2016 NAB Show's

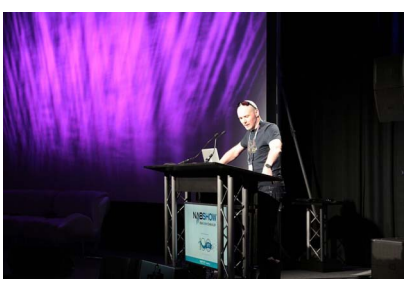
The Future of Cinema Conference: The Immortal Movie Dazzles Attendees with Ang Lee Keynote

SMPTE's program explored combining artistry with motion-imaging technology

By Aimée Ricca

The newly crafted NAB Show's "The Future of Cinema Conference: The Immortal Movie," produced in partnership with SMPTE, gathered the brightest industry minds and talents to discuss the changing nature of storytelling as technology evolves, and how the industry will ensure that creative work is preserved in its highest form for future generations. From 16 to 17 April, during the 2016 NAB Show, the refocused technical conference discussed forward-looking techniques and challenges related to making content for theatrical release and beyond, with a particular emphasis on the work and inspiration of the industry's newest generation of filmmakers.

The conference included sessions on the creative use of high dynamic range (HDR); utilizing content captured on 35 mm film to feed into high-end digital exhibition formats; the filmmakers and projects testing the limits of cinema; and the next-generation filmmaking efforts of students and recently graduated filmmakers. Further sessions addressed questions related to next-generation distribution, HDR mastering and delivery to the home, and the impact of advanced technologies on event cinema. A session focused on diversity-engaged panelists and attendees in a discussion on how to build a richer, more expansive, and more dynamic filmmaking community.



Richard Welsh, FoCC Program Chair.

The program committee was composed of program chair Richard Welsh, Sundog Media Toolkit, along with Abi Corbin, writer and director; Christy King, media technology consultant; SMPTE Education Vice President Pat Griffis, Dolby Laboratories; Bill Hogan, motion picture consultant; Pete Ludé, RealD; Cynthia Slavens, Pixar Animation Studios; Jim Whittlesey, digital cinema consultant; and Chris Witham, The Walt Disney Studios.

Special Pre-Event Screenings in HDR

SMPTE and the Advanced Imaging Society, with the generous support of Disney, Pixar, Warner Bros., and Dolby, were pleased to offer two special screening sessions in advance of The Future of Cinema Conference on Friday. These screenings took place at the newly opened AMC Town Square 18 in Las Vegas and provided demonstrations of released theatrical content

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The FoCC event was very well attended.

that were further discussed during the sessions "First Forays: High Dynamic Range in Animation" and "First Forays: High Dynamic Range in Live Action and Visual Effects."

Each session included only brief introductions of the content, because a more involved discussion was reserved for the full panels the next day. HDR clips from theatrical releases, such as *Inside Out, Zootopia, Tomorrowland*, and *Jungle Book*, were shown in Dolby Vision HDR. A full showing of *Star Wars: The Force Awakens* accompanied the afternoon session, while the evening session included a feature presentation of *Batman v Superman: Dawn of Justice* also in Dolby Vision and with Dolby Atmos.

(L-R) SMPTE President Robert Seidel, Ang Lee, SMPTE Executive Director Barbara Lange, and FoCC Program Chair Richard Welsh.

High Dynamic Range

After brief introductions from SMPTE President Robert Seidel; Executive Director Barbara Lange; Pat Griffis; and Richard Welsh, the Conference kicked off with two sessions on the topic of HDR. Building on the previous night's screenings at AMC Town Square, the sessions discussed some of the content shown.

Cynthia Slavens of Pixar Animation Studios moderated the first session, which included panelists Dominic Glynn also of Pixar; Kim White, director of photography and lighting on *Inside Out*; Mark Dinicola, colorist on *Inside Out*; Stefan Luka, senior software engineer, color science, at Walt Disney Animation Studios; and Brian Leach, director of lighting on *Zootopia*. The panel discussed how HDR was utilized to great effect in the format's first animated theatrical release, *Inside Out*, in 2015 and how, with the release of *The Good Dinosaur* and *Zootopia* in the months since, the industry has been buzzing with the potential and creative opportunities made available by the format. The session also examined the ways that the animation industry is poised to take advantage of the benefits afforded by HDR technology, which also poses unique challenges.

The second session on HDR dealt with live action and featured Pat Griffis as the moderator; Thad Beier, Dolby; Rick Sayre, Pixar Animation Studios; Jeroen Schult of Industrial Light & Magic (ILM), Ben Rosenblatt, Bad Robot; Stephen Nakamura, Deluxe's Company 3; and Rob Legato, visual effects supervisor and second unit director/cameraman. This panel explored the intriguing technical challenges of bringing the format to the screen, how the technology has evolved in its first year, and the tremendous potential envisioned for the future as it relates to live action.

SMPTE Education VP Pat Griffis and Annie Chang, Disney.

Panelists from "Next-Generation Mastering: Where Do We Go From Here?" session (L-R): Rod Bogart, HBO; Annie Chang, The Walt Disney Studios; Chris Clark, Netflix; Thad Beier, Dolby; Andrea Kalas, AMIA; and Program Chair Richard Welsh.

How Does Event Cinema Deal With Advanced Technologies?

Alternate content has come of age and is now often referred to as "event cinema." Yet, content creators and exhibitors, alike, still consider it both compelling and frightening. This panel of event cinema experts was composed of moderator Christy King, media technology consultant; Jim Carbonetti, 3D Blast; Bud Mayo, Carmike Cinemas; and Brenton Henry, Fathom Events. The discussion tackled whether 4K, 8K, or wider color gamut provides compelling technology for cinemagoers. They expressed opinions on the improvements that higher frame rates and HDR offer to the event cinema experience, as well as the challenges that the technologies create in distribution. This panel also offered their views on the future of event cinema including a new initiative presented by Bud Mayo and SMPTE, the Vista Project, that supports young filmmakers and their plans to develop stories incorporating second screens.

Screenings of Footage From Ang Lee's Billy Lynn's Long Halftime Walk

While Sony Pictures offered a first look at the upcoming feature *Billy Lynn's Long Halftime Walk* earlier in the week during CinemaCon, attendees at The Future of Cinema Conference were offered the exclusive opportunity to screen 11 min of the film in 120 frames/sec, 4K, 3D. For many, this may be the only opportunity they have to view the film in this way. It was truly the first-ever public screening from the upcoming movie in its native format. The screenings took place in a special screening room that was outfitted to Academy Award-winning director, Ang Lee's specific requirements. Christie supported the screenings with two Christie Mirage 4KLH projector heads, each utilizing four laser modules. The system allowed for a 4K-120 per-eye demonstration; it delivers the highest brightness, highest quality 3D images available for the most demanding and discerning applications. Due to space limitations, the audience for each screening was limited to only 84 people; five screenings were initially offered. However, the screenings were so popular that attendees queued patiently in lines that extended beyond the length of the hall, and an additional screening was added. Lee, himself, along with production systems supervisor and engineer, Ben Gervais, personally introduced each screening.

Keynote: Ang Lee Pushing the Limits of Cinema

Ang Lee is a multiple Oscar, BAFTA, Directors Guild, and Golden Globe-winning director who brought us such movies as *Life of Pi*, *Crouching Tiger, Hidden Dragon*, *Brokeback Mountain*, and *Sense and Sensibility*. On 11 November, Sony Pictures is scheduled to release Lee's next feature, *Billy Lynn's Long Halftime Walk*. This will be the first major motion picture release to have

(L-R) Tim Squyres, Ang Lee, and Ben Gervais.

Ben Gervais, Ang Lee, and Tim Squyres address the standing room crowd for the keynote.

been captured in 120 frames/sec, 3D at 4K resolution and in HDR. In the conference keynote presentation, Lee, along with editor Tim Squyres, and production systems supervisor and engineer, Ben Gervais, discussed their visions for cinema and the creative opportunities for the future of filmmaking.

Gervais introduced Lee, who remarked that he was nervous in front of the standing-room-only audience. Lee stated, "I'm not a technical guy at all. I just have a lot of curiosity to see drama, examine humanity, storytelling. . .that's my thing."

Lee began by discussing *Life of Pi* and his thought process around transforming the book into a film. He explained that the concept was actually spurred by his storytelling curiosity, which required him to get in touch with digital cinema. He admitted that he was originally resistant to digital technologies, even Digital Intermediate (DI). He stated, "I didn't even do that—I'm like a fighter for film." He explained that since he was looking to present an additional dimension, he got into digital cinema with the need for 3D. Still, he admitted that he was careful with the technology in making *Pi*. Like many, Lee said that he doesn't like when people watch movies, on smart devices and is an advocate for the cinema as a destination to view films. "I don't like when people watch movies on their iPhone." Lee continued, "I like to bring them to a special place that we call *theater*. I like to go there like a temple."

"Young Guns of Cinema on Next Generation Storytelling" panelists included (L-R): John Keng, Natalie Qasabian, Wasef El-Kharouf, and moderator Abi Corbin.

Lee went on to discuss how he created *Billy Lynn*, a ground-breaking movie, in a format that surpasses anything yet seen in cinema. He said, "This is really the beginning of a new quest." Lee expressed that he was looking to touch the audience on a deeper emotional level. He credited Doug Trumbull and James Cameron with laying the groundwork for the technology that he is now using as a tool to bring his creative vision to the screen. He explained that he visited Trumbull at his farm, and it was "quite an inspiration." Trumbull provided Lee with a brief history of higher frame rates and showed Lee how he created the technology.

Lee found that, when he raised frame rates, "You see things more clear" and he had to make adjustments to the performance to capture the desired image. One such adjustment was limiting the use of cosmetics on the actors. "I don't dare to put any makeup on because you see it," he stated, noting that he used makeup only on the cheerleaders in the scene that screened at the conference.

Squyres explained that 3D requires different editing than 2D. He

Panelists from the session, "Deep Technical Dive into *Billy Lynn's Long Halftime Walk*" (L-R) Tim Squyres, Ang Lee, Ben Gervais, Scot Barbour, Demetri Portelli, and David Cohen.

expounded that from the first day, he did all his editing in 3D and recommends that anyone editing for 3D exhibition work only in 3D. "When you cut a movie in 24 [frames/sec] in 2D, most editors are very good at knowing how that translates to the theater," Squyres said. "For this film at 120 [frames/sec], I had to cut at 60 [frames/sec] on a 12-ft screen; that way we can have that higher frame rate experience in the cutting room." He further explained that he hasn't seen the footage in 2D, and even with *Pi*, he has seen the film in 2D only twice.

In spite of the successful technological advances he is using in *Billy Lynn*, Lee acknowledged that commercial applications for utilizing these technologies are still difficult. He stated, "This is a long journey, and we're in the beginning for what I think digital cinema means."

Deep Technical Dive into Billy Lynn's Long Halftime Walk

Lee, Gervais, and Squyres were joined by stereographer, Demetri Portelli, Vice President of Production Technology at Sony Pictures, Scot Barbour, and David Cohen of *Variety*, who opened up about the technical challenges of production and post-production in 120 frames/sec, 4K, stereoscopic 3D. Following on from the keynote presentation, this session explored the technology, methods, and discoveries of working in a format that is at the cutting edge of what is possible in cinema today.

Cohen introduced the panel and advised the audience, "If you're leaving now, you're missing the best part!" Discussing the making of the film, the technical team behind this incredible leap in cinema described how they have widened the creative possibilities that will shape the next chapter in the art of filmmaking.

Barbour pointed out that Sony Pictures likes to create theatrical experiences that are exciting, and they did that with *Billy Lynn*. "It's rare that a filmmaker will come to us with a technological challenge that will change a lot of different parts of the industry at once," Barbour said. "With this one, we were really pushing the boundaries lens to lens." He expressed that this film is about storytelling rather than visual effects and that the technology is used to tell the story and move the audience. "What Ang's done with the technology is tremendous and actually very, very exciting," Barbour added.

Cohen said, "The 3D is perfect. And, I spoke to people, because I don't trust my own eyes, and people were saying, 'It's the best 3D that I've seen!'" Portelli explained that to accomplish this, he needed to converge the lenses on set, "so that you're feeling the roundness." He described this project as a massive opportunity where they were able to, live on the set, discuss the shape, space, and how it feels.

The takeaway from this session was that the constant collaboration between the studio and the technical and creative teams resulted is a film

Ang Lee greets attendees.

that uses technology as a tool to effectively tell a story in a way that is comfortable for the audience to view while also being emotionally moving.

How to Increase Diversity in the Future of Cinema

Moderator, Abi Corbin, and panelists Danielle Feinberg of Pixar, SMPTE Executive Director Barbara Lange, and Stephen Love and Blake Pickens both of BS Pictures discussed the steps that industry leaders can take to create an inclusive environment in which women and minorities are given equal opportunities. During the session, the panel shared stories and provided ideas and tactics to increase and sustain diversity in cinematic arts. Attendees were encouraged to interact with the panel by posting their own experiences and questions on social media.

Will the Future of Virtual Reality and 3D Capture a Light Field?

The final session, which had a full house, featured light field imaging. Light field is a method of reproducing light rays as they pass through a plane, defining a 3D spatial position plus two angular dimensions describing the direction of the ray. 2D plus 3D equals 5D, which implies that a tremendous amount of data is needed. The science dates back to 1846. However, over the past five years, light field cameras and displays have started to become reality. The technology allows images to be refocused, reframed, and viewed from any angle, similar to a hologram. Pete Ludé moderated this session that featured Jules Urbach, OTOY; Ryan Damm, Visby Cameras; and Jon Karafin, Lytro. The panel discussed how light field imaging works; why it is so difficult; and the way that recent advancements in nano-engineered materials, extraordinary digital processing power, and inexpensive storage have begun to make light field devices possible.

Michelle Munson and Barbara Lange at *TVNewscheck*'s Women in Technology Leadership Awards.

SMPTE Members Honored at the 2016 NAB Show

During the 2016 NAB Show, a number of SMPTE members were honored for their contributions to the motion-imaging field.

Broadcasting & Cable magazine paid tribute to technology leaders who have displayed innovation, imagination, and achievement. This year's honorees included SMPTE members Joe Addalia, Hearst Television; Gregory Coppa, CBS; Glenn Oakley, Discovery Communications; and Renu Thomas, Disney|ABC Television Group.

SMPTE member Michelle Munson of Aspera was also honored with the Women in Technology Leadership Award from *TVNewsCheck*.

SMPTE Releases DPROVE2 for SMPTE-DCP Verification

Leading into the NAB Show, SMPTE announced the release of the second-generation Digital PROjection VErifier (DPROVE2) for SMPTE Digital Cinema Package (SMPTE-DCP) verification and that Eclair (Ymagis Group) has already conducted the industry's first wide-scale testing. DPROVE2 allows exhibitors to test their digital cinema systems' functionality. The software represents SMPTE's increased emphasis on creating test materials for the cinema industry. The Society is planning additional test materials to support further evaluation and refinement of installed digital cinema systems such as a new pink noise DCP for sound calibration.

Developed primarily to check for digital projector performance, alignment, and picture-sound synchronization in theaters, DPROVE was derived from the 2009 D-Cinema Leader (SMPTE RP 428-6). Although it no longer supports Interop DCP, the new DPROVE2 builds on DPROVE by supporting SMPTE-DCP with enhanced capabilities for sound channel IDs and routing, accessibility features such as closed-captioning/subtitling and 3D subtitles/captions, and improved picture-sound synchronization.

DPROVE2 is an encrypted DCP that emulates actual movie playback as closely as possible. In tight collaboration with its two business units—CinemaNext and Eclair, respectively, dedicated to exhibitor services and content services—Ymagis Group conducted the first wide-scale tests with SMPTE's DPROVE2, evaluating all 8612 screens in its network to make the migration from Interop DCP to SMPTE-DCP. It found a potential need for updates in less than 1% of the projectors.

Further information about DPROVE is available at www.smpte.org/DPROVE.

ASPEN and AIMS

ASPEN and VSF TR-03 & TR-04 IP protocols for live video production were hot topics of conversation at the 2016 NAB Show. Adaptive Sample Picture Encapsulation (ASPEN) was submitted to SMPTE as a Registered Disclosure Document (RDD 37), and the Video Services Forum (VSF) recommendations TR-03 and TR-04 that have been contributed to SMPTE TC 32NF-60 for standardization.

VSF TR-03 and TR-04 build on existing SMPTE standards such as ST 2022-6 and the ST 2059 family. They were promoted at NAB by the Alliance for IP Media Solutions (AIMS), whose members' booths hosted several multi-vendor interoperability demonstrations.

SMPTE is currently looking for all opportunities to facilitate interoperability between AIMS and ASPEN.

Videos, including the Ang Lee keynote, and additional photos from The Future of Cinema Conference as well as SMPTE's other activities at the 2016 NAB Show are now available online at http://www.smpte.org/2016NAB.

Photos: Unless otherwise noted, Robb Cohen Photography, courtesy of NAB.

STUDENT EVENTS

SMPTE volunteers led students on tours of the various exhibition halls at the NAB Show. Students from all around the world also gathered at the SMPTE booth on Tuesday, 19 April, for a social mixer. This provided them the opportunity to interact with SMPTE members and leadership, who discussed their jobs in audio, digital cinema, cameras, broadcasting, post-production, and manufacturing.

During the mixer, students were reminded that they may receive their first year of SMPTE membership free-of-charge with the Student Membership Challenge and that renewals are only $10. Through a challenge grant established in 2012 by SMPTE Membership Vice President William C. Miller, student membership is on the rise and now represents almost 15% of the Society's nearly 7,000 members.

Additionally, SMPTE leadership reminded the group that SMPTE has issued a call for papers for the SMPTE Student Paper Award and is accepting applications for the Louis F. Wolf Jr. Memorial Scholarship through 18 May. The Society leaders also encouraged students to submit their entries to the SMPTE-HPA Student Film Festival by 27 June, which will take place on Wednesday, 26 October at the Grauman' Egyptian Theatre in conjunction with the SMPTE 2016 Annual Technical Conference & Exhibition in Hollywood, Ca.

More information about all student initiatives is online: http://www.smpte.org/students.

Students explore the halls at NAB. Photo courtesy of Keith Graham.

Student social mixer at SMPTE's NAB Show booth. Photo courtesy of Keith Graham.