AES 112th Convention

2002 May 10–13
MOC Congress Center,
Munich, Germany

Munich has become a popular location for AES conventions, helped greatly by the work of a highly professional organizing committee, chaired once again by Martin Wöhr. Wöhr and his colleagues delivered a jam-packed convention program for the appreciation of the many thousands of audio engineers that travelled to the M,O,C, in Munich. In addition to a vibrant exhibition, the 112th offered one of the fullest technical programs in AES history and an exciting menu of cultural events and tours. As part of the AES mission to educate and inform the audio community in areas of new technology, a special one-day symposium on the hot topic of metadata was added on Thursday, the day before the official opening of the convention.

OPENING CEREMONY AND AWARDS

Opening the 112th Convention Roger Furness, AES executive director, welcomed AES President Garry Margolis, who reminded the audience that the AES is a society that relies on the work of volunteers. He proceeded to commend all those who gave their time and energy to make events such as this convention possible. Convention Chair Martin Wöhr asked each member of his committee to stand and be recognized by the audience for their efforts. He spoke of the great honor he felt at being the chair of the Munich convention again and was pleased to note the strong turnout of exhibitors and the more than 130 technical papers. He promised that the hospitable city of Munich had much to offer delegates.

Albert Scharf, retired general manager of Bavarian Radio and former president of the EBU, delivered a perceptive discourse on the social role of the media in his keynote speech at this opening ceremony. Social communication, he said, is constituted by content and depends on the media, whereas technology only acts in service of this. He harked back to Churchill, the British wartime prime minister, who relied on newspapers and a soapbox to deliver his message when campaigning for his first seat in Parliament, whereas later in 1939 he used the new technology of radio to appeal to the world for peace. Scharf noted that Hitler also used radio to deliver his message of hatred and war. Thus technical tools are morally and socially ambivalent. In a deep, strong voice, Scharf made a statement that clearly got the attention of the entire audience when he pointed out that "the more we elaborate the means of communication, the less we communicate." He went on to say that we are in danger of becoming giants of information but dwarves of knowledge. Public broadcasting, he concluded, remains a cornerstone of social communication, being depended upon ➡

Garry Margolis, AES president

Albert Scharf, 112th keynote speaker

Roger Furness, AES executive director

Martin Wöhr, 112th Convention chair

Fritz Sennheiser receives Gold Medal Award from Garry Margolis.

David Robinson, Awards Committee chair, announces award recipients.

Dan Queen receives Distinguished Service Medal.

Peter Svensson, left, accepts Publications Awards for himself and Johan Nielsen (inset) from Editor Daniel von Recklinghausen.

Hirokazu Nakashima receives Citation Award.

Citation Award (given posthumously) for Heinz Thiele (inset) is accepted by Herman Wilms.

for reliability, continuity, and fair analysis.

Following Scharf's stirring keynote address, the program continued with the awards ceremony. The AES regularly honors those who have contributed notably to the audio community and to the Society. This year the AES Publications Award, given once every two years to authors under 35 years of age, was presented to Peter Svensson and Johan Nielsen for their outstanding paper in the AES *Journal*

(Vol. 47, No. 11), "Errors in MLS Measurements Caused by Time Variance in Acoustic Systems." Citations, given in recognition of services or accomplishments that do not fit into any other category, were awarded to Hirokazu Nakashima for significant contributions to the Japan Section and the promotion of AES in Japan and Heinz Thiele for his lifetime work in audio, particularly in the field of historical archiving.

Istvan Matók accepts Board of Governors Award for Gábor Heckenast (inset).

Board of Governors Awards are given to, from top, Dietrich Schüller, Günther Theile, Êva Arató-Borsi, and Masahiro Fujimoto.


Helmut Jahne (top) and Ulrich Horbach receive Fellowship Awards.

The Board of Governors Award is given for outstanding contributions to the Audio Engineering Society. It was presented this year to Masahiro Fujimoto for chairing the 10th Regional Convention in Tokyo, Günther Theile for chairing the 19th International Conference in Bavaria, and Êva Arató-Borsi, Dietrich Schüller, and Gábor Heckenast for chairing the 20th International Conference in Budapest.

Fellowships, a distinctive grade of membership, are given to members for conspicuous service, a valuable contribution to the advancement or dissemination of knowledge in audio engineering, or the promotion of its application in practice. Fellowship Awards were presented to Ulrich Horbach for pioneering work in surround technology and Helmut Jahne for outstanding contributions in AD and DA converters and in audio signal processing.

Two of the highest awards given by the Society were ➡
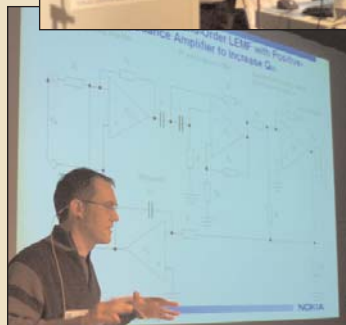
112th technical program was strongest in years, with 16 workshops and over 130 papers.

Day-long Metadata Symposium on Thursday before convention opening saw strong turnout.

Panelists in *20 Years of the Compact Disc—A Review*: from left, Jürgen Lang, Chair Reinhard Sahr, Han Tendeloo, Joop Sinjou, Lou Ottens, Kees Immink, Roger Lagadec, Herman Franz, Peter Burkowitz, and Björn Blüthgen.

also presented at the 112th Convention. The highest award of the Society, the Gold Medal, was presented to Fritz Sennheiser, founder of the well-known and flourishing German microphone and headphone company, who retired in 1982. He received a standing ovation from a respectful audience. Daniel Queen who recently retired as AES Standards manager, a post he had held since 1980, was awarded the Distinguished Service Medal for extraor-dinary service to the AES over the past 40 years. Queen proudly accepted his award and agreed to "pass the call for comment without objection." He said that he had watched the AES come into existence as a teenager, but he had never dreamed of eventually receiving such a prestigious award. He stated that it is not the time for the AES to rest, being at a critical juncture in its ongoing mission to advance quality audio.

Clemens Kuhn (left), student/education, and Martin Wöhr, committee chair

Ben Bernfeld Jr. (left), papers assistant, Benjamin Bernfeld, papers chair, with delegate

Reinhard Sahr, technical tours/logistics

Facilities crew: from left, Gerhard Picklapp, Ulrike Schwarz, Thomas Falerer, and Axel Dehler
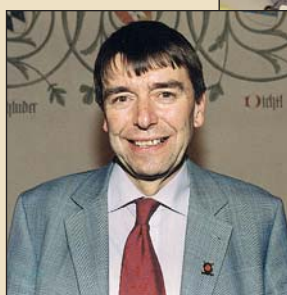
Marianne Lomas, cultural program

Thierry Bergmans, exhibition organization

Günther Theile, workshops

Gerhard Stoll, metadata symposium chair

EXHIBITION

Some trends and highlights from the exhibition, organized with great professionalism by Thierry Bergmans, are noted here, although limited space prevents an exhaustive review of the products shown.

Mixing consoles were riding high on the exhibition floor, with more newly launched contributions from manufacturers than have been evident for some time. Harrison announced its new digital broadcast console, the TVD-SL. The 112th also saw the European debut of SSL's first new analog console since 1994, the XL 9000 K, which has already been purchased by studios in the U.S. and Japan. Yamaha's DM2000 aroused considerable interest with its surround facilities and 24/96 capability as well as integrated ProTools control. There was also a new version of the classic 02R mixer that now includes 96-kHz sampling and surround monitoring. AMS Neve showed its Logic MMC system that is aimed at TV-postproduction applications, based on the larger DFC. Studer heralded the return of the human interface with its Vista 7 digital postproduction console. For the small to mid-sized radio market Lawo presented its new Zirkon modular on-air mixer, and Calrec showed its Sigma 100 all-digital broadcast desk in Europe for the first time. In an interesting move Calrec has also adapted its X series dig-

Han Tendeloo (right), program coordination, with Jürgen Herre

Ernst Völker (left) and Herman Wilms, historical program

Stefani Renner (left), press relations, and Gisèle Clark, promotion

We Thank...

Martin Wöhr
convention chair

Benjamin Bernfeld
papers

Ben Bernfeld Jr.
papers assistant

Günther Theile
workshops

Gerhard Stoll
metadata symposium

Axel Dehler, Gerhard Picklapp
facilities

Ulrike Schwarz
facilities assistant

Reinhard Sahr
technical tours/logistics

Marianne Lomas
cultural program

Clemens Kuhn
student/education

Ernst Völker, Herman Wilms
historical program

Han Tendeloo
program coordination

ital radio console for blind and partially sighted users. Continuing the broadcast theme, the new Max Air console from Euphonix has 96 channels and 32 mix/group buses with the aim of enabling the control of a large number of inputs in a small space. StageTec unveiled a new console called Aurus with an analog-like control surface.

The workstation market had a number of surprises, in particular Digidesign's new ProTools HD systems with up to 192-kHz sampling capability and redesigned appearance. Fairlight's Dream console adds to its growing lineup of integrated digital audio production and postproduction equipment and includes digital recording, editing, and mixing in one system. The company also introduced Fairworks AV Transfer, a universal file-exchange software tool for converting audio projects between various formats, including BWF, OMF, AES31, and EDL formats. Sadie showed Cedar's Retouch software on its workstations, which behaves like an Adobe Photoshop package for audio and enables one to highlight spectral features to be interpolated or replaced when treating problem audio material. Steinberg's VST System Link is a novel system designed to enable the synchronization of multiple computers running its VST processing, using a single bit of one audio channel of a digital interface.

Sony's Oxford signal processing technology has begun to find its way into novel products designed to enable easy integration of the very high bit rate Direct Stream Digital (DSD). Conventional signal processors cannot handle the computations required for this kind of high bit rate audio signal, so Sony has been developing its own customized logic for the purpose. The D-MAP development board is designed as a kit to enable one to try out DSD processing. Its D-MAP MixEQ is a small SODIMM-format module that can be powered from a single 3.3-V supply and provides all the basic building blocks required to mix and add EQ to 32 streams of DSD audio. This is complemented by MAC-DSD, another small module designed to enable point-to-point connection of 24 channels of DSD audio. Further in relation to DSD, converter manufacturer dCS has introduced a DSD converter (the dCS905) with a means of metering the DSD signal directly, which is claimed to be important for investigating the signal level in certain critical ultrasonic frequency regions.

➡

Wieslaw Woszczyk (left inset), Technical Council chair, introduced Ray Dolby, who gave *Richard C. Heyser Memorial Lecture* to standing-room-only crowd (left), Below, Ray Dolby receives certificate from Jürgen Herre, Technical Council vice chair. After lecture all enjoyed food and drinks at reception (bottom).

Tascam has recognized a need for a comprehensive digital surround monitoring processor, and its DS-M7.1 covers many formats up to 7.1-channel surround. The mix matrix enables downmixes to be arranged and the eight-channel unit has TDIF, AES, and ADAT interface options.

Genelec's new LSE subwoofers were shaking the structure in its demo room. This new range of subwoofers are designed with exceptionally low port turbulence. Mayah Communications also had a large presence on the exhibition floor with its Centauri streaming products for Web radio and its Flashman portable recorder for broadcast applications that stores on Compact Flash cards in MPEG format.

PAPERS

The papers program at the 112th Convention was stuffed to the point of overflowing thanks to the planning of Papers Chair Ben Bernfeld. An exceptional number of submissions was pared down to over 130 for presentation. This often resulted in two or three parallel sessions on themes from audio signal processing to automotive audio, in addition to the special papers from the historical program.

Chief among the themes in the technical papers were spatial audio and surround sound recording (three sessions in total) and the signal processing forum (also three sessions). In the signal processing forum the debate continued over effective treatment of DSD signals, attempting to arrive at suitable approaches to dither and the minimization of distortions. The final session concentrated on digital power amplification. Spatial audio sessions, chaired by Ulrich Horbach and Francis Rumsey, covered a variety of approaches to surround sound recording and virtual room processing, as well as the influence of visual images on spatial sound perception. Novel binaural and transaural techniques were proposed, including the expert tuning of HRTFs for reduced coloration, ➥

AT THE BANQUET

Conference Chair Martin Wöhr (top left) welcomes delegates to banquet (above) at Munich's Alten Rathaussaal. Left, Neville and Elizabeth Thiele flank Juha Backman at reception before banquet. Music was provided by Die Singphoniker (bottom left).

and a binaural model was proposed for predicting the localization performance of sound reproducing systems.

A session on automotive audio, chaired by Angelo Farina of the University of Parma in Italy, focused on methods of improving the quality of in-car audio, including noise reduction, equalization, and loudspeaker design. A special seminar on loudspeaker arrays was chaired by Diemer de Vries, followed by a roundtable discussion on the subject, during which particular emphasis was given to distributed mode and diffuse loudspeaker arrays.

In addition to these themes, papers sessions also dealt with microphones; audio electronics; loudspeakers; computer and Internet audio; musical acoustics; recording, restoration, and processing; psychoacoustics, perception, and listening tests; low bit rate coding; instrumentation and measurement; and room acoustics and sound reinforcement. A full listing of all papers and their abstracts and the complete list of workshops begins on page 495 of this issue. A CD-ROM of all the 112th Convention papers is available.

WORKSHOPS

The tireless Günther Theile, in his role as workshops chair, put together a must-see line-up of events. Workshops are one of the main ways in which the AES fulfills its educational mission and are designed to update audio engineers in areas of current development at an approachable technical level. Facilities supporting these and other events were ably and effectively managed by Gerhard Picklapp, Axel Dehler, and Ulrike Schwarz.

Sixteen workshops were presented in total. The challenges presented by surround sound were tackled admirably in *The Physics and Psychophysics of Surround Recording*, given in inimitable style to a packed hall by David Griesinger. *Future Spatial Reproduction Systems,* chaired by Wieslaw Woszczyk, gave another standing-room-only audience the chance to hear about a number of advanced approaches to the reproduction of spatial audio. In support of the spatial theme, demonstrations were held in separate rooms where delegates were able to compare different reproduction systems including 2+2+2 (which is a form of 5.1-compatible surround sound that includes a height component), Panor-Ambiophoncs, and Ambisonics. In a separate room members of the European CARROUSO project team demonstrated applications of wavefield synthesis for enhanced spatial reproduction. *Surround Sound for HDTV* was presented jointly by Toru Kamekawa and Tom Daily. Renato Pellegrini demonstrated *Advanced Mixing Techniques for Multichannel Sound*. Malcolm Hawksford chaired a workshop that concerned itself primarily with the issues relating to bass management in surround systems. Kimio Hamasaki and Florian Camerer gave the fascinating seminar and workshop *Multichannel Audio Production for Broadcasting*.

Particularly popular was a tutorial presentation orga- ➥

112th meetings. 1. At Regions and Sections meeting, from left: Garry Margolis, AES president, and Governors Juergen Wahl and Roland Tan. 2. At Technical Council meeting, from left, Roger Furness, AES executive director; Kees Immink, president elect; Garry Margolis; and Ron Streicher, secretary. 3. At 113th Convention planning meeting, from left: John Strawn, papers cochair, and Garry Margolis. 4. At Publications Policy Committee meeting, from left: Theresa Leonard, governor and chair of planned multichannel sound conference in Banff, Canada, in 2003; Nick Zacharov, 22nd International Conference cochair; Søren Bech, Conference Policy Committee chair and Europe Northern Region vice president; and Kees Immink. 5. At Technical Council meeting, from left: Jürgen Herre, vice chair, and Wieslaw Woszczyk, chair.

nized by the Technical Committee on Perception and Subjective Evaluation given by Durand Begault and Armin Kohlrausch entitled *What Audio Engineers Should Know About Human Sound Perception*. This fascinating seminar was designed to be a primer on basic psychoacoustics and an opportunity for seasoned professionals to revise what they might have learned many years ago.

Complementing these were workshops on *Perceptual Issues Relating to Cascaded Audio Codecs* and *Listening to Perceptual Audio Coders*, based on the new AES Technical Council CD demonstrating codec artifacts. Other exciting workshops were *Distributed Mode Loudspeaker Technology*, *Record Producer—Present and Future Challenges*, *Digital Audio Signal Processing—The Good, The Bad, and The Ugly*, *High Resolution Audio*, *Film Music Composition and Surround Sound Production Using a Laptop Computer*, and *Audio Over Digital Networks*.

STUDENT PROGRAM

The 112th student program, organized by Clemens Kuhn, was full of life and enthusiasm with numerous events including a recording competition. In addition to the established program of student and education events, producer Martha de Francisco delivered a special student-oriented seminar on the producer's role, objectives, and artistic impact on a recording project. The recording competition also contained a surround sound category as well as classical and nonclassical stereo classes, which all turned up some remarkably proficient work demonstrating the talent present in the next generation of recording engineers.

SPECIAL EVENTS

Metadata Symposium

Designed to deal with the complex and often perplexing issue of metadata, the AES organized a special symposium on the day prior to the convention. The subtitle "Present State of Chaos and Wishes for Solutions" was the theme of chair Gerhard Stoll, who posed some timely questions: Which are the appropriate interfaces for end-to-end delivery of metadata? How can existing production and scheduling tools be integrated into an overall concept of metadata? Are there already ideas for solutions or concepts available in the different broadcasting organizations?

This highly successful symposium attracted over 100 delegates on relatively short notice, reinforcing the importance of the issue for broadcasters in particular. "One problem with metadata," Stoll pointed out, "is that the needs in the production world and for the consumer are totally different. It will be necessary to find an efficient and common means of generating and handling the vast amount of metadata associated with productions in the future."

Planetarium and IMAX

On the Thursday evening following the Metadata Symposium delegates could visit the Planetarium and the IMAX cinema to witness a multimedia show with laser projection and animation, designed by Brian May, the cofounder and guitarist of Queen. This was followed by a showing of the Cirque du Soleil in 3D on the huge 16X22-meter IMAX screen.

Student activities at 112th. Above, at Education Committee meeting (from left) student officers Werner de Bruijn and Dell Harris, Education Committee Chair Don Puluse, Bob Moses, student officer Scott Cannon, and Theresa Leonard. Inset, students listen to presentation at Educators' Forum. Below, Education Fair had large turnout.

Organ concert

Graham Blyth's now-traditional organ recital on a major instrument in the host city took music lovers to the Marienkirche in the city center. This remarkable building with its two distinctive towers sported a reverberation time of some 12 seconds, causing the organ notes to continue virtually unchanged once they had finished sounding, dying away only after a seemingly endless time. In virtuosic style, Blyth played works starting with a prelude and fugue by Nikolaus Bruhns (a pupil of the more famous Buxtehude), through Bach and the remarkable *Fantasia* and *Fugue on Bach* by Liszt, to Rheinberger, Franck, and Widor.

20 years of the Compact Disc—A review

It was exactly 20 years ago that the CD was launched, introducing a major change in the way that high-quality audio was delivered to the home. In this special seminar a number of the key figures in CD's success celebrated this memorable date, chaired by Reinhard Sahr. Panelists included Björn Blüthgen and Kees Immink, AES president elect.

Heyser Lecture and Technical Council Reception

In a much-anticipated presentation, Ray Dolby, father of noise reduction, was the Distinguished Heyser Memorial lecturer at the 112th Convention. In a crowded lecture hall with people standing and sitting in the aisles, Dolby spoke of the endless downward pressure on price in audio engineering. In the 1950s, he explained, it was not at all clear whether analog or digital audio would prevail, similar to an earlier era when gas and electricity were competitors for generating lighting. During a tour through the history of his remarkable designs and his company's history, Dolby spoke of noise reduction, cinema surround, and digital codecs. C-type noise reduction, he said, resulted from eight months of high-pressure work in a top-floor laboratory, and it seemed to "stave off the digital peril" for a while. SR noise reduction regularly won shootouts against digital. However he was amazed at the successful results of Louis Fielder's first digital transform codec, and he became a firm convert to digital audio. Digital storage costs were now so low that it was no longer worth trying to improve analog recording. Nonetheless, one detected a fondness for the heyday of analog recording in Dolby's unspoken thoughts, and he was a regular visitor to the audio history exhibits and papers during the convention. "Never predict the future," he warned, "so much changes."

Audio history

The AES Historical Committee, led by Jay McKnight and supported admirably at the 112th by Irv Joel, Manfred Krause, Herman Wilms, and Ernst Völker, has done much in recent years to bring the industry's past back to life. Here in Munich it was no exception, with an exhibition room containing items such as the first telephone and the legendary first tape recorder of Telefunken—the Magnetophone. An open meeting of the Historical Committee was held on the Saturday morning and a special-event papers session was held in the audio history room on Saturday afternoon. During this event, visited by numerous luminaries from the audio industry, speakers reviewed aspects such as the first loudspeakers, selected highlights of microphone history, and "Philip Reis—From the First Telephone to the First Microphone."

Cultural tours

Munich and surrounding Bavaria have much to offer delegates and accompanying guests with some extra time to visit some of the remarkable nearby sights. Most popular among the cultural tours planned by Marianne Lomas was "The World of King Ludwig II," a dip into the fantasy world of this remarkable Bavarian king, including a visit to his Castle Neuschwanstein and a backstage tour around the theater in which a new musical about his life is being staged. Other popular tours included a visit to the Buchheim Museum, the Residenz München, and a trip to Regensburg entitled "Tour into the Middle Ages."

Technical tours

A tempting program of technical tours was arranged by Reinhard Sahr. Visits to Bayersiche Rundfunk (Bavarian Radio) proved so popular that it was repeated a number of times. Other popular tours included a visit to the Nationaltheater (Opera House) to see its new audio equipment and a tour of MSM Studio, which does DVD mastering and multichannel coding among other things. Additional tours included visits to other studios, broadcasters, and research institutes such as the IRT and Bavaria Filmstudio, as well as the organ manufacturer Münchner Orgelbau.

Banquet

Held in the splendor of Munich's Alten Rathaussaal, the convention banquet provided the opportunity to meet friends and colleagues in a convivial atmosphere, enhanced by excellent food and drink. The highlight of the evening was hearing the superb male choir Die Singphoniker who, with tremendous range and professionalism, sang madrigals from the 16th century, Schubert part songs, and Cole Porter numbers with equal aplomb. A standing ovation and high enthusiasm from the audience resulted in a number of encores including an amusing rendition of Rossini's *Barber of Seville* overture.

COMMITTEE MEETINGS

Much of the most important work of the Society goes on behind the scenes at conventions, in Standards Committee meetings organized by Chair John Nunn and Standards Manager Mark Yonge, at meetings of the numerous AES Technical Committees, and at other meetings of AES standing committees. The AES Board of Governors (see next page), under the leadership of President Garry Margolis, met for a full day on the Tuesday after the convention to review current activities and plan for the future.

With Munich and Bavaria providing cultural opportunities and scenic beauty, the 112th Convention committee delivered yet another exciting event for audio professionals from around the globe. As delegates left Munich with fond memories, planning was already underway for the AES 113th Convention in Los Angeles October 5–8. (For details on this and all upcoming Society activities, be sure to check the AES website at www.aes.org.) ➡

Board of Governors Meets

Meeting on May 14, members of the AES Board of Governors gather from around the world to hear reports from AES officials and standing committees:

1   Scott Cannon, student representative

2   Roy Pritts, past president and Nominations Committee chair; Annemarie Staepelaere, governor

3   Kees Immink, president elect and Laws and Resolution Committee chair; Neville Thiele, International Region vice president

4   Roland Tan, governor

5   Nick Zacharov, governor and 22nd International Conference cochair; Søren Bech, Conference Policy Committee chair and Europe Northern Region vice president

6   Don Puluse, Education Committee chair; Mercedes Onorato, Latin American Region vice president

7   Irv Joel, Historical Committee representative

8   John Nunn, Standards Committee chair; Bob Moses, USA/Canada Western Region vice president

9 Garry Margolis, president, Future Directions Committee chair, and Women in Audio Committee acting chair

10 Ron Streicher, secretary

11 Jim Anderson, USA/Canada Eastern Region vice president

12 Karl-Otto Bäder, governor

13 Roger Furness, executive director; Jay Fouts, legal counsel; Subir Pramanik, Regions and Sections Committee chair; Bob Sherwood, financial advisor

14 Richard Small, Publications Policy Committee chair; Theresa Leonard, governor

15 Marina Bosi, governor; Marshall Buck, treasurer, Convention Policy Committee chair, and Finance Committee chair

16 Markus Erne, Europe Central Region vice president

17 Francis Rumsey, Membership/Admissions Committee chair

18 James Kaiser, USA/Canada Central Region vice president

19 Wieslaw Woszczyk, Technical Council chair; Juergen Wahl, governor

20 Daniel von Recklinghausen, editor; David Robinson, governor and Awards Committee chair