

tion of the software currently is better than 70 percent.

Rowe also spoke briefly about using music as therapy, referring to a recent article in the *Wall Street Journal* about the use of music in treating Alzheimers patients. Following the presentation there was a question-and-answer session, with many of the approximately fifty attendees participating.

Bill Siegmund

Internet streaming and distribution discussed in NY

At the December 9 meeting, an audience of more than 35 members and guests attended the New York Section's first meeting in the Joseph Urban Theater, located in the Hearst Corporation Tower. Another first was the use of Skype video and audio technology to enable panelist Andy Butler to participate in the meeting while speaking from the offices of the Public Broadcasting Service (PBS) in Arlington, Virginia. Seen on the theater's large screen, he was able to easily interact with both Ray Archie, the other featured speaker, and audience members.

Streaming and the distribution of those streams is a service that operates on a large scale and requires a large amount of capacity as a safeguard for failures. Ray Archie of CBS Interactive discussed how CBS formerly streamed into its broadcast center with Windows Media, and then sent that stream to Limelight Networks (a Content Distribution Network), which created too many points of failure. CBS has since streamlined its operations, using two CDNs (Akamai and StreamTheWorld)

for its radio streams. CBS has a cross-connect to its West Coast CDN, thus negating the vagaries of the Internet when the stream originates from that location. The advantage of StreamTheWorld is instant metrics, allowing for a CPM (cost per thousand) model for the advertisers supporting the content. The stream received by the users has passed through a Symetrix profanity delay, though this is not required by law.

Andy Butler explained that PBS has to generate 17 different versions from any media they ingest for streaming and distribution purposes. They host pbs.org, with over 719,000 web pages, on an OC12 connection in parallel with two different ISPs. The audio streams have "decent stereo," with issues in Microsoft's codecs needing to be overcome to have 5.1 audio. Andy also lamented that people think DTV "is only software," when it is not, which is why there are other obstacles to overcome in streaming and distribution of PBS content.

Both Andy and Ray prefer to operate their networks at 40% capacity, so that in the event of a router or CDN failure the switchover to compensate for this does not overload a network. Ray recalled an incident where the Yahoo and AOL Radio streams remained online, while CBS's had gone silent due to routers going offline, thus emphasizing that you need backup routers (or routes) in place for uptime. They also see Quality of Service (QoS) issues with WiMax and mobile reception that will need to be solved before streaming to fast-moving mobile devices (cars, trains) can be a good experience. Ray believes the current game-changer is a

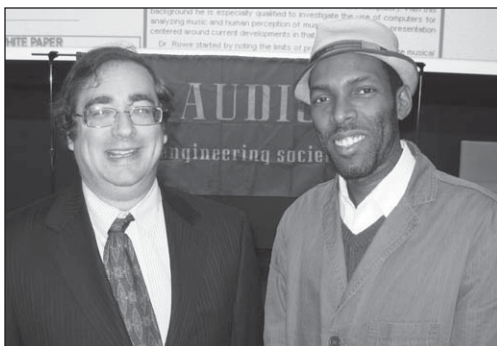
Samsung HDTV that is IP enabled, and can tie into CBS' content. He stated that one million of these HDTVs had been produced, but he did not have any sales figures.

Bill Siegmund

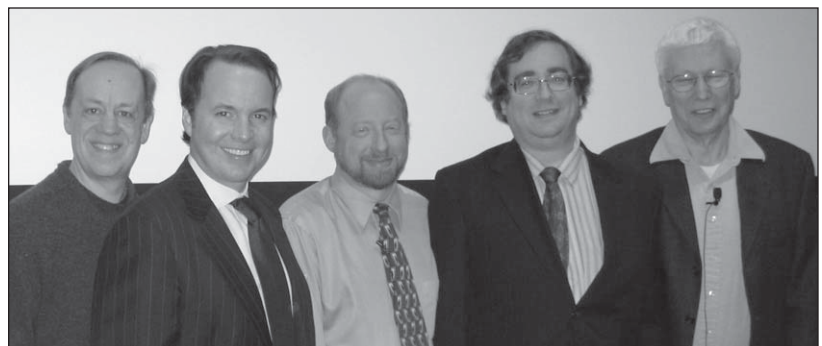
NY marks 75th anniversary of FM broadcasting

At its January 12 meeting, the AES New York Section honored Edwin H. Armstrong for his contribution to American entertainment: the invention FM radio broadcasting. David Bialik produced the meeting. Presenters included Herb Squire of DSI RF Systems and Scott Fybush of Northeast Radio Watch. Adam Brecht, the nephew of Armstrong, read from a letter his Aunt Jean had written, remembering her fond memories as an Armstrong employee. The event was very well attended by about 60 people and included interesting presentations on the history of FM broadcasting from the early days of Armstrong's experiments, explaining his vision of FM as a wide-area, even national, broadcasting system, through difficult times in which FM teetered on extinction, right up to present day where FM is competing with so many other forms of media.

Herb Squire explained some of the early challenges that FM faced, not the least of which was finding high-fidelity content to broadcast on this new, higher-quality broadcast medium. Other issues discussed were the difficulties in distribution, (mostly via Ma Bell) and the fact that FM went through a similar transition as broadcast television, when the broadcast band was shifted and listeners had a lot of useless receivers.



David Bialik (left) and Ray Archie at New York Section meeting



Participants in 75th anniversary of FM broadcasting: from left, Robert Auld, Adam Brecht, Scott Fybush, David Bialik, and Herb Squire

Scott Fybush then carried the timeline through the 1960s and beyond, discussing how FM survived through the use of subcarriers. These broadcasts were composed of everything from WDDS (the dentist broadcasting system) to Muzak.

Today the consensus regarding FM is that narrow-band FM is not so advantageous in terms of noise reduction, but wideband FM can bring great improvement in signal-to-noise ratio, if the signal is stronger than a certain threshold. Armstrong conducted the first large-scale field tests of his FM radio technology at RCA's facilities on the 85th floor of the Empire State Building from May 1934 until October 1935. However, RCA had its eye on television broadcasting, and chose not to buy the patents for the FM technology. Subsequently, Armstrong moved his operations to Alpine, New Jersey, where he had built a broadcast facility and began transmitting W2XMN from his 400-foot tower.

The question-and-answer period proved to be lively and interesting, with opinions expressed on everything from Dolby Noise Reduction and FM broadcast compression techniques to the history and experiences of engineers and listeners.

Bill Siegmund

John Dahl of THX visits Sacramento

At its July 22 meeting, the Sacramento Valley Section heard a presentation by John Dahl of THX. The first thing he talked about was the making of the Deep Note (the THX crescendo that you hear at the beginning of a THX movie). The THX Deep Note consists of 30 voices over seven measures, starting in a narrow range, 200 to 400 Hz, and slowly diverting to preselected pitches encompassing three octaves. The 30 voices begin at pitches between 200 Hz and 400 Hz and arrive at preselected pitches spanning three octaves by the fourth measure. The highest pitch is slightly detuned while there are double the number of voices of the lowest two pitches.

John then went on to talk about THX's standard of quality includ-

ing acoustic requirements, technical requirements, and architectural requirements for THX-certified movie theaters. THX is not a recording technology, but a quality-assurance system that guarantees that THX-certified theaters provide a high-quality, predictable playback environment to ensure that any film soundtrack mixed in THX will sound as near as possible to the intentions of the mixing engineer.

John talked briefly about how THX got its name. It has been speculated that THX stands for Tomlinson Holman's eXperiment, which is a spin off of Lucasfilm. Tomlinson Holman of Lucasfilm developed THX in 1983 to ensure that the soundtrack for the third Star Wars film, *Return of the Jedi*, would be accurately reproduced in the best venues.

John discussed the applications of THX in such things as home theater receivers, car audio, THX-certified recording studios, and other products.

Bryan Armstrong

The acoustics at the pyramids of Teotihuacan

For one of its meetings last year, the Sala de Audio Student Section of Mexico visited the pyramids of Teotihuacan. The group learned about Mexican culture and how the placement of the structures and the building materials used helped to create certain types of sound effects.

At the November 24 meeting, Gustavo Matínez, Adrian Zamudio, and Salvador Tercero spoke on the standards for 5.1 audio in HDTV.

On November 25 the group heard from Raul Oropeza, technical director of professional audio for Televisa. Traditionally, Mexican TV broadcasting companies haven't been interested in investing to get better quality audio in their transmissions. This is mainly due to the fact that the majority of viewers don't have good sound systems with which to watch TV. Even so, some people in the industry are

working to achieve a better sound quality in TV broadcasting.

On November 26 the group heard from Manuel Tapia, a product specialist for such companies as Community, Nexo, and Shure. He started by talking to us about how sound is transferred and reproduced with the help of transducers. He showed us how the law of inverse squares works for the loss in sound in relation to distance: 6 dB for every doubling of the distance. He then talked about reverb and how to calculate it with the RT60 formula.

Manuel Tapia then talked to us about different kinds of speakers, different arrangements and where they are used. He discussed phase cancellations and other interactions between two or more speakers. He then explained how line array systems work as one big speaker to cover large areas without unwanted interactions using computing systems to align the array. He helped us understand the world of audio design and how hard it can be to achieve a good sound in a certain enclosure.

Claudia Cabrera Cruz

Radio futurologist visits Toronto

At the December 8 meeting of the Toronto Section, radio futurologist James Cridland explained that he's been traveling around the world discussing radio and new platforms. He explained his work at the BBC, which included working on their iPlayer. He offered some interesting statistics: 25% of radio listening in the UK is done in cars, 2.2% is done on the Internet, 3.6% is done on DTV, and 13.3% is done on DAB.

Radio, he argued, needs to evolve to stay relevant. Some of today's radios—mobile phones and computers—come with large color screens. The key is to use new media and repurpose content for various delivery methods, such as iPhones and DAB. He discussed the Audio-Boo service, which allows for short audio clips to be delivered to ➔