

Section Meetings

Chicago March 2003

The topic for the meeting on March 11, was "A Marriage Between Film and Video." Presenter Mark Chiolis, Thomson, reviewed a brief history of imaging technology milestones. A progression of camera innovations has led to the Viper FilmStream acquisition device, which features Frame Transfer CCDs with dynamic pixel management (DPM), mechanical shutter, and a dynamic range equivalent to 8 f-stops. The film stream transfer concept provides an unmodified, uncompressed output from CCD sensors rated at 9.2 million pixels. Chiolis emphasized that the Viper represents an alternate electronic cinematography tool, not a replacement for 35mm. It has no optical viewfinder and less depth-of-field and dynamic range than film, but captures up to 18 Mbytes of data per frame. Its 1920 x 4320 frame array outputs 2.2 Gbits/sec of a 12-bit linear signal on a 10-bit transfer envelope. The main function of film stream is to capture photons and deliver bits.

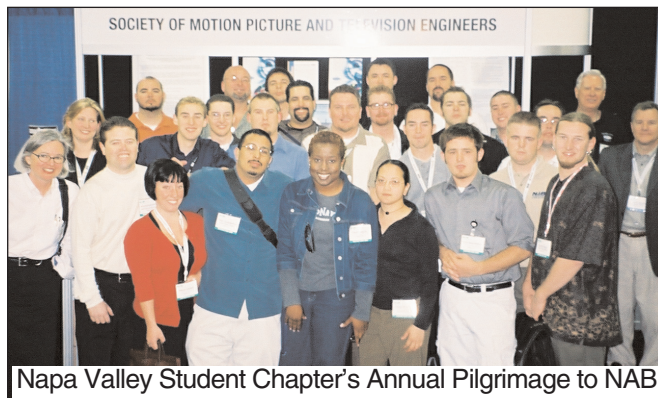
The presentation included still and motion samples of raw and modified output. The unprocessed signal from the Viper has a green tint from 59% of the light being directed through the green channel. Many questions from the very diverse audience of broadcasters, production, post, and agency representatives, dealt with the thorny issue of storing uncompressed, high-resolution video data. With its dual link 4:4:4 spigot, the Viper output requires more than a half-dozen 120-GByte drives to contain less than one hour of video. Once the storage and time-of-transfer issues are resolved, true HD production will proliferate.

Thanks to Jim Mahoney and his staff at host Film & Tape Works. Projection, D-5 playback, and other media support were provided by Avenue Edit, Filmworker's Club, and John Proctor—*Scott Kieffer, Section Manager*

Detroit March 2003

The meeting on March 11 featured a presentation on timing and synchronization in a multistandard, multiformat video facility, by Bill Cohn, Tektronix.

Cohn began by showing the 25 attendees an historical RCA film feature documenting TV technology of a half-century ago, as a lead-in to how the complexity of video timing has increased since the early days. He reviewed NTSC timing fundamentals and explained a basic NTSC timing setup, and how to make measurements and adjustments on analog video sources. In his discussion



Napa Valley Student Chapter's Annual Pilgrimage to NAB

on multiformat facilities, Cohn introduced the concept of "format islands" and the desire to group, signal-wise, devices within a plant by format. Systems of the same type should be timed to one another. He also explained different ways to maintain synchronization when converting between formats.

The nature of the analog high-definition tri-level sync signal was also explained, and digital timing considerations were discussed. Cohn also covered the procedure for determining timing with digital signals by demonstrating how to display the SAV and EAV pulses in the signal, using a reference generator and waveform rasterizer. He stressed the importance of examining vertical as well as horizontal timing, just as in NTSC measurements. The meeting concluded with a discussion of audio synchronization issues, as well as timing analog component video.—*Frank Maynard, Membership Chair*

Napa Valley College February 2003

During a two-day visit to students in the Napa Valley Telecom program, Charles Hintz, CSU, Hayward, gave an introductory lecture on the digital format CCIR 601.

Aided by Instructor Vann, students spent two weeks in preparation for Hintz's visit, gathering information in the hopes of coming up to speed. A tape of a 1970s Bluegrass festival of a much younger, guitar-toting Hintz was accidentally unearthed and students hoped, in good natured fun, that this footage would somehow steal his thunder and give them home advantage, but it did not.

In the moments that followed that first day, Hintz worked quickly through the D formats, D-1, D-2, etc., and moved rapidly onto the MPEG series. Taking short breaks to inquire about student's understanding, Hintz was often met with dumbfounded expressions, to which he provided "brain relief" by verbalizing a series of horrible puns beyond the scope of literary description.

On the second day of lecture, Hintz opened with HD footage of an indigenous ritualistic chant, before moving on to his plethora of technical knowledge on compression rates. It was through an ensuing progression of cultural introduction ranging from Rastafarianism, to Biblical language origins, and finally Scottish Rites, that Hintz

taught students the importance of not only having a thorough understanding of what you do, but who you are.—*Faye Pilgrim, Secretary*

Napa Valley College **March 11, 2003**

Sandy Wolfe met with the second-year NVC Telecommunications class with the sole purpose of sharing her work experience since her graduation in 1997.

While attending Napa College Wolfe was unsure of which avenue in broadcasting she wanted to pursue. Making a mental list of what she didn't want, Wolfe waited for external inspirations to guide her towards viable options. After a visit from a San Jose-based Sony representative she was convinced that systems integration had to become her forté. Since then, her contract-hire with Sony has taken her on assignments from the east coast to exotic Caribbean locations. When she addressed the class she had recently returned from a gruelling 48-hour shift of systems integration troubleshooting for a New Jersey client. Wolfe explained that although these work hours were not typical of all assignments, overlapping integration conflicts usually required more attention to achieve project completion. She told students that Sony's project management software had to be the greatest asset of assignment tracking. During its absence on her latest job, Wolfe mentioned the horrifying task of having to hand-track and update changes to each drawing so that engineers weren't wasting time on tasks that had already been performed.

Wolfe informed the eager students that being able to troubleshoot equipment and follow the newly adopted line-drawing formats has helped her to keep on top of her trade, but most of her success is due to sincerity as opposed to egotism.—*Faye Pilgrim, Secretary*

Napa Valley College **March 13, 2003**

Roy Trumble's transmission speech on March 13 covered everything from the broadcast DTV conversion and its economical effects on small stations, to his personal experience with RF upgrades on Sutro Tower, as a result of the new mandate. Attendees watched in amazement as Trumble deftly turned his presentation of facts and figures into a poetry reading for RF engineers. Although second-year students were able to follow the technically saturated talk on klystrons, waveguides, and antenna patterns; others who had yet to receive Instructor Clark's transmission lecture were hard-pressed to follow.

Presently, VTR signal systems happens to be the topic of study so students were eager to expand their knowledge through Trumble's engineering expertise. Trumble was given a tour of the NVC Telecommunications training lab after his speech.—*Faye Pilgrim, Secretary*



Napa Valley Chapter meeting on March 13: Guest speaker Roy Trumble (second row, third from right) and members of the the Napa Valley Chapter, in the NVC training lab.

New England **March 2003**

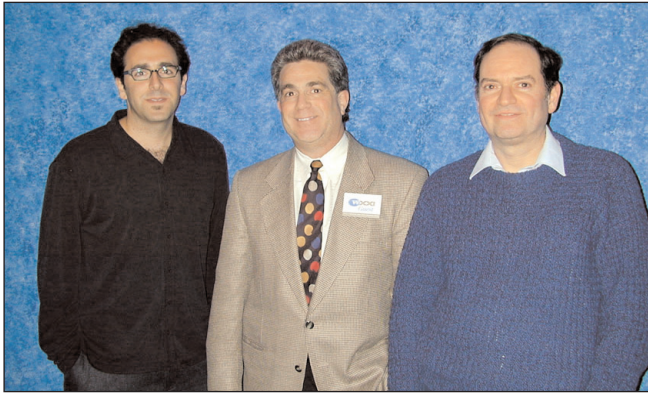
Due to the success of the Section's Lighting Boot Camp in March 2002, it was brought back for an encore. Over 90 members and guests traveled to Studio B at High Output, Inc.'s new facilities in Canton, MA, for a workshop, which included active demonstrations covering the five basic lighting choices, with specific emphasis on color. A special one-hour pre-meeting time allowed attendees to preview the lighting equipment and two HD cameras provided by Boston Camera Rental and Rule Broadcast. Tours of the three High Output studios and ancillary facilities were also offered.

Award-winning lighting director John Gates, Gates Service Group, Inc., led participants through the five basic lighting choices: selectivity, brightness, angle, quality, and color, using a wide range of lighting equipment from High Output to illustrate the cause and effect of lighting choices. Generous support from Mike Jones, Rosco Labs, provided a wide range of color products that allowed Gates to explain and clearly show the range of color choices available to a motion image creator. Several lighting demonstrations aptly showed the often significant differences between what the human eye perceives and what the camera is capable of recording and reproducing. Differences in both hue and saturation in lighting color, as well as the perceived color contrast that can be created, were well displayed on the HD systems.

The entire two-hour presentation was audio/video captured for archival purposes and possible webcasting on the New England Section website.—*Paul R. Beck, Secretary/Treasurer*

Pasadena City College **March 2003**

On March 25, Pasadena City College got an insider's look into government television when Colleen Duffy Felix, senior video production associate for the city of Burbank, spoke to the 15 members in attendance. Duffy



(l-r) Ross Shain and John Cerquone, Avid Technology, Inc., and David Stern, Rochester Chair, at the Rochester Section meeting in March.

Felix has been a member of the Golden Mic-winning production department for the city of Burbank, which broadcasts 95% original programming to its community. The station dedicates itself to serving the public by keeping them informed of local government meetings and events through news magazines. She explained how the station works with the local city council to coordinate the best information for constituents.

As a former PCC student with a certificate in television production, Duffy Felix explained that the information she learned at PCC has served her at Burbank. She encouraged students to take full advantage of the state-of-the-art equipment at PCC, and stressed the importance of knowing your production equipment thoroughly. She was adamant about the importance of being well-rounded, as her field productions require her to master multiple disciplines in media production. She helped students realize that their work at PCC is an accurate simulation of a real production environment.

Students took Duffy Felix to heart when she explained what she was looking for in new employees. "We look for team players who are on time and know their equipment." Pasadena City College emphasizes team involvement, which was exemplified by Duffy Felix's professional presentation to the chapter as she spurred questions well past the meeting's end.—*Eduardo Garcia, Student Chair*

Philadelphia March 2003

"VoIP InterComm Systems" and "12-Bit Sampling" were the topics of the meeting on March 11 at QVC in West Chester, PA, where 29 members attended.

Mark Wren, Trilogy BSE, Inc., presented information on Mercury, a unique new product that combines the broadcast-style intercom feature set with the VoIP delivery platform. It allows PCs to become virtual intercom panels, with nodes easily located in networked environments to provide I/O gateways, and traditional intercom to extend beyond what was previously possible. At the heart of the system is the Mercury VoIP intercom

engine. This peer-to-peer virtual matrix can be extended across LAN, WAN, and the internet. Its business rules are guided by Trilogy Broadcast Ltd.'s many years of broadcast intercom experience. The ability to communicate flexibly in one-to-one, one-to-many, and many-to-many conversations distinguishes this product from other VoIP initiatives. All this sophistication is exposed to the user in the simplest of user interfaces, and the real power of the system can be managed securely by a network administrator.

Jerry Cohen, JVC, presented a tutorial on why video cameras should use 12-bit sampling. The increased dynamic range of modern CCD devices allows for 4:1 overexposure, which cannot be utilized with 10-bit sampling, unless the video signal is limited or kneed in analog before A/D conversion. If the video signal represents saturated colors, analog limiting or kneeing can affect color rendition. When 12-bit sampling is spread over the full 4:1 overexposure range, the RGB video in the overexposed area can be digitally kneed, maintaining better color ratios.

There was also discussion about how some digital recorders add 7.5 units of setup to digital signals, even if the incoming signal already has setup—something to watch out for. The meeting concluded with a tour of QVC's 165,000 sq. ft. state-of-the-art broadcast center.—*Walt Bundy, Section Chair*

Rochester March 2003

A handful of attendees braved bitter temperatures on March 6, to see uncompressed HDTV editing in the studios of WXXI-TV 21. Ross Shain, senior applications specialist, Avid Technology, began by covering the rationale behind the Advanced Authoring Format (AAF), a metadata-rich scheme that allows a modern NLE system to conform data from any of its software.

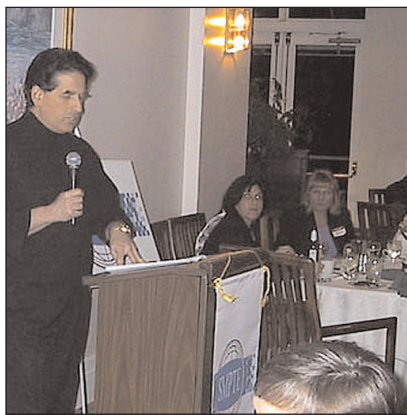
The system on hand was the new Avid DS HD 6.0, running on a Compaq dual 2.8 GHz PC with an Avid 2-Gbyte Fibre Channel JBOD array and a custom SMPTE 292M/259M I/O box. Shain explained the



Ross Shain, speaker at the Rochester meeting in March.



Rome Chelsi presents John Burrell with Lifetime Achievement Award.



Tom Martino addresses Rocky Mountain Section.

Sacramento March 2003

The Sacramento meeting, titled “HD NonLinear Edition on Apple Final Cut Pro,” was held at Thomson Grass Valley on March 19. Approximately 30 people came out on a rainy night to hear John Abt, president of AJA Video, discuss the development and capabilities of AJA Video’s Kona HD capture card and how it is used with Apple Final Cut Pro software to edit 10-bit uncompressed HD video. This was followed by a well-received discussion and demonstration of the editing system. The presentation was followed by an informal discussion of the editing system and the future of HD video editing.—*Mike Betts, Section Chair*

systemic shift from hardware-based rendering to pure software, via a hardware abstraction layer (HAL) to support HD, using generic hardware. To demonstrate the realtime HD offline capabilities, he displayed a documentary acquired in HD, but cut on a traditional Avid system by a nearby PBS affiliate currently trailing in the transition to DTV. The system conformed the entire work to 1080i without any problems. Shain stated that in addition to all ATSC formats, 8-bit resolution independence and video wall support are also available. He demonstrated features of the software, leaving neither the familiar media composer-style interface nor the “explorer” structure to access any file type, network site, or web page. Realtime scalable effect trees handled SMPTE wipes and 3-D DVE moves, as well as color correction and simple motion tracking. The system also worked with EPS, Photoshop files, and even linked clips. Future enhancements were not mentioned specifically, but would be announced at NAB.—*John P. Weiksnar, Section Manager/Membership Chair*

Rocky Mountain February 2003

The Rocky Mountain Section took a break from the usual forum of technical presentations to honor one of its own with a Section Lifetime Achievement Award. This year’s recipient was John Burrell, Entravision Radio. Burrell served the SMPTE board for many years in the 1980s and ‘90s, and has been an outstanding contributor to the local broadcast community. He founded Burst Communications, and has also worked in various engineering capacities at Hewlett-Packard and Tektronix. He was also recognized for his willingness to go the extra mile to assist colleagues.

The keynote speaker, Tom Martino, Fox Network, provided an illustrative talk on how technology has changed the job of on-air personalities. Thanks to our sponsors for their generous support of local chapter activities: Pinnacle Systems, Ross Video, Sony Corp., Burst Communications, Encoda Systems, and Leitch Corp.—*Rome Chelsea, Section Chair*

San Francisco February 2003

Thirty-five members and guests gathered at the studios of KCSM, College of San Mateo, on February 26, to hear a presentation titled, “Video/Audio as Data? Open Standards and Media Servers,” by Adam Wilt, Omneon Video Networks, (www.omneon.com). Wilt is no stranger to SMPTE, having served as a Section Officer; he also designed and ran the A/V for several SMPTE national conferences. At Omneon, Wilt develops editing strategies and workflows, user interfaces, and utility tools. He is also well-known for his regular *DV Magazine* columns and maintains a website (www.adamwilt.com) covering DV and 24p technologies.

Wilt took attendees down the multiple pathways of media flow and connectivity in today’s production facilities. Media servers have become the digital hub for the modern broadcast operation in which they have to cope with different standards to allow for “anything in/anything out:” signals coming in as video and audio and played out as video/audio or data, or video/audio coming in as data (file-based transfers), but played out as either video/audio or data. The server must also be able to offer computer-program access to portions of a datafile for editing. The presence of open standards enables this data interchange.

Wilt discussed evolving hardware and software architectures, as well as the use of open platforms in Omneon’s MediaServer system as one solution to the digital traffic jam occurring in many facilities. He talked about the benefits and pitfalls of open standards, including how a small company leverages the development talents of the larger community, although that means relinquishing proprietary control over the infrastructure. He concluded by showing true edit-in-place workflows using Apple Final Cut Pro (FCP) nonlinear editing systems (NLE), in which video ingested by Omneon is immediately available to FCP NLEs without further file



Attendees watch a presentation by John Abt, at the Sacramento Section meeting in March.

transfer or conversion. Because FCP is Quicktime-based, its output is immediately playable to air by the Omneon system. The company's use of standard interfaces and file formats allows this workflow to occur with off-the-shelf NLEs not specifically designed for the purpose.—*Peter Hammar, Secretary*

San Francisco March 2003

Thirty members and guests gathered at the Round Table Pizza restaurant in Menlo Park, CA, on March 24, to hear a presentation titled, "MXF, the Material Exchange Format Demystified," by Lowell Moulton, Sony Systems Integration.

Many new SMPTE standards currently in balloting or ready for trial publication relate to an internationally accepted video and audio file-interchange format called MXF (Material Exchange Format). Moulton discussed these new standards and why people should care about them. He noted that MXF topics would be a part of the NAB Pro-MPEG Forum Interoperability Suite, and that many NAB vendors would show MXF-based products at this year's convention.

Moulton reviewed some of the basic technical strategies for building production and distribution systems using MXF, UMID (Unique Material Identifier), and metadata-enabled digital asset management. Building mixed MXF and SDI plants will require KLV-encoded metadata for SMPTE 291M vertical ancillary data packets. Workflow will be drastically changed when metadata-rich MXF production technologies are implemented. MXF enables material to be easily searched and accessed at temporal resolutions down to individual frames. The variety and quantity of metadata associated with AV essence has no technical limitations.

System designers will have options about where they encode metadata in MXF-based systems, allowing metadata to be embedded in essence tracks; associat-

ed with essence tracks; attached as a header to essence tracks; or stored in a separate database. SMPTE UMID is a globally unique identifier for AV material that can provide links among MXF-files and separate databases. Moulton discussed the three new SMPTE engineering guidelines for MXF, the Descriptive Metadata Scheme, and the catalog of MXF enumerated values. He also covered SMPTE 377M, the MXF File Format; SMPTE 379M, the Generic Container; SMPTE 330M, UMID; and the many essence mappings and operational patterns, including SMPTE 378M, 381M, 382M, 383M, 384M, 385M, 386M, 387M 390M, 391M 392M, and 393M.—*Kellie McKeown, Manager*

Twin Cities March 2003

On a snowy March evening, Twin Cities Section members and guests were given a tour of the University of Minnesota's new digital technology center (DTC). The tour began in the Laboratory for Computational Science and Engineering (LCSE), which is located on the newly refurbished Walter Library ground floor. The laboratory is a state-of-the-art facility for scientific computation and visualization, built through the support of industry, government, and the University's Institute of Technology. It is supported by the National Science Foundation, as well as continuously upgraded equipment donations from Ancor, Brocade, Ciprico, Cray Research, MTI, Seagate, and SGI.

Paul Woodward, director of the LCSE, gave a technical overview of the lab, after which attendees viewed images from the Powerwall, a 10-screen display with a total resolution of ~13 megapixels. The 48 CPU SGI VisPC image-rendering cluster is attached to a Fibre Channel SAN of 4.8TB capacity. With a Gigabit Ethernet link to the University's OC-12 Internet-2 pipe, massive data sets can be streamed onto the LCSE SAN for data analysis and visualization. For more information about the UMN LCSE, visit www.lcse.umn.edu.

Upstairs, in the spacious new DTC auditorium, Andrew Odlyzko, director of the digital technology center, gave an overview of the DTC's formation and mission. The DTC aims to be a bridge between local industry and university experts in digital technologies such as visualization, data mining, data storage, networking, wireless, robotics, AI, and high-performance computing.

The third presentation by Gary Meyer, associate professor in the Department of Computer Science and Engineering, detailed advances in how color appearance professionals approach the design of materials and decorative finishes such as paints, plastics, and textiles. He reviewed the important computer graphics advances in realtime shading and surface reflection modeling that have made this approach to color appearance design possible. Detailed information about the digital technology center can be found at www.dtc.umn.edu.—*Jim Miller, Section Chair*