

AES Multi-Tracks in New York 2007, Part 2

More highlights from the 123rd AES Convention in New York City



TUTORIALS

“Here Comes the Sun—Are You Listening?” William Moylan (Coordinator of Sound Recording Technology, University of Massachusetts Lowell; www.UML.edu) believes that “hearing requires learning what to listen for, then developing skill in the process of listening.” Through listening to and analyzing *Here Comes the Sun* and other Beatles productions, this tutorial illustrated key ways to “enhance listening skills and learn from those who create the albums we love.” I was never sure whether Moylan was saying that music creators intentionally place the instruments with

respect to each other and the sound stage, or merely create musical effects that as a byproduct can be interpreted as instrument location and motion. A critical note is the musicians’ limitations due to the available number of channels and recording/mixing technology. He asked the audience to decide whether one instrument was louder than a different instrument—a question flawed by not specifying measured or perceived loudness.

“Tinnitus: Just Another Buzz Word?”

Dr. Neil Cheria (neurologist specializing in vestibular and balance disorders, Center for Headache and Pain, Cleve-

land Clinic; www.ClevelandClinic.org) explained that “tinnitus is a common yet poorly understood disorder where sounds are perceived in the absence of an external source. He touched on the “pertinent anatomy and physiology, audiologic parameters, current research, guidelines for identifying high risk behaviors, and how to determine that you have a problem.” Tinnitus—an affliction, not a disease—is estimated to affect more than 50 million in the US, of which about 12 million seek medical help. There are many symptoms, with a range of severity, no definitive test, and no correlation to an audiogram. Neither is there a clearly identifiable cause, but some observational coincidences. There is also no specific treatment, and all are off-label, meaning that a medicine used for other purposes *might* have the beneficial side effect of reducing tinnitus’ severity.

“High Definition Perception—Psychoacoustics, Physiology, and the Numbers Race.” Poppy Crum (psychophysicist, Johns Hopkins University and Johns Hopkins Hospital; www.HopkinsHospital.org) acknowledged that “improvements in digital technology have led to higher fidelity recordings by some definitions, but they have also generated much controversy. Sampling rates and bit depths well beyond the limits of conventionally accepted human perception can be used, but are they necessary?” Crum discussed psychophysical and physiological research on ultrasonic hearing, noting that you don’t directly hear ultrasonics in the same way you hear audio frequencies,

but you do sense some ultrasonic stimuli. Whether that simultaneously affects hearing in the audible range is unproven. She gave a tutorial on “nonstandard mechanisms of hearing transduction across species as an ecological approach to hearing development.”

Many attendees brought preconceived notions about her topic, with some expecting her to support consumer digital audio at higher than 16-bit/44.1ksp/s as audibly better than the Red-Book CD standard. Her only claim was that higher-resolution audio recording is beneficial for original recordings and post production due to the degrading effects of extensive processing. She said nothing about the possibly audible difference between the CD standard and higher-resolution recordings. Crum did take issue with the conventional approach to analyzing listening test data, saying that with respect to the September 2007 AES *Journal* paper by E. Brad Meyer and David R. Moran (“Audibility of a CD-Standard A/D/A Loop Inserted into High-Resolution Audio Playback”) and many other papers on listening tests, she doesn’t find the data analysis technique sufficiently powerful to reach conclusions about near-threshold audibility choices. She suggested that signal detection theory, a data analysis approach used in psychophysical experiments, might be more powerful, yielding more reliably accurate conclusions regarding the audibility, or inaudibility, of near-threshold alternatives.

“Loudness Metering Techniques and Standards for Broadcasting.” Steve Lyman (Dolby Labs) chaired a panel consisting of Thomas Lund (TC Electronic; www.TCElectronic.com), Andres Mason (R&D, BBC; www.BBC.co.uk/rd/), and Gilbert Soulodre (Communications Research; www.CRC.ca/en). They discussed the two ITU-R standards, BS.1770 (“Algorithms to measure audio program loudness and true-peak audio level”) and BS.1771 (“Requirements for loudness and true-peak indicating meters”), and how the meters should be used.

“Architectural Acoustics.” Tony Hoover (McKay Conant Hoover Inc.) emphasized architectural acoustics consulting, which is the art of applying the science of sound in a timely, practical,

and easily-understood manner. Three distinct areas were covered: sound isolation (airborne and structure-borne), HVAC noise control, and surface treatments (absorption, reflection, and diffusion), plus electroacoustics. Several claims: it takes about 200ms for humans to determine pitch; near-field is closer than the size of the source (earphones are the only near-field monitors); so-called near-field monitors should be called direct-field monitors; for line-array speakers, the level drops about 3dB per distance-doubling until the distance equals the array length, after which the level transitions to dropping at 6dB per distance-doubling.

THE RICHARD C. HEYSER MEMORIAL LECTURE

“This series is an endowment for lectures by eminent individuals with outstanding reputations in audio engineering and related fields. . . It honors the memory of Richard Heyser, a scientist at the Jet Propulsion Laboratory who was awarded nine patents in audio and communication techniques and was widely known for his ability to clearly present new and complex technical ideas. Heyser was also an AES governor and AES Silver Medal recipient.”

“Listening to Music in Spaces.” Few are as worthy of such an honor as Leo L. Beranek, whose book *Acoustics* (in its current edition; ISBN 978-0883184943) is still the reference text more than a half century after initial printing. In his early 90s, Beranek is still active in the field, having just completed his 13th book (to be released in March) and recently been acoustical consultant for four concert halls, one opera house, and two drama theaters (I’m almost breathless recounting even these recent accomplishments!).

Beranek addressed “apparent source width, listener envelopment, lateral fraction, inter-aural cross-correlation coefficient, reverberation time, early decay time, initial time-delay gap, strength (and various substrengths including early and late relative levels, and early and late lateral relative levels), perceived bass, texture, just noticeable differences, and instrumentation.” These parameters are being met in halls of different architectures with varying

success. He touched on the relation of these parameters to living-room listening venues. To highlight Beranek’s devotion to research, he included ideas from an exceptionally obscure paper he had encountered less than a month before the presentation. Some of the topics were from papers he has recently published, but the overall impact of so much valuable information about concert hall acoustics in one address cannot be overstated.

WORKSHOPS

“Concert Halls and Their Acoustics” was hosted by John F. Allen (High Performance Stereo; www.HPS4000.com), and included panelists Leo L. Beranek, Chris Blair (acoustician; www.Akustiks.com), Barry Blesser (www.Blesser.net), Larry Kirkegaard (architectural acoustics; www.Kirkegaard.com), Jonathan McPhee (Music Director, Boston Ballet; www.BostonBallet.org), and Alan Valentine (Nashville Symphony president; www.NashvilleSymphony.com). These luminaries covered a wide range of issues, including Kirkegaard’s work acoustically refurbishing London’s Royal Festival Hall. The highlight was discussion of the new Schermerhorn Symphony Center in Nashville, Tenn.—including the Laura Turner concert hall that is earning accolades as being in some ways acoustically better than Boston’s Symphony Hall.

Valentine gave a detailed explanation of how the concert hall committee raised interest and financial backing from the city fathers and wealthy local investors, of the committee’s insistence that world-class acoustics be the primary focus, and about the overwhelmingly strong economic benefit that has come to the neighborhood and Nashville in general. The committee visited and studied halls in Europe and the US, with the design inspired by the great halls of the world—a basic shoe-box shape of proper size and height, with sound-diffusive walls and ceiling. Allen, who has attended concerts in Symphony Hall for many years, said the Schermerhorn Hall, with about 1860 comfortable seats versus Symphony Hall’s ~2600, has better bass (not an easy accomplishment) and higher sound

level.

LUNCHTIME KEYNOTES

“Beethoven’s Deafness.” Charles J. Limb (neurologist, otolaryngology, Johns Hopkins Hospital) and Patrick J. Donnelly (computer music research, Sound and Music Perception laboratory, Johns Hopkins University) noted that Beethoven is one of the three best-known deaf people (with Helen Keller and Thomas Edison). “Despite recent advances in medical understanding of hearing loss, the cause of Beethoven’s hearing loss remains a mystery. [Limb and Donnelly] reviewed Beethoven’s musical compositions from the perspective of a musician with progressive hearing loss, and in the context of medical diagnoses based on modern otologic principles. [They also discussed] recent data, including studies of Beethoven’s hair, as part of this investigative study of one of the great mysteries of classical music.”

TECHNICAL COMMITTEE MEETINGS

I attended a few meetings, and am not permitted to report on the details. However, it is clear that the participants are motivated to try to make standards and practices better, and coordinate their activities with working groups in other standards organizations such as SMPTE and ITU. I recommend that AES members consider joining those committees whose themes intersect with their interests. Only through involvement can you improve the status quo.

EXHIBITS

ConEQ. In an acoustically treated room, Real Sound Lab (www.RealSoundLab.com) demonstrated its CONEQ™ automatic speaker/room equalization. The system is flawed in that it presumes and requires a radiation pattern that exhibits uniform frequency response versus horizontal angle, a condition very few speakers can meet. When I raised the issue, they seemed unconcerned.

MISCELLANEOUS

High-resolution audio and ABX listening tests. During a non-session discussion, someone raised the question of

whether testing increases the listener’s stress level (is the listener trying too hard?), altering his hearing sensitivity to differences. Another asked if you listen differently during tests than when you listen, even critically, for pleasure. No conclusions were reached, but the thoughts percolate.

“Geoff Emerick/Sgt. Pepper.” Commemorating the 40th anniversary of *Sgt. Pepper’s Lonely Hearts Club Band*, Beatles engineer Geoff Emerick explained with examples and personal observances how the album was created.

There were many sessions I could not attend:

- **“Surround Sound: The Beginning, 1925-1940”** (Robert Auld; www.AuldWorks.com), **“Surround Sound: Quadraphonic Sound in the 1970s—Recording Classical Music”** (Auld, moderator; panelist Max Wilcox [www.ClassicsAbroad.org/max-wilcox.htm]).
- **“The Art of Space: Audio Engineers as Aural Architects”** was the subject of a lunchtime keynote address by Barry Blesser (AES Fellow; author of *Spaces Speak, Are You Listening? Experiencing Aural Architecture*; ISBN 978-0-262-02605-5; MIT Press; \$40). “Space and sound are inexorably linked because space changes our experience of sound, and sound changes our experience of space.”
- **Audio Education Forum.** Mark Parsons (Parsons Audio, Wellesley, Mass.; www.PAudio.com) moderated this panel discussion on preparation for audio-related employment among Jim Anderson (AES convention chair; Chair, Clive Davis Department of Recorded Music, NYU; www.JimAndersonSound.com), Eddy B. Brixen (EBB-consult; www.EBB-Consult.com), Alex Case (University of Massachusetts Lowell), Paul Foessler (Digidesign; www.Digidesign.com), and Dave Moulton (Sausalito Audio Works; www.SausalitoAudio.com).
- **“Audio Delivery Specification.”** (AES preprint 7182) Thomas Lund (TC Electronics; www.TCElectronic.com) addressed the lack of correlation between conventional metering (peak, average, and so on) and loudness. He offered the ITU-R BS.1770 standard

as “a coherent alternative to peak level fixation.” He presented novel ways of visualizing short-term loudness and loudness history.

- **“Surround 5.1 Mixing Dos and Don’ts”** was a workshop chaired by George Massenburg (www.Massenburg.com) with Frank Filippetti (Right Track Recording; www.RightTrackRecording.com), Crispin Murray (technology development manager, Metropolis; www.Metropolis-group.co.uk), Ronald Prent (Galaxy Studios; www.Galaxy.be), and Jeff Wolpert (www.JeffWolpert.com).
- **Graham Blyth Organ Concert.** As at each AES New York convention, Graham Blyth (co-founder and technical director, Soundcraft; www.Soundcraft.com) gave an organ recital, sponsored by the Soundcraft Studer Group, on the chapel organ and the sanctuary organ in Brick Presbyterian Church. The concert featured an all-British first half (Parry, Stanford, Matthias) plus the complete Widor *Symphony* #5.
- The convention offered a slate of technical tours of college music departments, studios, theaters, and stations.

The PA systems were fairly well adjusted throughout the convention. Intelligibility was quite good in almost all cases, and adequate in those few that were less successfully amplified. The only needed improvement is to lower the lights in the session rooms, especially on the screens, to a level that is high enough to take notes (and keep people from nodding off) while making it much easier to read the projected slides.

CONCLUSION

AES executives, and convention chair Jim Anderson in particular, should be proud of producing such an exceptional convention with a breadth and depth of presentation topics that were uniformly interesting and informative.

Preprints of the technical papers, and a CD-ROM of the entire set, are available at www.AES.org. MP3-on-CD recordings of the sessions and panels are available from Conference Copy Inc (www.ConferenceMediaGroup.com; 800-575-0580). *ax*