Section Meetings

Atlanta—October 2007

The Section meeting on October 8 included two presentations from Michel Proulx of Miranda. In his first presentation to an attentive group of 33 attendees, Proulx discussed "Aspect Ratio Control using AFD." He gave a comprehensive overview of this technology, including SMPTE 2016, which covers the broadcast plant, and went into some detail on SMPTE 2016-1 and 2016-3—the more pertinent portions of the standard. In his second presentation, Proulx discussed the status of 1080p60, the 3 Gbit/sec "Holy Grail" of HDTV. He provided details on the relative size differences between 720p, 1080i, 1080p24, and 1080p60. He also discussed the advantages of progressive scan over interlaced and pointed out that many products must convert interlaced to progressive, which introduces temporal issues. Proulx also discussed the state of technology to support 1080p60 and stated that significant progress is being made to provide the internal infrastructure, such as routing, to support this format. He concluded that this format represents the best of spatial and temporal resolution and is becoming more practical from a "plumbing" standpoint. A standard interconnect (SMPTE 424M) will lead to more processing devices that meet the standard, which already exists in display devices, players, and games. The challenges are cost-effective storage and set-top boxes for the home.—*T.J. Scott, Jr., Section Chair*

Australia—September 2007

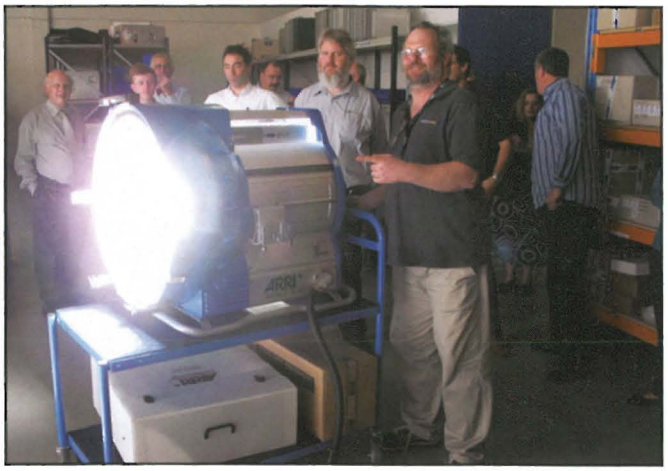
In conjunction with ARRI Australia, the Section meeting was held on September 25, at the ARRI Australian head office in Macquarie Park, North Ryde. Stefan Sedlmeier, general manager of ARRI Australia, hosted the well-attended event and provided a very informative and enjoyable evening.

Sedlmeier began the meeting with an overview of the ARRI organization and Australia's position within that structure. Tom Altenreid, senior service engineer at Digital Intermediate systems, followed, with an indepth look at the ARRI laser recorders and scanners.

The group then proceeded to the camera department, where Christian Hilgart, rental manager, demonstrated the ARRI lenses and cameras; and then into the lighting area, where Richard Curtis, sales manager for lighting, gave an illuminating overview of ARRI lighting, which was highlighted by a retina burning demonstration of the Arrimax 18K light. Attendees then went back into the test bay area where Sedlmeier wrapped up an excellent evening with ARRI's outlook on the industry and where it is heading, both in Australia and worldwide.

ARRI has traditionally had a strong background in the film side of the industry, but now with the release of the Arriflex D-20 film-style digital camera and their leadership role in supply of cutting-edge post-production equipment such as the laser film recorder and film scanner, the company has built a very strong footprint into the digital development of the film industry as well.—*John Maizels, Section Chair*

Stefan Sedlmeier gives an overview of the ARRI organization.



Richard Curtis demonstrates the Arrimax 18K light.

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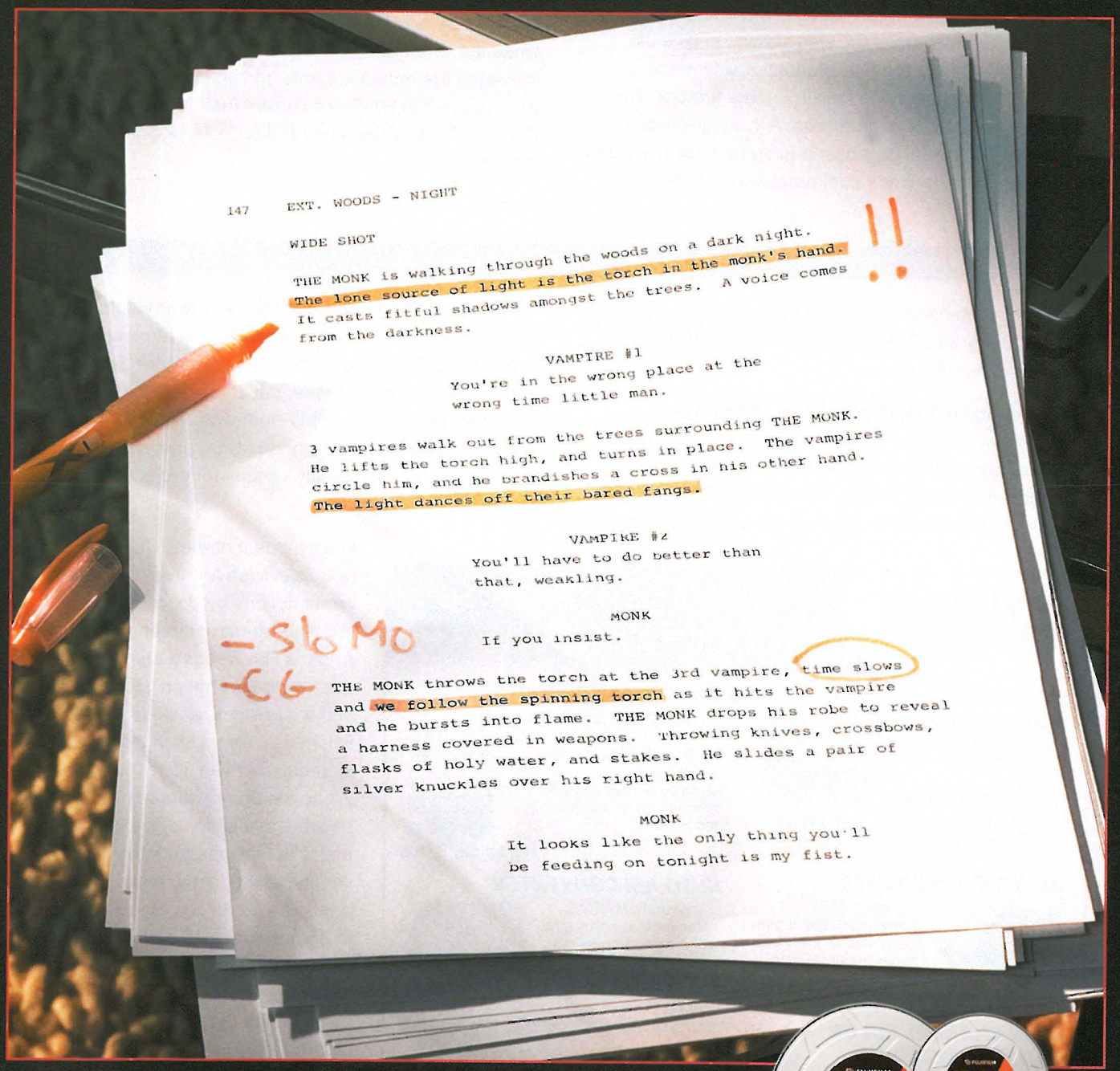

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Hollywood—September 2007

The Section meeting on September 18 was held at the Linwood Dunn Theater, in Los Angeles, CA, with 100 members and guests.

After introductions by Section Chair Dick May and a dinner, courtesy of Grass Valley, S.two, and Technicolor, a clip from the movie *Zodiac* was shown, to give the audience an idea of the end-product quality of the workflow on the upcoming David Fincher feature, *The Curious Case of Benjamin Button*. A lively discussion ensued on the digital disk-based uncompressed workflow that began with Fincher's commercials, such as Xelibri, Motorola, Nike, Lexus, and Heineken. These digital disk-based commercials set the stage for moving the workflow into the Paramount/Warner Bros. feature *Zodiac* and how time-saving features such as electronic slates, instant full-resolution reviewing, and the ability to delete scenes on set were able to save both time and money on this project. Once the workflow base was established, the discussion moved to the enhancements and lessons learned that were applied to Fincher's current feature project, *The Curious Case of Benjamin Button*.—*Mark Chiolis, Section Manager*

Hollywood—October 2007

The October Section meeting began with the customary get-together in the Dunn Theater's lobby, with about 75 people in attendance.

The program on "Independent Film Restoration," organized by Michael Friend and Grover Crisp, ensued with the cartoon *8 Ball Bunny*. The actual discussions were accompanied by video, 16mm, and 35mm projection. The program focused on recent independent/avante-garde film restoration and preservation. The reproduction of these complicated physical artifacts in a photochemical context is different from and sometimes considerably more complicated than the preservation process for a standard 35mm feature. Much of this work was created on 16mm film, and the world of 16mm emulsion and laboratory services (as well as quality venues for projection) is rapidly contracting.

Ross Lipman of the UCLA Film and Television Archives began the presentations by describing his supervision of restoration of Kenneth Anger's film *Rabbit's Moon*. The film was originally shot on 35mm black-and-white stock, and eventually finished in 16mm, with the inclusion of elements derived from 16mm sources. When the 35mm source material became available, UCLA combined that with blowups from the 16mm version of the film to make a 35mm print. The technique of enlargement to 35mm was used again for the complicated reconstruction of Anger's 16mm *Fireworks*. Both works are now available for the first time in 35mm. Lipman examined the technical agenda of this preservation strategy and reviewed some the inherent aesthetic issues.

Mark Toscano of the Academy Film Archive gave the second presentation. He discussed the career of Will Hindle, who made eleven 16mm films between 1958 and 1987. Hindle's

Hollywood—October 2007

death in 1987 left complicated estate issues and scattered film elements. The effort to preserve his films has met with unexpected technical challenges, from unconfirmed originals to color fading, as well as problems unique to his filmmaking practice. He used items such as sticky black tape maskings to create elaborate wipe effects. The presentation focused on the many troublesome facets in the effort to preserve Hindle's film legacy, with a particular focus on technical difficulties and possible solutions.

Following the presentations, Michael Friend and Grover Crisp led a panel discussion with the presenters and Adam Hyman of the Los Angeles Film Forum.—*Richard P. May, Section Chair*

Philadelphia—October 2007

The Section meeting was held on October 9 at the brand new KYW/WPSG television facility in downtown Philadelphia. This two-station facility serves the Delaware Valley with CBS on channels 3 (SD) and 26 (HD) and the CW on channels 57 (SD) and 32 (HD). In keeping with CBS policy, each station devotes its full DTV ATSC bandwidth to a single HD channel.

The new facility opened in April 2007 and is considered one of, if not, the most modern TV station plants in the country. It was designed and built as an all-HD facility. The few SD signals coming into the stations are immediately upconverted to HD. All processing in the system is at full HD quality. NTSC channels 3 and 57 signals are downconverted to SD as they leave the building for transmission via broadcast transmitter, cable, or satellite. Audio is handled either in stereo or 5.1 surround as needed by the program.

A record 64 members and guests met in the stations' Great Hall to hear brief presentations from the station staff, the systems integrator, and six of the many equipment manufacturers represented in the facility.

Marc Musgrove, CBS3 chief engineer, began with an overview of the project, including a comparison to their old facility at 5th and Market Street (site of the "Mike Douglas Show"). Musgrove also thanked those involved with the project, including Rich Paleski, director of broadcast operations and engineering, and Brad Risch, operations manager.

Greg Willis, senior vice president of sales at Ascent Media, described the project from a systems integrator's point of view. There are two studios, two production control rooms, and two master control positions, the latter in a common room, each with an SD and HD channel. The facility requires over 160 racks and 20,000 cables.

Pete Challinger, Pixel Power, discussed all the computer graphics systems, pointing out that one can really see the difference when watching the uncompressed over-the-air signal. Rob Robinson, Grass Valley, described the Aurora system news and production workflow, from ingest to edit to playout and storage at the stations. Brian Kelly, Omneon Video Networks, covered the Spectrum Media server system used for programs and interstitials. Michael Bergeron, Panasonic, discussed the HD cameras used in studio operations. Matt Mussari, Sony, described the MVS-8000 production switchers and XDCAM-HD field acquisition equipment, and Todd Riggs, Harris, gave an overview of how their platinum router and X-75 synchronizers are used in the system.

The meeting ended with in-depth tours by the CBS3/CW57 staff. More photos can be seen at www.philasmpte.org/1007meeting.html.—*David Horowitz, Eastern Region Governor*

Attendees were given a tour of the CBS3 newsroom.

CBS3 chief engineer Marc Musgrove provided an overview of the project.

Rochester—October 2007

The Section meeting was held on October 11, at Eastman Kodak Co., in Rochester, NY, with 25 in attendance.

Jose Rosario, Kodak's digital cinema regional sales manager, North America, gave a presentation on the current state of digital cinema and Kodak's involvement with the digital transformation of the cinema, which has expanded to nearly 10% of theater screens in the U.S.

The presentation encompassed enabling technologies, Kodak's role in digital cinema, content types, content preparation workflow, packaging and distribution, and 3-D content. Rosario illustrated how Kodak provides content packaging by Laser Pacific, supports distribution, and provides exhibitors with a full network solution for their venues. He included comparisons of two compression standards—MPEG-2 and JPEG 2000—and pointed out that JPEG 2000 has "raised the bar." He shared the equations that govern the compression of both standards and also addressed content encryption and the "Public" and "Private" keys.

Rosario continued with an overview of digital 3-D, which defined how the process works in the context of digital cinema. He pointed out that 3-D is proving to be a driving force in the adoption of digital cinema, but several attendees questioned how long this new form of 3-D would really last. (Historically, 3-D has not been very successful, since its introduction in the 1950s.)

Jose Rosario (r) describes the Kodak Cine Server to Rochester member Rollie Zavada (l) and George Eastman House student John Klacsman (c).

The presentation concluded with discussion on the studios' and exhibition's position on digital cinema, and adoption curves were given to define how quickly digital cinema would replace film exhibition.

Following the formal presentation, Rosario gave a digital projection demo that included both 2-D and 3-D material. All images were projected on a silver screen in 1.85:1 and 2.39:1 aspect ratios. The 3-D effect was obtained using "passive" eyewear. A Kodak Cine Server fed a Barco projector for this demonstration. Viewers were impressed with the overall image quality of both the 2-D and 3-D projection.—*Darryl Jones, Section Manager*

Washington, D.C.—September 2007

HDTV Boot Camp

The mandated over-the-air analog-television broadcast cutoff deadline is less than 16 months away. Much has been accomplished, yet much remains to be done.

Digital television is a special application of computer science and information technology. The DTV transition brings to the broadcast community new SMPTE and ATSC standards, new technologies, plus a need for different knowledge and skills.

SMPTE's mission includes educating through seminars and communicating the latest technology developments, as well as promoting interaction among members and others in the community. In concert with this objective, plus broadcast professionals' needs resulting from the DTV transition, SMPTE's Washington, D.C., Section and the Association of Washington Executive Broadcast Engineers (WEBE) produced, managed, and held an intensive two-day HDTV Boot Camp for broadcast and program-production personnel.

The seminar, held on September 19-20, 2007, was hosted by WUSA-TV/DT, Washington, D.C., CBS affiliate, with Ron Peters, special projects supervisor, and Victor Murphy, WUSA director of technology, providing exceptional support and assistance.

The event attracted 100 attendees, and registrations for at least 40 other interested professionals had to be reluctantly declined due to space limitations.

The first day's topics included studio technologies basics, such as DTV foundations, video basics, DTV image basics, video compression basics, and audio for DTV; ATSC transport protocol and multiplexing; datacasting basics; and station scenarios. The second day's topics focused on production issues such as HD vs. SD, aspect ratio, audio, and concatenation; as well as HD vs. SD optics; test and measurement; 1080p60; Active Format Description; and audio metadata.

SMPTE-DC Section Manager James Snyder, Communications Engineering, Inc., discussed NTSC and DTV systems, providing an edifying and entertaining context to many parameters ensconced in standards

and to some real-world problems he has encountered. He reminded attendees that in many ways digital is analog—transferring digital audio and video data over wires at even SD bit rates involves frequencies up through RF, meaning such cable-related issues as termination, signal attenuation, and phase shift must be addressed. He pointed out that digital doesn't automatically mean high quality—it can only deliver whatever quality is in the program, minimizing most of the analog artifacts, while introducing the potential for new ones unique to the digital world.

In his coverage of MPEG-2, Snyder made the point that the signal being encoded needs to be as clean as possible, because the MPEG encoder will try to process everything in the image, including noise, which will take away from the bits available to carry image data, thus reducing image quality. He said that NTSC composite video is roughly equivalent to 2.8:0.6:0.2 vs. MPEG-2-encoded video's 4:2:0 and the professional video camera's 4:4:4 sampling. He talked about how human visual perception limitations are considered in MPEG video compression algorithms, and proceeded with a thorough explanation of how MPEG-2 data reduces video content. A critical issue raised was the cumulative effects of concatenation, since in almost all cases, a program goes through a series of compression/decompression cycles, which sometimes includes changing the compression algorithm between program creation and the home viewer; this means that at each stage in the production/broadcast process, image data compression must not be so severe that one or two successive cycles will cause visible image degradation.

Overall, Snyder made clear that engineering enables the creative process. DTV (and digital in general) increases the number of parameters that can be more easily, accurately, and precisely adjusted as part of that creative process.

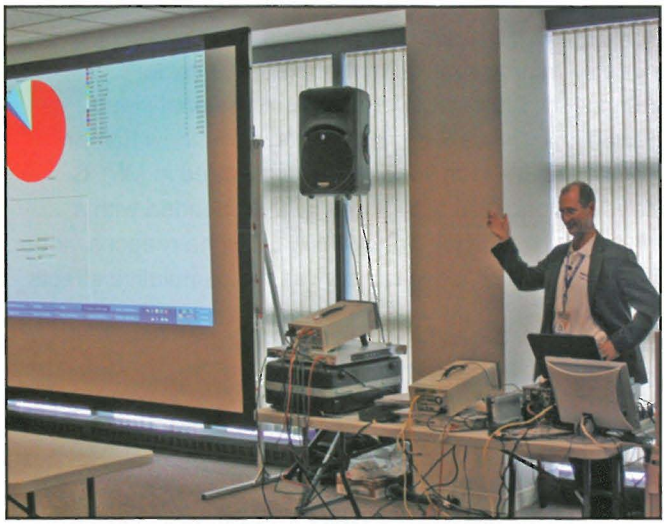
Laurence J. Thorpe, national marketing executive, Broadcast and Communications Division, Canon USA, is a renowned expert on cameras, optics, and digital television. He discussed the role of the lens in maximizing HDTV camera performance, making clear that lens quality is at least as important as the pixel count of the image sensor. He talked about the basic optical requirements for HD imaging, perceived image sharpness, differences between SD and HD lenses, and compared studio vs. ENG lens requirements, emphasizing that the lens and camera must be recognized as an integrated system.

SMPTE-DC Section Chair Karl Kuhn, senior application engineer, Tektronix, demonstrated how to monitor HD and SD image/sound characteristics and transport bitstream data using Tektronix test equipment (although certainly other manufacturers make products that can do the job). Kuhn also emphasized that a digital bitstream includes radio frequencies. However, unlike analog, the waveform itself provides severely limited information about problems. Using examples, he explained that there is a huge amount of detailed data and metadata in the transport bitstream, which when decoded can lead to a clearer understanding of a problem's cause.

Michel Proulx, chief technical officer, Miranda Technologies, spoke of the near-term "holy grail"—1920 x 1080p60 (3 Gbit/sec data rate), discussing camera capabilities, up/down conversion of video resolutions, data rates and the benefits of keeping video in a progressively scanned format as long as possible through the production, post-production, and broadcast chain. He also talked about aspect ratio problems, plus Active Format Description's history and the SMPTE standard set (SMPTE 2016, parts 1-5) (Proulx represented Miranda as part of the committee that developed this SMPTE standard set).

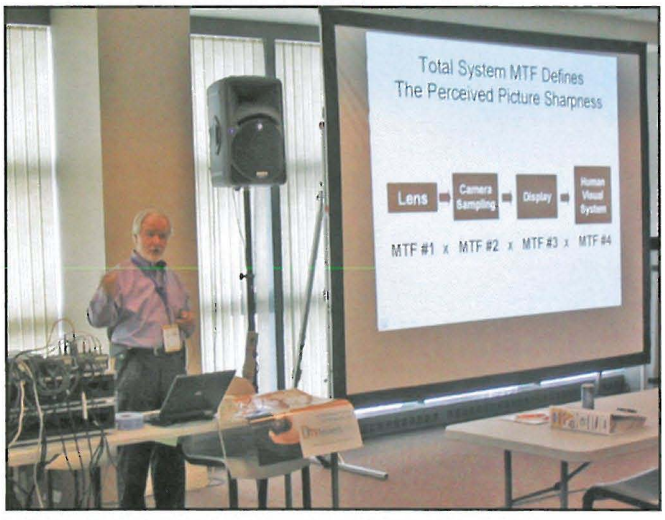
Thanks to the 27 corporate sponsors, who generously backed this event with funding, facilities, equipment, and services. Without their support the seminar could not have taken place.—*David J. Weinberg, Section Manager*

Attendees at the Washington, D.C., Section's HDTV Boot Camp in September.



Presenter Karl Kuhn demonstrated how to monitor HD and SD image/sound characteristics and transport bitstream data.

Speakers James Snyder (l) and Michel Proulx (r).



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