also can produce high quality graphics as illustrated above to describe areas that need treatment. Autocad files provided by clients can be imported into the program to save some time as long as they do not contain excessive details. We also can work jointly with the audio systems designers to use the same basic model to reduce costs.

Farbo on the Search for Champy

Last summer, Liz von Muggenthaler of Fauna Communications Institute in Hillsborough led an expedition on Lake Champlain in search "Champy," the legendary monster of the lake. The effort was sponsored and taped by Discovery Channel and other cable networks and was shown last fall. Liz was assisted in the effort by Joe Gregory, then a post doctoral researcher in mechanical engineering at N. C. State. The effort resulting in the recording of signals startlingly similar to the echolocation signals of whales and porpoises. No fresh water species capable of this is known to exist in North America. Tragically, Joe Gregory died in an automobile accident in the fall. Liz is resuming the search this summer, and we are proud to have Aaron Farbo of our staff assisting for a couple of days. Watch for the results on cable TV channels in the fall.

Acoustical Society of America - 75 Years

The Acoustical Society of America celebrated its 75th Anniversary in May in New York City. The society was founded in New York in the last week of 1928 and had its first meeting in 1929. Several architectural acousticians from around the country including California traveled over the Christmas holiday to meet with others at Bell Telephone Laboratories to organize the society. The society today has over 7000 members of very diversified interests covering all aspects of acoustics. The celebration was organized and led by Leo Beranek, quite a story himself at 90 years of age and still going strong. Beranek had been elected President of the Society at its 25th anniversary meeting in 1954.

Leo Beranek receives National Medal of Science from President Bush

Last November at the White House, President Bush presented the National Medal of Science to Dr. Leo Beranek in recognition of his many contributions in acoustics over his long career as an acoustical consultant. This award is granted to typically less than 10 people each year, most of them university researchers. To those of us in a field where people rarely get recognition from organizations outside acoustics, this was indeed a welcome honor.

Beranek had first received Presidential recognition in 1948 when he was awarded the Presidential Certificate of Merit by Harry Truman for his contributions to improved pilot communications during World War II. Shortly thereafter, in response to a request from the United Nations for assistance with their new headquarters, he founded Bolt, Beranek, and Newman (BBN). This became the largest acoustical consulting firm in the 1950's and 60's, with many people from the firm later starting their own firms. The projects that gave him the greatest personal satisfaction in acoustics were the development of methodologies to evaluate jet aircraft sound (showing it different from propeller aircraft), and his work on concert halls.

Not mentioned in the citation but perhaps just as important as a long-term contribution is the role Beranek played in the development and construction of the internet. When the major industrial and communication firms of the country told the Army they could not build a computer network, Beranek led BBN to take on the task. They had already invented the modem, and as they built this system they also developed our modern email system and introduced the "@" into email addresses. This effort led to the internet becoming the dominant business of BBN rather than acoustics, with the acoustical consulting business later spun off before BBN became part of what is today Verizon.

Architectural Acoustics Program at Virginia Tech

Former acoustical consultant Michael Ermann has joined the faculty of the School of Architecture + Design at Virginia Tech to establish research programs, coursework, and graduate degree programs in architectural acoustics. This provides a major complement to other acoustics programs at Virginia Tech and other universities in the region that are primarily operated within engineering programs.

North Carolina Chapter of ASA Awards First Royster Prize

Larry Royster, retired acoustical consultant and professor at N. C. State and his wife Julie have endowed a fund with the Acoustical Society of America to allow local chapters to conduct student competitions in noise control and hearing conservation. The North Carolina chapter had the honor of conducting the first such competition last fall at Wake Forest University. A $5000 prize was awarded to Patricio Ravetta, a graduate student at Virginia Tech for his project developing a phased array microphone system for source localization and identification. Another competition is scheduled for this fall in Blacksburg.

North Carolina ASA Soliciting Student Prize Contributions

The Royster student prize program allows only one or two ASA chapters each year to hold a competition, and imposes restrictions on technical content of projects and the way the prize can be divided. The North Carolina Chapter of ASA is building a supplementary prize fund to allow for competitions in years when the chapter may not have the opportunity to hold a regular Royster competition, or to make awards to students whose projects have exceptional merit but do not fit within the guidelines of the Royster competition. Such might occur for instance with some projects in architectural acoustics. If you can make a contribution of any size, please contact Noral Stewart.

Staff Activities in Professional, Technical, and Standards Organizations

Noral Stewart this month concludes 10 years of service on the Board of Directors of the National Council of Acoustical Consultants, including a two year term as President. That period has seen NCAC put on a firm financial foundation, develop a website and brochure, and rewrite its bylaws. Stewart will now serve a two year term as NCAC Historian, and continue as a member of the Long Range Planning Committee for life with other past presidents.

Joe Bridger is concluding a second one-year term as Chair of the North Carolina Chapter of the Acoustical Society of America, and will serve as Treasurer for the next year. Aaron Farbo has been appointed as member of the chapter executive council.

The new revision of ASTM E 336, the standard for field evaluation of isolation between spaces in buildings, is nearing completion under task group chair Noral Stewart. The major change will be in the treatment of large rooms where measurements will be confined to areas near the separating partition rather than averaged over the room. The proposed revision also allows for the measurement of a “apparent” STC that includes flanking effects, and clarifies that the actual FSTC of a partition cannot be reported unless it is demonstrated that flanking is insignificant.