

## Detroit September 12, 2000

Fifteen members and guests gathered at Ameritech's headquarters in downtown Detroit to hear William E. Cohn, Tektronix, discuss new technology being employed to correct audio-video delay.

The problem of time delay between the audio and video portions of a film or television program has been around since the beginning of sound-for-picture production. In modern television, delays in video can result from digital processing, and if the routing path is unknown, synchronizing equipment is sometimes unpredictable. Subjective means of determining delay, such as watching for lip-sync errors or observing the traditional film clapboard, are not always satisfactory or efficient, especially where unattended correction is desirable.

Offline measurements of audio-to-video delay are fairly straightforward when using current video measuring equipment; test signals exist for proofing circuits, but this must be done in the absence of other programming. The requirements of terrestrial broadcasters, common carriers, and satellite television distributors, among others, dictate that some form of inline or inband scheme be developed to automatically correct unpredictable errors in the audio-to-video delay characteristics of a delivery path, which might be introduced by codecs or other processing equipment.

To accomplish this, a new system of intravideo data channel technology, "video watermarking," was developed. The technique involves extracting and digitizing low-bandwidth audio information and unobtrusively inserting it into the video portion of a program stream. This is accomplished by using adaptive spread-spectrum methods to superimpose a pseudorandom pattern of bits with varying brightness across the field of the picture. The small amount of data needed

for encoding is duplicated many times across the image so it can be recovered with greater certainty. The depth of modulation for the individual bits is adjusted to the average picture level of the region of the frame in which the bits are located, in order to be undetectable by the viewer. The resulting data watermarks each frame with a low-resolution representation of the matching audio for that frame. Detection of the data, audio encoding, and frame-matching is used at the receiving end to adjust an active audio delay to put the picture and sound back in lip-sync.

Designed to withstand MPEG, the entire process is very robust. Additional data capacity not used by the audio watermarking information can be utilized by the program producer as a form of user bits, so that the originator can insert serial or episode numbers, ownership or "branding" information, or any other desired data. This information travels with the picture, unlike an out-of-band stream such as vertical-interval data. Subsequent transmission of a recorded program allows the audio to be resynchronized at the receiving end if needed.

Among the technical issues remaining are whether it is possible to remove the data once it has been inserted into the image. Currently, there is no way to strip the data and re-encode it if, for instance, the video and audio are edited separately (such as with news footage). Another issue is that pseudorandom data is detected by picture quality analyzers as noise.—Frank Maynard, Past Chair

## Montreal September 27, 2000

"Challenges Encountered to Build a Mobile Production Truck" was the theme for the September Section meeting held at Maison Radio-Canada in Montreal, Quebec.

The featured speakers Gilles

Arcand, SRC, and Pierre Ouellette, Reference Video, both work in the design and construction of mobile trucks. They shared technological challenges normally encountered and explained solutions that would satisfy operational requirements.

Following the presentation, attendees were given a unique opportunity to visit two "full production enabled" mobiles: The Mobile 1, from Société Radio-Canada, and the Digital Référence Video Mobile, from Reference Video.—Yves Corsi, Section Manager

## Napa Valley College Student Chapter August 30, 2000

The Telecommunication class of 2001 at Napa Valley College would like to thank last year's officers, Bryte Beevers, Maricel Sweeney, Carlos Rodriguez, Susan Ball, and Damon McLaughlin, and wish them well in their new careers.

Now a new year has begun and with it new officers. Those stepping up to the challenge are: Jeff Johnston, President; Maira Villafuerte, Vice-President; Dan Trimbach, Treasurer; Jeremiah Peterson and Mike Laschiazza, Webmasters; and Greg Martin, Secretary.

The first meeting was held on August 30, where our President spoke with incoming students of the program and introduced the new officers. He explained what it means to be a SMPTE member and discussed ideas for future meetings and guest speakers. Enthusiasm was high and the Section appears to be off to a great start.—Greg Martin, Secretary

## Napa Valley College September 16, 2000

Chapter President Jeff Johnston called the meeting to order with announcements and introduction of the guest speaker Tony Cox, who gradu-

ated from the Napa Valley Telecommunications program in 1993. After a six-month tenure at Encore Hollywood, Cox moved to San Francisco where he now works as chief engineer for Filmcore Editorial and Distribution.

Cox showed a demo of commercials edited on Avid editing systems and explained his duties at the post-house, where he is currently responsible for daily maintenance and continuous upgrading of 1-in.-C, Betacam, and 3/4-in. tapes, as well as upkeep of the Avids.

The meeting was adjourned after a brief Q & A session.—Greg Martin, Secretary

## Nashville July 20, 2000

Steve Wynn, advanced technology specialist, Sony Broadcast Systems, gave a presentation on new developments in MPEG technology, which included a demonstration of various pieces of Sony equipment.—Buddy Gailey, Secretary/Treasurer

## New York September 13, 2000

The September meeting, held at the Globix SuperPop Internet Data Center, was entitled "Streaming: Beyond the Basics." More than 120 people attended the event, which included tours of the facility. The nontraditional topic was part of a continuing effort by the Section to educate and introduce members to new technologies in all areas of imaging and media content.

Andrew Leighton, Globix, gave the history of the company, one of the largest providers of web hosting services, and goals for future growth in the industry. Timothy Garret, mshow.com, then gave a presentation on Mshow and the technologies behind the product, a multimedia webcasting package that integrates a video/audio streaming engine (Real Player or Microsoft



*New York Section meeting speakers Timothy Garret, Mshow, and Andrew Leighton, Globix.*

video player) with a variety of applications. Intended for use in webconferencing, corporate presentations, seminars, and other types of interactive situations, Garret demonstrated some of the capabilities of this new distribution tool. The meeting was webcast live, so members from around the country were able to log-in for viewing.

The presentations were followed by a lively and spirited Q & A session, which showed that many SMPTE members are quite savvy about web technology. The meeting was also recorded for webcast and should be available on the New York Section website at [www.smpte.org](http://www.smpte.org), New York Section.—Mike Strein, Program Manager, Television

## Ohio September 26, 2000

The meeting took place at the WOSU television plant located at the Fawcett Center on the Ohio State University campus, in Columbus. The topic, "Digital Imaging in the Entertainment, Educational, and Instructional Media," attracted 40 members and guests, who enjoyed three very interesting presentations related to digital imaging conversion.

Frederick C. Motts, Executive Director of SMPTE, began the meeting by discussing the 142nd SMPTE Technical Conference and Exhibition in Pasadena, CA. He outlined some of the Society's goals for this conference, including informing, educating, and stimulating members in efforts to convert their facilities to a more digital domain. Alternating the venue

between the East and West coasts from year to year presents a more convenient and accessible opportunity to attend sessions and social events and to visit displays. It also provides a forum for sharing experiences in solving mutual problems and goals when contemplating current and future digital plant conversions. The Society is being relied upon, now more than ever, to provide digital media oriented educational services to a much wider and more diversified membership, residing around the world. The conferences are an extremely important step in making sure that the SMPTE mission is accomplished.

The second speaker was SMPTE Executive Vice-President John L. Mason, Director, Eastman Kodak Worldwide Student and Emerging Filmmaker Programs. Mason spoke of the concerns shared by many in the motion picture and television entertainment industries about the movement to a more digital infrastructure, not only at the production end of the chain,

but for the exhibition end as well. Complete across-the-board digital infrastructure conversion has recently been considered by some of the more traditional motion picture theater exhibitors, who have been testing new digital projection technology at select theaters around the country. Some of the items being considered for such a format conversion are software/hardware costs, technology needed, audience reaction, and the current economic conditions at some locations.

Mason outlined some of the more important and immediate responsibilities that SMPTE should employ to educate and inform members about new digital technologies. He suggested that these processes should not only offer higher quality imaging to the entertainment industry as a whole, but must also be a practical consideration for future business models. New digital imaging models should ideally result in more favorable and noticeable audience reaction, which should translate to potentially higher revenues for the particular entertainment industries using them.

He also mentioned that since the introduction of the 16 x 9 aspect ratios to filmed HDTV programs, some cinematographers have expressed concerns about the restrictions involved in multiple (aspect ratio) framing during original photography. For instance, when photographing a television program simulcast in HDTV, the subjects must be framed within two sets of framing lines, a

16 x 9 and a 4 x 3 aspect ratio. If both framing lines are not being considered during original photography, later, during the HDTV simulcast of the program, some of the subjects may not be included in the essential viewing areas of either a viewer's HDTV 16 x 9 or NTSC 4 x 3 receivers. The consideration of multiple aspect ratio framing lines is now a must for filmed television programs and even for theatrical motion pictures, which could appear later on HDTV.

Mason concluded his presentation by stating that he is eagerly anticipating his responsibilities as future SMPTE President and finds these to be some of the most exciting and challenging times in the Society's history!

The third speaker was Dale Ouzts, director and general manager, WOSU Television and Radio Stations at Ohio State University. Ouzts displayed, via a direct view HDTV big screen display, the television plant's model for a complete digital infrastructure conversion. WOSU's digital television broadcasting station of the future will include a digital/HDTV PBS passthrough, local HDTV/SDTV origination, and SD multicasting broadcast services. For a few years after its digital signal conversion, like all other television stations, WOSU will simulcast both NTSC and digital signals until the expected cut-off date in 2006. Ouzts outlined the station-projected model of SD multicasting, which will open a unique



*Ohio Section Officers were presented at the September meeting. L-R: Manager David Schein; Chairman David Prince; Secretary/Treasurer Gene Batey; Manager David Ginaven; and guest speakers John Mason and Frederick Motts.*

broadcasting service to viewers in its service area. Each of the four or more planned multicasting channels will broadcast in SD with the capacity to provide data streaming to a computer and up to six channels of Dolby digital audio.

During discussions between Ouzts and attendees, several scenarios were suggested as to how a multicasting service could benefit elementary, high school, college, and technical school students. Ouzts pointed out that during the portion of a broadcast day when multicasting would take place, high school students in one group of cities within a service area could view a lesson on architecture on one of their standard definition, multicasting channels, and a different school system in another group of cities could show "romper room" type programming to kindergarten students, simultaneously. On another SD channel they could also offer "The Buckeye Channel," which will be used exclusively by Ohio State University.

One member suggested a scenario with veterinary students sitting in their classrooms either on or off campus, viewing a lecturer at a teleconference in New York, presenting the latest research paper on a particular animal disease. They would be able to download an additional data stream signal containing graphics and other print media supplementing the lecture directly into laptops during the broadcast. Dolby Digital AC-3, 5.1 multi-channel audio could also be included in the channel, simultaneously offering the lecture to the students in several languages.

During the full HDTV portion of WOSU's broadcast day, Ouzts mentioned that the station could also passthrough a PBS program that could include such a data streaming signal providing additional data services such as a Power Point-type presentation. This data could be downloaded and stored and then viewed hours or days after the original two-hour broadcast took place. Last year's PBS HDTV broadcast special on Frank Lloyd Wright is an example. It included

slides, blueprint graphics, and even multiple camera angle still photos of the rooms inside the Wright home. The actual data stream, which was downloaded at the time of the original broadcast, was presented via a laptop computer linked to a HDTV monitor and exhibited to meeting attendees. Everyone was amazed that such a highly detailed data stream signal, broadcast with the full HDTV program, could contain so much supplemental program content.

The meeting concluded with a lively Q & A session.—Gene L. Batey, Secretary/Treasurer, Ohio State University, Office of Information Technology

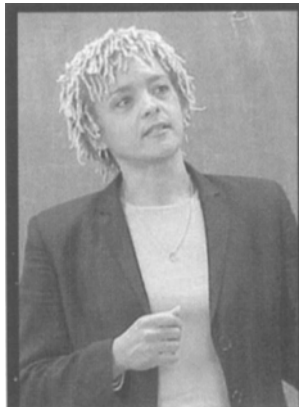
### Pasadena City College Student Chapter September 26, 2000

With 42 in attendance, the meeting began with announcements of the 142nd SMPTE Technical Conference and Exhibition and the Hollywood Section meeting. Guest speaker Hester L. Hargett, a producer and unit production manager, was then introduced. A native of Los Angeles, Hargett developed a passion for filmmaking at age 11. She attended USC and earned B.A. and M.A. degrees in film production.

Hargett got her first opportunity, as a receptionist for Dino DeLaurentiis, at the age of 20; later she worked as a production assistant on the feature film *Dune*. While working with DeLaurentiis, Hargett established a relationship with his daughter Raffaella, who launched her own production company, Raffaella Productions, Inc., and they have been working together since.

As a producer, Hargett explained the importance of staying within the budget and urged that students ask for what they need and not let the studio pressure them to do it for less. She said to take into consideration scheduling the days for principal photography, cast, crew, equipment, and post-production procedures, such as visual effects; all of the factors that make up the budget.

Hargett has worked on films ranging from a \$3 million bud-



Hester L. Hargett, guest speaker at the Pasadena meeting in September.

get to \$80 million, including, *Dragon: The Bruce Lee Story*, *Dragonheart*, and *Daylight*. She stated that every production is important and no matter how much money is allocated to the budget, each production presents its own challenges. She told students to learn from mistakes and that the key to success is the relationship with the cast, crew, and vendors.

In closing, Hargett recommended that students prepare themselves by learning as many areas of production as possible at PCC, UCLA, or USC. "You must have passion, don't let your knowledge hold you back. You have to start somewhere and it's usually at the bottom. You have to break in, you have to be around people in the industry."—Kassa Zakadi, Chairperson



A certificate of appreciation is presented to Ms. Hargett by Kassa Zakadi, chairperson, Pasadena City College.

## Rochester September 12, 2000

The September meeting took place in the Chester Carlson Auditorium at the Rochester Institute of Technology (RIT) with approximately 80 people in attendance to view the screening of this year's entries in the New York State Student Film and Video Festival. Gloria Read, Eastman Kodak Co., was present to award \$1,500 in grants to the winning productions captured on film.

The categories were non-fiction, fiction, animation, and experimental. First place winner in the fiction category was *H & G*, a film by Amalia Zarranz and Gustavo Maraes of Columbia University. In the non-fiction category, Joseph Bellavia, a student at RIT, was awarded first place for his video, *Searching for Papa*. The experimental category's first place winner was Scott Zarzycki, also a student at RIT. Zarzycki's winning production *TV Dinner* was produced on video.

Po-Chun Lin was awarded first place in the animation category for his computer-animated production *Render Out*, which was submitted to Leonard Maltin, Entertainment Tonight, for review. Maltin said, "I was very pleased to watch *Render Out*. It fulfills everything I think a student film should achieve; it's bright, original, ambitious, but most important, successful in what it

sets out to do. Best of all, it's entertaining. I hope Po-Chun continues to work in this medium and set himself new goals each time out." Po-Chun is a student at RIT.—Vincent T. Slavín, Section Chair

## Sacramento September 13, 2000

The September meeting was held in the studio at KCRA-TV in Sacramento. Larry Eastteam gave an illustrated talk on the conversion of KCRA to simulcast, NTSC, and digital transmission. He explained how the conversion of the transmitter tower was implemented while a standby transmitter continued with the existing transmission schedule.

Eastteam discussed the equipment currently being used for conversion to digital and some of the problems encountered in getting on the air. He also explained the current program schedule, which includes live transmission of the "Tonight Show" in high-definition. Eastteam briefly discussed the problem of funding the cost of conversion to digital, which prevents the use of resources in implementing HD production.

The meeting concluded with a tour of the facility, showing the HDTV equipment used for up-conversion and the master control area with a 16 x 9 display of the up-converted signal and analog transmission for Channels 3 and 58.—Mike Betts, Secretary/Treasurer

## Washington, DC August 17, 2000

Approximately 60 members and guests attended the meeting hosted by Atlantic Video in Washington. Amid all the debate over DTV transmission standards, 8VSB vs. COFDM vs. ISDB/BST-OFDM, one truly promising and greatly desired development has emerged: a universal video production format bridging the multitude of digital and analog transmission standards. The presentation gave participants an opportunity to experience 24 frame/sec high-definition video personally.

The key word in videography the last few years has been convergence: this format certainly falls in the category, uniting film and video professionals, as well as "new media" artisans, looking to stream material across the internet. For a century, chemical-based motion picture film was the universal acquisition medium. Then, the development of electronic video post-production offered speed, economy, and a WYSIWYG (what you see is what you get) creative environment. Programs edited for worldwide distribution required multiple film-to-video transfers and duplicate editing sessions for each transmission format. Now 24p changes all of that!

Steve Wynn, Sony Broadcast and Professional Group, gave a clear and concise overview of the format's past, future, and present manifestation in his company's CineAlta line of equipment. He explained Sony's use of a segmented frame with existing signal transports, enabling equipment to switch between interlace and progressive modes. The system scans the entire image progressively and then separates the signal into odd and even lines, similar to fields, but temporally coincidental.

Wynn's overview was very interesting, but the novel appeal of the evening was the demonstration, viewing 24p natively and then seeing it transcoded to other formats in realtime. Those who have watched PAL or SECAM 50-Hz signals are familiar with the slight flicker especially visible in brighter or high-contrast scenes. This effect is evident when displaying 24 frames/sec on a 48-Hz refreshing display, although most of the time, it is not that disturbing. Monitors are being developed that will refresh 72 times/sec, making native viewing of 24p flickerless.

It was also interesting to see identical images converted to and displayed in center-cut 4:3 aspect ratio, NTSC standard definition, and both 16:9 HD 1080i and 720p. Images shot with Sony electronic 24p cinematography system, equipped with prime, film-like lenses, were exhibited. The difficult-

to-describe, but much sought after, film look was achieved and the material appeared to have originated on film.

After Wynn's presentation, Sony's Nick DiLello showed film-originated material, transferred to 24p video, followed by a comparison between film and electronic imaging. In most instances, the film-originated image appeared slightly more pleasing, but the difference was minimal. When converting to SDTV and HD 1080i, the standard 3:2 pull-down method (traditionally used to transfer film) was used for transferring 24p video, giving the film-feel as well.

Filmmakers (such as George Lucas) are adapting this technology to their needs; however, additional, super high-definition formats might develop as needed. D-cinema, the electronic digital distribution and exhibition of theatrical motion pictures, saving print costs and heading off piracy, has also been mentioned as an outlet for

television stations and production houses by producing local commercials and segments for movie theaters. Although not demonstrated, DiLello said that converting to PAL or 1080 25 frames/sec is just as easy. He also stated that 24 flicker and 72-Hz refresh display was being updated to enable 24 frame/sec material in a flickerless environment.

According to Wynn, Sony has joined SMPTE and others in developing ways of placing metadata on recording media so that reframing for 4:3 could be more versatile than simply center-cut. He also stated that while direct transmission of 24 frames/sec was permitted and possible, there was little interest by broadcasters, especially since compression encoders returned to the original frame rate anyway.

After the meeting, Atlantic Video offered a tour of its studio.—Jim Suthard, Section Manager

## Obituaries

**Murray Stevenson**, a Life Fellow, has passed away at age 95. Stevenson was the founding member of the Australia Section in 1976 and the original chief engineer of Sydney Commercial Television Station, Channel 7, in the mid-1950s. He designed and built the station and laid the foundation for good engineering practice in the Australian television industry.

**Michael D. Patten**, a SMPTE member, has passed away at the age of 53. As the co-founder, chief technology officer, and chairman of Graham-Patten Systems, he was the architect and principal design engineer for the company's ESAM and D/ESAM edit suite audio mixers. In 1991, Patten won television's highest honor, a Technical Emmy Award, for a GPS product: the first digital audio mixing board made for television.

A leading figure in Nevada County's video industry, the British-born engineer moved from the U.K. in 1975 to work for Grass Valley Group. While

at GVG, he did pioneering work in television digital special effects and played a key role in developing video switcher equipment that was "the standard in the industry" for about 10 years.

Patten was an active participant in the working groups of both the SMPTE and AES organizations. He had been a member of the Society for over 20 years.

**Franklin J. Miller**, a member of the Society, is dead at age 57. Miller's career in designing audio equipment for broadcast spanned over 20 years. He had been a SMPTE member for over 15 years.

SMPTE has also learned of the death of **H. Theodore Harding**, at age 87, and of **Tom Weaver**, director of post-production at ABC Inc. in California.

