INTRODUCTION

For the first time in six years, the AES Convention returned to the Moscone Convention Center in San Francisco, where it found the industry in a positive, upbeat mood. With the attendance and exhibitor figures close to record numbers, the entire convention was an outstanding success, resulting in a busy exhibition floor and a packed technical program.

The convention, whose theme was *The Art of Audio*, delivered abundantly on that theme: from demonstrations of in-car audio and computer games, through exciting new technology in the exhibition, to discussions of recording practitioners in the special events.

OPENING CEREMONY

Roger Furness, AES executive director, and Ron Streicher, AES president, formally opened the convention and welcomed the large number of attendees. Convention Chair John Strawn thanked the organizing committee for their hard work in putting the program together. He commented that the only complaint he had heard was that there was too much to see and do at the convention.

Garry Margolis, AES Awards Committee chair, announced a number of awards for outstanding work in the Society and within the industry. Fellowship awards were presented to James Angus for research and education in electroacoustics, Jim Brown for his achievements in sound reinforcement design and contributions to standards work, and George Massenburg for his services to the AES and his outstanding contribution to the art and science of recording. A Silver Medal was awarded to Takeo Yamamoto for five decades of contributions to analog and digital audio engineering.

Editor of the AES *Journal*, Daniel von Recklinghausen, presented the Publications Award to Barry Blesser for his paper, "An Interdisciplinary Synthesis of Reverberation

Viewpoints." Then von Recklinghausen received the final award at the 117th, the Distinguished Service Award for his long-term, outstanding service as editor of the *Journal*.

John Strawn introduced the keynote speaker, Ron Fair. Currently president of A&M Records, he has been involved in a large number of hit records over the past two decades with nominations for six Grammy awards. Fair discussed his career and how the music business has changed. He listed what he sees as the current threats to the industry: file sharing, the decline in musical education, music video policy, and archive problems. However, he also said he sees new opportunities for the future and the possibility that music might one day be considered a utility rather than a product, constantly available in a steady stream like water and electricity. He expressed enthusiasm about such new bands as the Black Eyed Peas, and he reminded the audience that the most important aspect of the music business is the music itself.

EXHIBITION

With over 410 exhibitors (just four short of an AES record) and a large number of visitors, there was an exciting buzz in the exhibition hall for the duration of the convention. The abundance of new products and novel developments in all areas of the professional audio industry—of which a small sampling is discussed below—gave a clear sign that business is in a confident and healthy state. (See page 74 for the complete list of exhibitors.)

A large number of new software releases were announced at the convention. Steinberg premiered version 3 of their Nuendo system. This version introduces a new set of media-management tools that allow easy handling of large audio file libraries. It also includes a new warp-to-picture feature that offers an efficient approach to synchronizing sound and picture by enabling real-time timestretching of audio material with simultaneous real-time tracking of the corresponding ➡
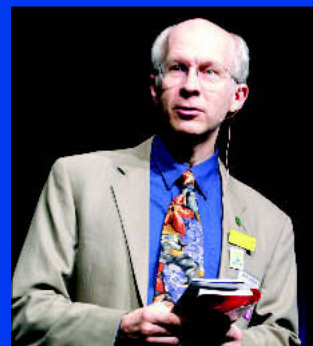
Opening Ceremonies and Awards

Roger Furness,
AES executive director

Ron Streicher, AES president

John Strawn,
convention chair

The 117th Convention Committee: from the left, Han Tendeloo, Rob Maher, Brian Link, Bill Wray, Valerie Tyler, Felice Santos-Martin, Theresa Leonard, Van Webster, Bob Megantz, Annemarie Staepelaere, Bob Moses, David Harris, Christoper Struck, Lisa Roy, and John Strawn.

Ron Fair, keynote speaker

Overflow crowd for opening ceremonies.

Garry Margolis, awards chair

Ron Streicher presenting Distinguished Service Award to Daniel von Recklinghausen

Kimio Hamasaki accepting Silver Medal Award on behalf of Takeo Yamamoto

Daniel von Recklinghausen presenting Publications Award to Barry Blesser

Fellowship Award recipients: clockwise from top, Jim Brown, James Angus, and George Massenburg.

video track. Apple Computer launched a new version of their audio software, Logic Audio version 7. This includes an exciting development in which the audio processing power available for the software can be increased by connecting additional computers via Ethernet. The new version also includes support for the Apple Loops file format, allowing real-time timestretching and pitch shifting. Cakewalk showed off their SONAR 4 Producer Edition, a Windows-based audio production platform. New features include surround sound mixing and editing in a range of formats, methods to integrate stereo effects within a surround sound mix, and tools for loop creation.
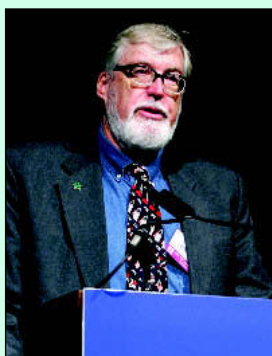
A number of exciting new products aimed at the live sound market were also presented. Meyer Sound Laboratories introduced the Galileo 616 loudspeaker-management system. This is a 6-input, 16-output matrix processor that includes all the facilities required to drive and align sound-reinforcement systems that are configured in multiple zones. Sabine showed their new automatic feedback controllers, the FBX1200 and FBX-2400. An advanced algorithm is used in these units to determine whether a tone is feedback or a part of the music, and the results of this analysis are used to control the real-time feedback-suppression processing.

JBL exhibited their new SRX700 range of loudspeakers. These have been designed to provide high power output with a relatively low weight for easier portability. Alcons Audio introduced their LR14 line-array loudspeaker, which can be used in vertical arrays, either stacked or flown. This is a compact design, yet it has a maximum SPL output of 130 dB per unit. Martin Audio displayed their AQ series of loudspeakers. These are designed for unobtrusive installation and include six full-range designs and four sub-bass designs in a range of sizes and power capabilities.

The San Francisco Convention saw the debut of the Yamaha PM5D live-sound mixing console. This is a one-box design that offers 64 input channels of audio and handles sample rates up to 96 kHz. Audient launched their new digital EQ and dynamics product, the Neo, which includes a graphic and parametric equalizer, ➥

Speaking at the AES annual business meeting: clockwise from top left: Roger Furness, executive director; Ron Streicher, president; Han Tendeloo, secretary; Marshall Buck, treasurer, and Chris Freitag, Tellers Committee chair.

Tom Holman discusses audio postproduction in one of the 25 tutorial seminars at the 117th.

DTS, Genelec, Soundfield, and Steinberg teamed up for "Understanding Surround Production," one of the 24 exhibitor seminars.

high- and low-pass filters, shelving EQ with compressor, limiter and dynamic equalizer, digital delay, and an optional real-time analyzer.

Universal Audio launched a number of products at the convention. They unveiled their new software plug-in, the Plate 140 Reverb emulation. This is designed to emulate the sound of classic plate reverbs, while allowing the additional control available from modern DSP processes. In addition, they launched two multichannel microphone preamplifiers, the 8110 and the 4110. These are 8-channel and 4-channel units, respectively, and include a unique "shape" setting to adjust the linearity of the audio processing.

Audio-Technica introduced a new cardioid lavaliere microphone, the AT898. This is a subminiature condenser microphone, only 5 mm in diameter, intended for maximum speech intelligibility in situations that require minimum visibility. At the other end of the size scale, Soundelux showed their new cardioid tube-based vocal microphone, the E250. This is designed as a close microphone for loud vocals with low noise and distortion and a specifically tailored frequency response.

One of the more unusual products introduced at the convention was Smart AV's Smart Console. This is a control interface for a number of brands of mixing software, which is claimed to be able to save time both in the new-user learning curve and in everyday use. The unique curved panel at the top of the console contains the meters, scribble strip, and access buttons, while the center of the console includes more conventional channel strip controls for the selected channels. This means that the engineer does not have to move far from the sweet spot to access all the controls of the desk.

At the other end of the scale, Mackie unveiled their HMX 56 tabletop matrix mixer. This is a headphone amplifier with flexible routing and mixing capabilities. It contains a number of stereo and mono inputs that can be mixed individually to the six headphone outputs, allowing up to six musicians to customize their own headphone mixes while the engineer concentrates on other issues. ➡

Mark Davis, speaking, chaired the workshop *Spatial Coding of Surround Sound: A Progress Report*; panelists were, from left, Leon van de Kerkhof, Robert Reams, Jean-Marc Jot, Jürgen Herre, Gilbert Soulodre, Mark Vinton, and David Griesinger.

PreSonus demonstrated their new tube-based microphone preamplifier, the ADL 600. This includes three high-voltage vacuum tubes in each channel, with analog VU and LED metering and selectable input impedance. The unit offers up to 75 dB of gain, 36 dB of headroom, and a wide frequency range of 5 Hz to 80 kHz. Tonelux introduced their modular and customizable rack-mounted signal processing units. These systems allow the user to install up to 16 modules in one 3U chassis, including remote microphone preamplifiers, parametric EQ, and 2- and 5.1-channel mixer components.

Riding the rising popularity of vintage equipment, Chandler Limited showed their range of outboard gear based on classic designs. Two of the products, the TG1 compressor/limiter and the TG2 preamplifier, were developed in association with Abbey Road Studios in London. These are based on the EMI recording and mastering consoles used in the 1960s and 1970s.

Dolby Laboratories gave demonstrations of their new Dolby Digital Plus system. This has been designed for use in a wide range of current and future applications, such as HD-DVD and cable, terrestrial, and satellite broadcast systems. Dolby Digital Plus allows for a greater range of bit rates and can be used to encode a greater number of channels.

The successful series of exhibitor seminars continued at this convention with 24 in-depth sessions on a range of technologies. Genelec, Steinberg, DTS, and Soundfield combined to give a series of presentations on surround sound technology, including microphone, recording, coding, and loudspeaker technology for surround sound up to 6.1. Holophone discussed their surround sound microphone that consists of eight microphone elements in an elliptical baffle, designed to capture surround sound up to 7.1 using a single unit.
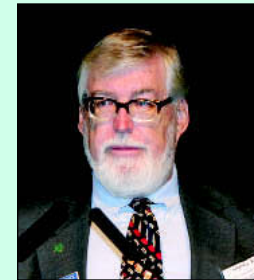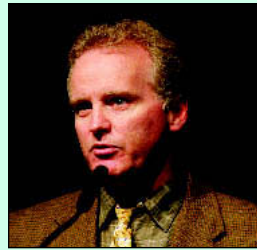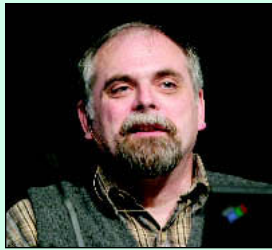
Some of the authors who presented papers at the convention: clockwise, from top left, Eric Benjamin, Sean Olive, Michael Makarski, Marshall Buck, Louis Fielder, and Gilbert Soulodre.

Audiomatica discussed the applications of their CLIO measurement system in loudspeaker design and optimization. This included demonstrations of functions such as impedance, inductance, capacitance, and directivity measurements and FFT analysis. Fraunhofer demonstrated two technologies. The first was a discussion of the business opportunities for their Iosono implementation of the wavefield synthesis technology and the second was on low-delay audio coding. The other seminars were presented by Furman Sound, APT, Moog Music, Yamaha, Renkus Heinz, Manifold Labs, Texas ➡

The quantity and quality of the technical papers presented in poster sessions continue to increase. Brian Link (right) and Rob Maher, the 117th papers cochairs, introduced each author giving a presentation at the start of every poster session. Below, Eric Benjamin (left) and Matti Karjalainen were two of the 47 authors who gave poster presentations.

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John Strawn (center), convention chair, flanked by Rob Maher (left) and Brian Link, papers cochairs

From left, Annemarie Staepelaere and Bob Megantz, facilities cochairs, and Bob Moses, tutorial seminars chair

Christopher Struck (left) and David Harris, workshops cochairs

Valerie Tyler and Van Webster, special events cochairs

Historical events team: from left Gene Radzik, Bill Wray (historical events chair), Steve Williams, Jay McKnight (chair, AES Historical Committee), and Larry Miller

Han Tendeloo, program coordinator

Lisa Roy, platinum events chair

Larry the O, technical tours chair

Instruments, Wavefront Semiconductor, Lynx Studio Technology, Level Control Systems, and Smart AV.

TECHNICAL PROGRAM

Papers cochairs Brian Link and Rob Maher arranged an ambitious program of papers and posters, with over 150 individual presentations organized by topic into 27 sessions. This gave participants a wide range of choice, with virtually every segment of the audio industry covered.

A number of interesting trends became apparent within these sessions, giving insight into the future directions of audio technology. Two papers sessions and two posters sessions focused on the state of the art in loudspeaker technology. These covered a wide range of issues, such as modeling techniques for loudspeaker ports and enclosures, characterization and prediction of distortions, and measurements of driver suspension components. In other sessions there were a number of papers on analog-to-digital converter techniques, including the ongoing issue of dither in one-bit sigma-delta converter designs.

The session on psychoacoustics, perception, and listening tests included a number of papers on loudness and listening-level issues. Esben Skovenborg and Søren H. Nielsen presented a paper that evaluated the performance of 12 measurements of perceived loudness. They found that the performance of

Felice Santos-Martin (left), education events vice chair, and Theresa Leonard, education events chair

David Bialik (center), broadcasting special events chair, flanked by Robert Reams (left) and Tony Masielo, panelists in the special event on surround sound for digital radio

these 12 objective models could be grouped into four categories based on their performance in accurately predicting the perceived loudness. Surprisingly, two of the most commonly used metrics gave poor predictions of the subjective results in some cases and, therefore, were placed in the lower two categories.

There were a number of papers on the topic of lossy audio coding, including a number of techniques for coding multichannel signals aiming to use either a lower data bandwidth or encoding the audio into two transmission channels with the option of an additional data channel. This topic was also covered in one of the series of 14 workshops organized by cochairs David Harris and Christopher Struck.

Another theme that was common across the paper sessions and workshops was the issue of computer game audio. The papers session discussed issues of reference audio levels and audio/video asynchrony, whereas the workshop considered the technical challenges of good game audio and included a discussion of the demonstrations that were available to participants in an area outside the workshop rooms.

The tutorial seminars, organized by Bob Moses, educated the attendees on a wide range of topics, with an ambitious ➡

We Thank…
117th Convention Committee

John Strawn
chair

Brian Link
Rob Maher
papers cochairs

David Harris
Christopher Struck
workshops cochairs

Bob Moses
tutorial seminars chair

Valerie Tyler
Van Webster
special events cochairs

David Bialik
special events chair, broadcasting

Lisa Roy
platinum series chair

Bob Megantz
Annemarie Staepelaere
facilities cochairs

Theresa Leonard
education events chair

Felice Santos-Martin
education events vice chair

Larry the O
technical tours chair

Bill Wray
historical events chair

Gary Brown
volunteers coordinator

Han Tendeloo
program coordinator

Gary Brown (center), volunteers coordinator, surrounded by his crew of volunteers

Bob Moog (left) and moderator Craig Anderton during the special event *An Afternoon With Bob Moog*


Packed house for Platinum Engineers

The all-day Surround Live! symposium was held the day before the first full day of the convention.

program of 25 separate sessions. There were introductory sessions on the physics of sound and hearing presented by Jim Johnston, acoustics by Anthony Grimani, the basics of digital audio by Stanley Lipshitz and John Vanderkooy, and digital signal processing by Dennis Fink. On the operational side, sessions covered subjective microphone comparisons by

Jürgen Wahl, audio postproduction by Tom Holman, microphone techniques for music by Bruce Bartlett, and mastering for stereo and surround by Bob Ludwig. There was even an opportunity for hands-on experience in the session on live organ concert recording by Ron Streicher, which was held in Grace Cathedral and included the set-up, recording, and

Elmar Leal (right) chaired the Professional Audio in Latin America (Audio Profesional en Latinoamerica) special event, which included, from left, Roberto Muñoz, Andrés Mayo, David Rodriguez, Paulo Lima, Mercedes Onorato, Jorge Urbano, Jose "Pepe" Reveles, and Mauricio "Magú" Ramirez.
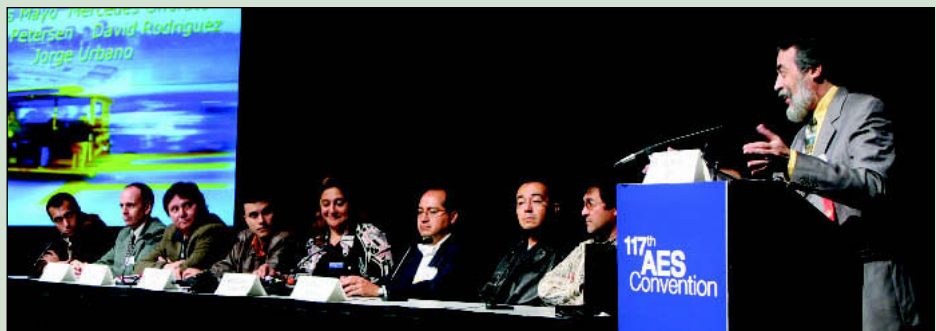
Panelists in the special event, *Platinum Minds: From Stereo to Surround*, included, from left, Martha de Francesco, Peter Chaikin, Rodney Orpheus, Ronald Prent, George Massenburg, Geoff Emerick, Jeff Levison, Robin Hurley, and Jim Pace. Nathaniel Kunkel (not shown in this photo) was the moderator.
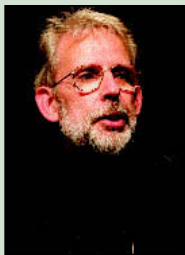
An appreciative audience (right) listens to Walter Murch (left), 117th Heyser Memorial Lecturer, who after the lecture received a certificate of appreciation (below) presented by, from left, Wieslaw Woszczyk, Technical Council chair, and Bob Schulein and Jürgen Herre, vice chairs.

Apple Computer was one of over 50 first-time exhibitors among the more than 410 exhibitors at the 117th.

dismantling of the equipment used for the live recording of Graham Blyth's organ concert.

A full listing of all papers, workshops, and tutorial seminars begins on page 79 of this issue. An insert to this issue lists all AES 117th papers, which can be purchased online at http://www.aes.org/publications/preprints/lists/117.cfm as individual PDFs; you can also purchase a CD-ROM with all 117th Convention papers. The second insert to this issue lists all the events for which audio recordings (MP3s on CDs) are available for purchase; you can also go to http://www.mobitape.com.

HEYSER MEMORIAL LECTURE

The *Richard C. Heyser Memorial Lecture* was given by Walter Murch and focused on the history of cinematic sound. Murch has been involved in film sound since the late 1960s and was awarded Oscars for his work on *Apocalypse Now* and *The English Patient*. His interest in the history of film sound was sparked by being given the task of resynchronizing the sound and picture of a recently rediscovered copy of Edison and Dickson's first sound film from approximately 1894. The recording—showing a pair of men dancing and a violinist (presumably Dickson himself) performing a piece of music into a large audio recording horn—consisted of approximately 17 seconds of nitrate film and approximately 3 minutes of audio on a wax cylinder.

Murch described the difficulty of resynchronizing these two pieces of material, as the rate and duration of the two formats were unknown and the correct synchronization could only be judged from the violin performance. After a large amount of trial and error, a successful synchronization was found and it was at this point that Murch realized that this was the first time that the recording had ever been successfully put together, as there were no methods available to achieve the synchronization at the time that it was recorded. Murch went on to consider the driving forces propelling the development of the art of cinema; he proclaimed three individuals whom he considers to be the fathers of cinema: Beethoven, Flaubert, and Edison. Beethoven for pioneering dynamic variations within his music, analogous to a musical version of the visual cuts, pans, and fades that have become the common cinematic tools. Flaubert for his realistic fiction, pointing filmakers in ➡
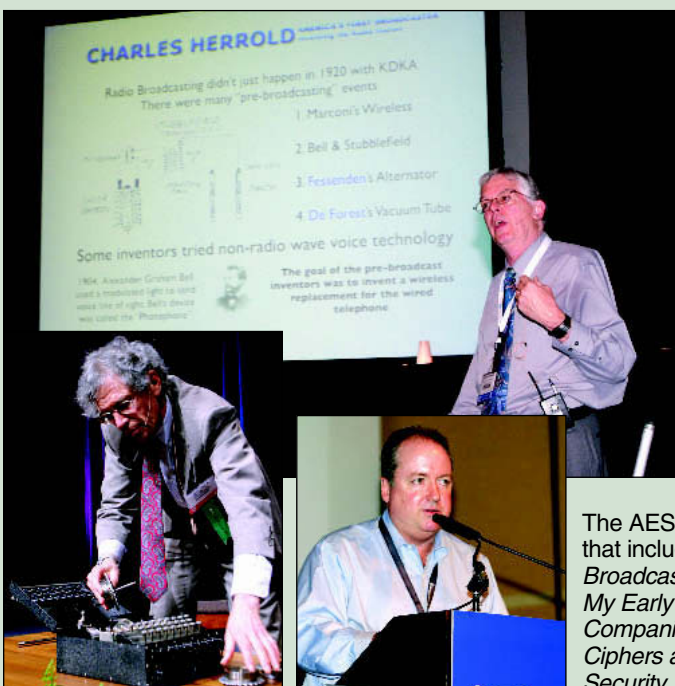
The AES Historical Committee organized an extensive series of events that included (clockwise from top) Mike Adams's *Birth of Radio Broadcasting: Charles Herrold and the First Radio Station*, Peter Gotcher's *My Early Experiences Founding, Funding, Growing, and Selling Audio Companies*, and Jon Paul's *Enigma and the Ultra Secret: Cracking WWII Ciphers and the Common Origins of Computers, Digital Audio, Internet Security, and Digital Rights Management*.

the direction of examining reality and life in detail. And Edison for providing the technical innovations that made cinema possible. Murch concluded by stating that cinema is "a dynamic view of closely observed reality" that owes its form to the pioneering artistic works of the 19th century.

SPECIAL EVENTS

The convention also hosted a large number of special events organized by Valerie Tyler and Van Webster, special events cochairs, David Bialik, broadcasting special events, and Lisa Roy, platinum events chair. The broadcasting events included *Opportunities for Engineers in the Digital Broadcast World*, *Digital Radio Broadcast Forum*, and *Surround Sound for Digital Radio*. This last event looked at the possibilities for broadcasting surround sound, including new distribution methods and techniques designed to use two transmission channels to ensure compatibility with current systems.

During *An Afternoon with Bob Moog*, Moog, with the assitance of moderator Craig Anderton, entertained the audience with tales from his career, starting with humble beginnings at an early AES convention. The career of another industry giant, producer and engineer Tom Dowd, was profiled in the film *Tom Dowd & the Language of Music* (available on DVD). In the film, introduced at the convention by Dowd friend and colleague Phil Ramone, legendary artists such as Ray Charles and Eric Clapton fondly describe the influence that Dowd had on their music. On Saturday SPARS sponsored a mentoring session.

Lisa Roy organized another of her exciting series of Platinum events with industry heavyweights serving as moderators and panelists. The Platinum Producers panel shared tips about music production, from the psychology of encouraging a good performance, through arranging and composing music and how to draw out the special aspects of a song, to the technical details and tricks of the trade. The Platinum Minds session focused on the progression from stereo to surround. This included the challenges of new formats and a consideration of the commercial realities. All of the participants were enthusiastic about the new possibilities that surround sound provides, and suggestions were made about how the commercial success of surround sound systems can be achieved.

The 16th Annual GRAMMY Recording Soundtable focused on the increasingly important topic of video game music. The panel discussed the issues involved in creating game audio and gave tips on how to get into this expanding area.

There were also seven technical tours available to the convention attendees, organized by Larry the O, technical tours chair. The tour of Electronic Arts guided the participants through the production suites and recording studios used for adding audio to computer games. There was also the opportunity to visit the television and radio facilities of KQED. As San Francisco's primary public broadcaster, KQED has been broadcasting educational

AES MEETINGS

Technical Council: from left, Jürgen Herre, Bob Schulein, Wieslaw Woszczyk, and Jeremy Cooperstock.

Historical Committee: from left, Jerry Bruck, Scott Smith, Myles Cochran Davis, and Jay McKnight, chair.

Regions and Sections: Neville Thiele, VP, International Region.

Publications Policy: Louis Fielder (left) and Richard Small, chair.

Conference Policy: Søren Bech, chair.

Standards: SC-04-04 reviews microphone issues.

EDUCATION EVENTS

1. Audience at recording competition
2. Education Fair
3. From left, Theresa Leonard, outgoing Education Committee chair, with student officers: Martin Berggren, Marie Desmarteau, Felice Santos-Martin, and Daniel Orejuela.
4. Education Forum panelists, from left, John Lay, Martha de Francesco, Geoff Martin, Bob Ludwig, Roy Pritts, Theresa Leonard, and moderator David Christensen.

programs for fifty years. A tour of Audium demonstrated that multichannel sound has been in creative use for much longer than some would imagine. This is a purpose-built multichannel performance space now in its 38th year of operation; it has more than 300 loudspeakers that can be used for improvised real-time diffusion of sound.

HISTORICAL EVENTS

Bill Wray, historical events chair, organized an informative range of historical events. The first was a documentary film, *Bad Boy Made Good*, which told of the career of American pianist and composer George Antheil. Central to this was a performance of his Ballet Méchanique for percussion, sound effects, and multiple player pianos. This was written in 1924, but could not be performed until recently due to the fact that multiple player pianos could not be synchronized at the time. The film included a performance of this work, using modern technology to realize the music that was never performed during the composer's lifetime.

Another notable event was a panel discussion and technology demonstration about the Bay Area electronic music pioneers. This included a wide range of innovations that were developed along the California coastline, including alternative music controllers, audio-generating algorithms, computer-controlled music performance, digital audio sampling, musical event sequencing, musical synthesizer design, speech processing, and synthesized rhythm devices.

Other sessions included a presentation on a little-known innovation in 1909—the radiotelephone—which appears to have been the first radio station in the world, broadcasting entertainment and information to a small audience in the Santa Clara Valley; a presentation by Jon Paul on the German Enigma Machine and its relevance in modern digital rights management; and venture capitalist Peter Gotcher, cofounder of Digidesign, offering advice for audio entrepreneurs.

AES STANDARDS AND COMMITTEE MEETINGS

The various standing committees of the AES met before, during, and after the convention. A comprehensive program of standards working groups and committee meetings was assembled under the guidance of AES Standards Manager Mark Yonge and AES Standards Committee Chair Richard Chalmers. Officers from local sections met together with the regional vice presidents in the Regions and Sections meeting, at which issues relating to management and good practice were aired. New officers were welcomed and new business was discussed at the Board of Governors meeting on the day following the close of the convention (see next page).

The AES 117th Convention, in the beautiful city of San Francisco, was a vibrant and rewarding event for all who attended. Start making your plans now and be sure not to miss what promises to be an equally exciting event, the AES 118th Convention in Barcelona next 28-31 May 2005. For details on all upcoming events visit the AES website at http://www.aes.org.
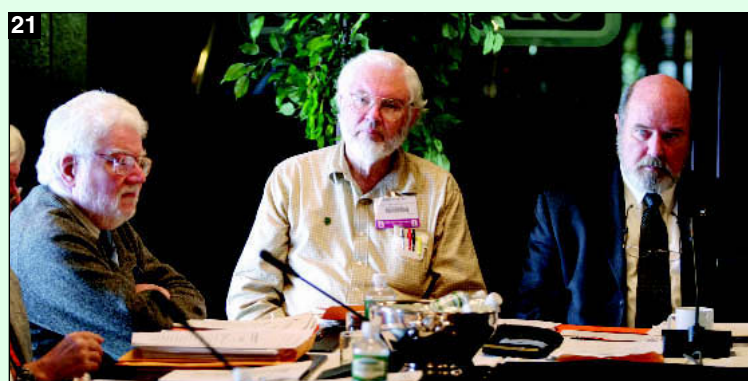
Board of Governors Meets

The AES Board of Governors met on November 1 to hear reports from AES officials and standing committees:

1 Felice Santos-Martin, student representative; Martin Berggren, student representative; Marie Desmarteau, student representative; Ron Streicher, president and Future Directions Committee chair

2 Roger Furness, executive director

3 Richard Small, governor and Publications Policy Committee chair

4 Kunimaro Tanaka, governor

5 Han Tendeloo, secretary

6 Wieslaw Woszczyk, Technical Council chair; Subir Pramanik, Regions and Sections Committee cochair

7 John Vanderkooy, incoming governor

8 Neil Gilchrist, president-elect and incoming Laws & Resolutions Committee chair

9 Mercedes Onorato, Latin American Region vice president

10 Ivan Stamac, Europe Southern Region vice president

11 Chris Freitag, Tellers Committee chair; John Strawn, 117th Convention chair; Bob Moses, USA/Canada Western Region vice president

12 Peter Swarte, governor; Bozena Kostek, Europe Central Region vice president

13 Kees Immink, past president and Nominations Committee chair

14 Curtis Hoyt, governor

15 Daniel von Recklinghausen, editor; Theresa Leonard, incoming president, Education Committee chair, and incoming Future Directions Committee chair

16 Søren Bech, Europe Northern Region vice president and Conference Policy Committee chair

17 Garry Margolis, governor and Awards Committee chair

18 Jay Fouts, legal counsel

19 Marshall Buck, treasurer, Convention Policy Committee chair, and Finance Committee chair

20 Jim Anderson, USA/Canada Eastern Region vice president

21 Jerry Bruck, governor; Jay McKnight, Historical Committee chair; Roy Pritts, governor and Regions and Sections Committee cochair

22 Louis Fielder, treasurer-elect

23 Richard Chalmers, Standards Committee chair

24 Neville Thiele, International Region vice president

25 Don Puluse, governor; Frank Wells, USA/Canada Central Region vice president