FOR YOUR EMMY CONSIDERATION

OUTSTANDING SOUND MIXING
FOR A COMEDY OR DRAMA SERIES (ONE HOUR)

"MASTERFUL."

ASSOCIATED PRESS

PUB DATE 05/30/18

BLEED: 8.625" X 11.125" TRIM: 8.375" X 10.875"

NETFLIX

STRAIGHT THINGS 2

NETFLIX
FEATURES

54th Annual CAS Awards ......................... 8

Meet the Winners ................................. 16
Dunkirk, Coco, Jane, Black Mirror, Game of Thrones, Silicon Valley,
Rolling Stone: Stories from the Edge

CAS Student Recognition Award ............... 53
Introducing Xiang Li

Outstanding Product Awards 2017 ............. 56
MixPre-10T & RX 6 Advanced

Trade Show Wrap-Up ............................ 62
Adventures from the trade show floor

Mixers Can Hear ................................. 66
Our inaugural Ed J. Greene Award recipient, Tomlinson Holman CAS,
talks about self-calibration

Stay Calm and Keep Mixing .................... 68
Navigating the specs while creating a good mix

DEPARTMENTS

From the Editors .................................. 4

Announcements .................................. 7

Been There Done That ......................... 74
CAS members check in

The Lighter Side ................................. 78

Cover: Collage of CAS Award-winning projects
Hello CAS members and friends. Welcome to our spring issue where, in celebration of this year’s CAS Awards ceremony that was held in February, we get to “Meet the Winners” from our seven “Outstanding Sound Mixing” categories and our two “Outstanding Product” categories, along with our Student Recognition Award recipient. It is always enjoyable to read about our honored colleagues.

In addition to the awards, the inaugural Edward J. Greene Award for the Advancement of Sound recipient Tomlinson Holman CAS provides some rather impressive information on the consistency of which mixers perceive loudness. Also on the topic of loudness, Jon Greasley presents some food for thought relating to how we are mandated to measure loudness—and how there may be more accurate ways to do so based on program content. Also, David Bondelevitch CAS MPSE checks in from CES, CILECT, NAB, and NAMM.

As always, you’ll find submissions from your fellow members in the “Been There Done That” section and be able to check out some pictures in their “The Lighter Side” submissions.

The CAS Quarterly is produced as a service to our members on a voluntary basis. If you are a member and would like to contribute an article—whether on the production or post-production side—please let us know. Additionally, we greatly appreciate, and want, your feedback and suggestions—so send them in! Email us at CASQuarterly@CinemaAudioSociety.org. Finally, don’t forget that our sponsors are professionals like you who understand the business and needs of our industry. We encourage your commitment to them.
FOR YOUR EMMY CONSIDERATION
OUTSTANDING SOUND MIXING

GAME OF THRONES
THE DEFIANT ONES
JOHN MCCAIN: FOR WHOM THE BELL TOLLS

Baltimore Rising
ELVIS PRESLEY: THE SEARCHER
THE FINAL YEAR
KING IN THE WILDERNESS

THE TALE
ROOM 104
FAHRENHEIT 451

©2018 Home Box Office, Inc. All rights reserved. HBO® and related service marks are the property of Home Box Office, Inc. King in the Wilderness: © Bob Fitch, Stanford University Libraries. John McCain: For Whom The Bell Tolls: © Clare Popkin.
“BLOODY TERRIFIC”

TV GUIDE

“...WELL-MADE AND
BEAUTIFULLY
PLAYED...”
LOS ANGELES TIMES

“THE PERFORMANCES ARE
SUBLIME”
SAN FRANCISCO CHRONICLE

“...ABSOLUTELY
TOP-NOTCH...”
THE HOLLYWOOD REPORTER

“...GRISLY FUN...”
TV WORTH WATCHING

“...TWISTED
GOOD TIME”
BOSTON HERALD

GET SHORTY
OUTSTANDING COMEDY SERIES
WATCH THE FULL SEASON AT EPIX.COM/FYC

Get Shorty © 2018 MGM Television Entertainment Inc. All Rights Reserved.
Lee Dichter CAS to Receive Fellowship and Service Award from the Motion Picture Editors Guild

The Motion Picture Editors Guild will honor re-recording mixer Lee Dichter CAS with its prestigious Fellowship and Service Award. The ceremony will be held on October 20 in New York City.

“It is an enormous pleasure for me to take part in this year’s Fellowship and Service Award honoring Lee Dichter,” commented Alan Heim, ACE, MPEG President. “I am delighted that the Guild is bringing the award to New York to honor so important a member of our community.”

The award recognizes an individual who embodies the values the Guild holds most dear: Professionalism, Collaboration, Mentorship, Generosity of Spirit, and a Commitment to the Labor Movement.

“Lee and his body of work are just what the Awards Committee was established to acknowledge,” said Sharon Smith Holley, Committee Co-chair. “Especially important to the Guild is his dedication to the labor movement.”

Added fellow Co-chair Jeffrey Burman, “As a mainstay at New York’s premier mixing house, Sound One, Lee was instrumental in making sure the facility was a union shop—which makes it particularly meaningful to hold the ceremony on the East Coast, where Lee has made such an impact.”

---

CAS SPRING 2018
NEW MEMBERS

Active
Blake Collins
Jonathan Greasley
Michael Holbrook
Michael Schmidt

Associate
Huch Platt
Heath Ryan
Jorge Del Valle
Steven Willer

Student
John Bradley
Bradley Steinbech
Hunter Vickers
Elizabeth Walford

---

CORRECTIONS
In the Winter 2018 edition of CAS Quarterly, the production nominee DPA: Slim 4060/4061 on page 28 was misrepresented in image and the webpage provided was incorrect. The copy should read the DPA 4160 Series Slim microphones and the correct site is: www.dpamicrophones.com/dscreet/4160-series-slim-omnidirectional-microphone. See accurate image.

Additionally, on page 14 of the Winter edition within the article “CAS Career Achievement Recipient: An Interview with Re-Recording Mixer Anna Behlmer,” Anna was listed as having 12 Oscar® nominations and 10 CAS Award nominations. This was inadvertently reversed. Anna is a 12-time CAS Award nominee and a 10-time Oscar nominee. Pretty impressive indeed!

---

Cinema Audio Society Announces Summer Screening Series

SAVE THE DATES!

The CAS will host a summer screening series of iconic sound films for CAS members and their guests on Saturdays: June 2, July 14, and August 11

June 2 - Hal Ashby’s Being There (1979) with production sound mixer Jeff Wexler CAS, and editor Don Zimmerman.
6 PM Reception
Real D, 100 N. Crescent Blvd., Beverly Hills

Screenings will begin with a reception and will be followed by a Q&A with special guests, including members of the sound team.

Further information will be sent via email and posted on the CAS website. www.CinemaAudioSociety.org
CINEMA AUDIO SOCIETY
54TH AWARDS:
Let the Festivities Begin
by Karol Urban CAS MPSE

On February 24, the 54th Cinema Audio Society Awards took place at the Bunker Hill Ballroom of the OMNI Los Angeles Hotel at California Plaza. The lavish affair gathered mixers from production and post together to share the year’s war stories and triumphs. Laughter was abound as old friends reunited and new friendships were forged.

The evening’s events began with a cocktail reception sponsored by our title sponsor Dolby Laboratories and was followed by dinner. The awards were hosted by the hilarious comedian Michael Kosta. Celebrity presenters for the evening included Bryan Fogel (Icarus), Diane Warren (Oscar®-nominated songwriter), Jaleel White (Family Matters, Sonic the Hedgehog), Larry Thomas (Seinfeld), Emma Kenney (Shameless, Roseanne), Donavan W. Carter (Ballers), and Pollyanna McIntosh (The Walking Dead). Finally, the evening wrapped with an elegant after party sponsored by Smart Post Sound.

This year, in addition to our sound excellence awards in the categories of Motion Pictures — Live Action; Motion Pictures — Animated; Television Movies and Mini-Series; Television Series — One Hour; Television Series — Half-Hour; Television Non-Fiction, Variety, Music Series or Specials; Motion Pictures — Documentary; and our Outstanding Product Awards in the categories of production and post, there were a number of very special honors that took place over the evening.
THE 54TH CAS AWARDS
FOR OUTSTANDING ACHIEVEMENT IN SOUND MIXING FOR 2017

MOTION PICTURES – LIVE ACTION
DUNKIRK
Production Mixer Mark Weingarten CAS
Re-recording Mixer Gregg Landaker
Re-recording Mixer Gary Rizzo CAS
Scoring Mixer Alan Meyerson CAS
ADR Mixer Thomas J. O’Connell
Foley Mixer Scott Curtis

TELEVISION SERIES – ONE HOUR
GAME OF THRONES
“Beyond the Wall”
Production Mixer Ronan Hill CAS
Production Mixer Richard Dyer CAS
Re-recording Mixer Onnalee Blank CAS
Re-recording Mixer Mathew Waters CAS
Foley Mixer Brett Voss CAS

MOTION PICTURES – ANIMATED
COCO
Original Dialogue Mixer Vince Caro
Re-recording Mixer Christopher Boyes
Re-recording Mixer Michael Semanick CAS
Scoring Mixer Joel Iwataki
Foley Mixer Blake Collins

TELEVISION SERIES – HALF-HOUR
SILICON VALLEY
Episode 9 “Hooli-Con”
Production Mixer Benjamin A. Patrick CAS
Re-recording Mixer Elmo Ponsdomenech
Re-recording Mixer Todd Beckett

MOTION PICTURES – DOCUMENTARY
JANE
Production Mixer Lee Smith
Re-recording Mixer David E. Fluhr CAS
Re-recording Mixer Warren Shaw
Scoring Mixer Derek Lee
ADR Mixer Chris Navarro CAS
Foley Mixer Ryan Maguire

TELEVISION NON-FICTION, VARIETY,
MUSIC SERIES OR SPECIALS
ROLLING STONE:
STORIES FROM THE EDGE
Production Mixer David Hocs
Production Mixer Tom Tierney
Re-recording Mixer Tom Fleischman CAS

TELEVISION MOVIES AND MINI-SERIES
BLACK MIRROR “USS Callister”
Production Mixer John Rodda CAS
Re-recording Mixer Tim Cavagin
Re-recording Mixer Dafydd Archard
Re-recording Mixer William Miller
ADR Mixer Nick Baldock
Foley Mixer Sophia Hardman

CAS STUDENT RECOGNITION
AWARD
XIANG LI
Chapman University, Orange, California

OUTSTANDING PRODUCT AWARDS
2017

PRODUCTION
MIX PRE-10T RECORDER
Manufacturer: SOUND DEVICES

POST PRODUCTION
RX 6 ADVANCED
Manufacturer: iZOTOPE, INC.

Photos: Alex J. Berliner/ABImages
The Student Recognition Award is an honor very close to our hearts and our core mission values at the Cinema Audio Society. This year, it was presented to Xiang Li of Chapman University in Orange, CA. Ms. Li was presented with a check for $2,500, as well as a generous gift bag of software and sound gear to help her embark on her sound journey. The CAS Student Recognition Award is enthusiastically supported by both IMAX and Avid Technology.

The first Edward J. Greene Award for the Advancement of Sound, created in memory of our dear friend and colleague, was presented to Tomlinson Holman CAS, creator of THX, by Sam Greene, Jeff Wexler CAS, and director Andrew Davis. George Lucas and John Singleton sent special video messages congratulating Tom.

Our honored Filmmaker Award was given to the very talented Joe Wright (Darkest Hour, Anna Karenina, Atonement). His films cannot only be identified by their poignant biographical narratives, but also by their very detailed and bewitching use of sound. His presentation was highlighted with accolades given by re-recording mixer/supervising sound editor Craig Berkey CAS, director Edgar Wright (Baby Driver), and Oscar-nominated actor Gary Oldman. Our past CAS Filmmaker honorees have included Jon Favreau, Jay Roach, Quentin Tarantino, Gil Cates, Bill Condon, Paul Mazursky, Henry Selick, Taylor Hackford, Rob Marshall, Jonathan Demme, Edward Zwick, Richard Linklater, and Jay Roach.

Our highest honor, the CAS Career Achievement Award, celebrated the professional contributions of re-recording mixer Anna Behlmer. Behlmer’s award was presented with passion and heart by re-recording mixer Chris Jenkins CAS, director Niki Caro, and producer Paula Wagner. Behlmer is the first woman to receive the CAS Career Achievement honor and is a rarity as a SFX re-recording mixer. Her work on more than 150 titles has garnered her three BAFTAs, 10 Oscar nominations, and 12 CAS Award nominations and puts her in a class of sonic trailblazers all her own.

The Cinema Audio Society remains grateful and humbled by the continual accomplishments of our community and membership. We thank all of our sponsors, volunteers, and participants for their service to our mission to promote, advance, educate, and recognize the craft and art of sound for picture. We look forward to seeing everyone at our 55th CAS Awards event next year.
FOR YOUR EMMY CONSIDERATION

OUTSTANDING SOUND MIXING FOR A COMEDY OR DRAMA SERIES

BUCK ROBINSON, CAS, SCOTT R. LEWIS, NATHAN NANCE, STEPHEN URATA

"THE MOST ACCOMPLISHED DRAMA ON TV RIGHT NOW."

MINDHUNTER

NETFLIX
A NETFLIX ORIGINAL SERIES
WHO WOULDN’T WANT TO COME HOME TO THIS EVERY NIGHT?

CONSIDER IT #MARVELOUS

IN ALL CATEGORIES INCLUDING OUTSTANDING COMEDY SERIES
“BOLD FILMMAKING ON THE GRANDEST SCALE”

– USA Today

PRIME ORIGINAL

LONG STRANGE TRIP

THE UNTOLD STORY OF THE GRATEFUL DEAD

CONSIDER IT LOUD IN ALL CATEGORIES

INCLUDING OUTSTANDING DIRECTING FOR A NONFICTION PROGRAM

AMIR BAR-LEV

prime
The evacuation at Dunkirk was a historical event wrought with anxiety and dread. The fate of approximately 330,000 British and Allied troops appeared to be sealed, as they were surrounded on all sides and forced to take refuge on the beaches. From May 26 to June 4, 1940, the troops endured strafing runs by German Stukas and bombing runs that took out military vessels intended for their extraction. Their only deliverance was to be by sea, but it appeared that it would never come. During that fateful week, they were miraculously rescued from the beaches and harbor of Dunkirk, France, by the unlikeliest of champions—a civilian fleet comprised of hundreds of merchant marine boats, fishing boats, yachts and other pleasure craft, in addition to several British and Canadian naval vessels.

Christopher Nolan’s Dunkirk brings the audience into the confusion, urgency, peril, and relentless disquiet of all of the participants in that rescue. The imagery is at times dizzying and expansive and then suddenly claustrophobic, ferrying the viewer from the beaches of Dunkirk, to the Mole, to the rescue craft, and into the battles in the skies over the English Channel.

The CAS Awards, BAFTAs, and Academy Awards for the sound on Dunkirk are testament to the accomplishments and craftsmanship of Mark Weingarten CAS (production mixer), Thomas J. O’Connell (ADR mixer), Scott Curtis (Foley mixer), Alan Meyerson CAS (scoring mixer), and Gary Rizzo CAS and Gregg Landaker (re-recording mixers). Dunkirk challenged every discipline of sound mixing, pushing the creative, technical, and artistic achievements of these professionals to new levels. After speaking individually to the award-winning mixing team from Dunkirk, it became apparent that the process of mixing for the film was as unique and compelling as the soundtrack they created.

The Vision

The sound for Dunkirk aimed to engulf the audience in the experience of the soldiers, the pilots, and those onboard the rescue craft, never letting the audience off the mat until the danger abated...

Gregg: The feeling of Dunkirk has to be this thread of a pulse that literally and physically changes the audience’s breathing pattern and heart rate. You feel like you are suppressed by this movie, by the soldiers’ hardship, you are living in that moment, the same as those who lived through Dunkirk. The panic going through the soldiers’ minds every time they heard a Stuka, it’s like, “Oh my God, here it comes again…” and feeling helpless.

Gary: There is a magical momentum that works its way through this entire film. That pulse controls the blood pressure of the film itself and in turn, controls the blood pressure of the audience. It’s a hijacking of the cardiovascular system. That pulse controls the amount of adrenaline that is going through the body of every audience member and when you orchestrate that the way Chris does, he puts the audience right where he wants them. The film is constantly communicating the sense of the desperation for survival where, even in the quieter moments, you’re not sure what is coming next.

Alan: The sustained tension and the use of the pulse … that was by design. We spent a lot of time talking about it. It goes through the entire film, changing in color, texture, and tempo, but it is always there. In the score for Dunkirk, the pulse element was actually treated as separate from the tonal elements of the music. They were overlaid onto each other in the mix. That pulse was designed to always press on the audience, like you’re constantly getting the sense of rushing and impending doom. That was without question the number one directive—to keep that energy going from the beginning to the end of the film.
Christopher Nolan and Lee Smith direct Gregg Landaker and Gary Rizzo CAS through the final dub of *Dunkirk*

Mark Weingarten CAS at work on the *Moonstone*—feet up on IMAX cam (sorry) Mix 8, Field Venue, Fusion 12, Shark Fins clamped to shelf

"**We’re not allowed to see a frame of the movie until it’s our first day.**"  
—Gregg Landaker

## The Authenticity

Every Christopher Nolan film has a “style” to it. None of his films are conventional, and each one is unique. *Dunkirk* is no exception. It is unlike any World War II film before it. The transposing timelines, the duration of each story being told, and the use of the ubiquitous pulse are a few of the elements that set it apart from other films in the genre. Above all, for *Dunkirk*, Christopher Nolan valued realism and the purity of the moment…

**Mark:** On *Dunkirk*, almost everything was done as much as possible where it actually happened [historically], in whatever conditions were present at those locations. The Mole (the pier) was shot on the Mole. The *Moonstone* (a rescue craft) was shot at sea. We actually shot on the beaches of Dunkirk. There were some scenes where the background of the breaking waves was extremely present, especially on the Mole. I wasn’t sure they were going to be able to clean the production tracks enough to save them but Gary did.

**Gary:** Chris is a purist. He likes things being very real. He is not a fan of ADR and he would rather live with a less than ideal production recording that has a true, honest performance on it, rather than an ADR performance that falls short. He has no interest in anything even falling slightly short in emotion and energy. It’s almost like the imperfect production track helps to sell the validity and honesty of it.

**Gregg:** For Chris, dialogue is just another tool of sound design. He wants you to think, to use your brain. At the end of the scene, did you understand the scene? That’s what is important to Chris. Not that you heard every little piece of spoken dialogue. He doesn’t want to spoon-feed the audience. I believe there are only three lines of ADR in the whole movie. And yes, Chris’ movies are real! “I want my actors in a real cockpit, reacting to real forces.” Those guys are reacting to a real plane yanking around on them or they were put in a cockpit on a gimbal for the close-up shots. It’s not like there’s a blue screen and the director says, “OK, now there’s going to be a spaceship around here.” No! In Chris’ movies, you’re in it. You’re in a physical practical set, actually getting slammed around.

**Gary:** And that posed challenges mixing the production sound. Mark can only do so much when the IMAX cameras are inches away from the microphone. Those things sound like lawnmowers! I appreciate Mark, and I know how hard he works. He is exceptional. Barring one brief cutaway ADR line from Tom Hardy, every single line in the planes are a synchronous recording to the picture that you’re seeing—even though he’s wearing that pilot’s mask the whole time.

**Scott:** In Foley, one of the items that we had to get right were the “hobnailed” boots worn by the soldiers, especially in the opening scene. Hobnails (short nails with thick heads) were affixed to the rubber soles of boots to provide traction, durability, and longevity to the footwear. They made a distinct loud crunching sound and Christopher was adamant that we cover those boots properly. In that specific scene, we did some outdoor recording of footsteps for soldiers walking in boots to layer in with what we did on stage. During our Foley sessions, I will play the recording up against the production track because you can’t just record things (props or footsteps) in a vacuum and expect it to work. It’s all about creating a sound so that you believe it … so you’re still along for the ride.

## Unique Challenges

Tasked with creating and maintaining suspense and authenticity, achieving the vision for *Dunkirk* presented some obstacles for the team…
FOR YOUR EMMY® CONSIDERATION
OUTSTANDING SOUND MIXING

WESTWORLD

SPIELBERG

BARRY

THE DEUCE

MOSAIC

THE ZEN DIARIES OF GARRY SHANDLING

NOTES FROM THE FIELD

PATERNO

IT YOU’RE NOT IN THE OBIT, EAT BREAKFAST

©2018 Home Box Office, Inc. All rights reserved. HBO® and related service marks are the property of Home Box Office, Inc.
Mark: The ever-present wind on the Mole got even stronger toward the seaward end. It was more than a mile long and, after a few days of shooting there, all carts (including mine) were banned. I spent a good deal of time dialing in my over-the-shoulder setup. As the rain came, keeping everything dry became a challenge. But what was even more critical was to keep the saltwater out of the gear as the Mole was frequently hit with big waves that washed over us. The Moonstone posed another challenge as Chris wanted to shoot with the engine always running at sea. Despite a valiant effort from the marine department to insulate the whole engine compartment, the engine noise was still not acceptable for sound. I asked them to rig the Moonstone to be easily towed from front, back, and side. On Day 1, we shot with the engine on. From Day 2 going forward, the Moonstone was always towed ... phew! It was an extremely tough shoot. I’d like to thank all of the other crew members for their support throughout.

“I will play the recording up against the production track because you can’t just record things (props or footsteps) in a vacuum and expect it to work.”

-Scott Curtis

forward, the Moonstone was always towed ... phew! It was an extremely tough shoot. I’d like to thank all of the other crew members for their support throughout.

Alan: As I received new elements or had to change out elements of the score (for example, switching out a sampled orchestra with a live one), it was challenging to match what I’d done before when I sent it back to editorial or the stage. Chris doesn’t want to put in a piece of music and have the level be 4 dB louder. That upsets the whole apple cart. Part of my job was making sure every single moment in the score matches level-wise and balance-wise, but with the new sounds.

Additionally, this score was essentially an 88-minute piece of music that never stopped. Originally, there was 1m1 and I think, 5m2 or something like that. For scoring purposes, it was broken up into manageable chunks and recorded, but was always meant to be put back together as one continuous piece. I delivered every element to the stage as a separate element. Alex Gibson and Ryan Rubin, music editors, were kind of partners on the mix. They were given so many elements to cut into the film under the watchful guidance of Chris Nolan to deliver the final, seamless score.

Scott: A perpetual challenge in Foley is not having the actual prop or environment for your recording. We have to go with what we think is going to work. What does this cockpit truly sound like? I believe we used a police riot shield for a lot of the cockpit interior banging and movement. Oftentimes as I’m mixing the Foley, I don’t look out onto the stage to see what they’re using because I want to be tricked. I feel like if they can fool me, then the sound is working.

Another unique thing for Dunkirk was the fact that on our stage here at Skywalker, we have this elephant door that we can open up to bring in big items like vehicles. We actually brought in a boat and put it in the water pit! We recorded not only a lot of the human movement for the scenes inside the beached trawler and the Moonstone, but also the sound of netting, buoys, and other things that you saw in the periphery in the boat.

The Pre-Dub

Dunkirk did not have a pre-dub.

The Final Dub

Gregg: We’re not allowed to see a frame of the movie until it’s our first day. We start our first day on the film as the first day of the final mix. Richard King has created and brought to the stage a minimum of 500-plus tracks of sound effects. The music department has me with 192 stereo tracks coming in. Gary has a full boat of his dialogue and we start with reel 1. We work our way through the reel—crashing and burning. Chris sits right there behind us as he wants to see our physical reaction to a sound that we’ve never heard before. How Gary and I react to the picture and the audio (what we’re grabbing/not grabbing, what are we reaching for, why are we doing what we’re doing) is important to Chris because he likes the artistry, he likes our impression and he likes our foresight of soundtracks.
FOR YOUR EMMY CONSIDERATION

OUTSTANDING SOUND MIXING
FOR A COMEDY OR DRAMA SERIES (ONE HOUR)

"THE CROWN' DESERVES PRAISE ON EVERY LEVEL."

BAFTA TV AWARD WINNER
SOUND: FICTION
Gary: I think Chris Nolan takes joy in seeing how Gregg and I respond for the first time, our knee-jerk reactions. He takes inventory of our gut reactions, he evaluates and responds to that. That being said, Chris has got the road map in his head and it’s really interesting to hear him navigate us through that first pass. For us, he’s kind of illuminating the path through a foreboding woods. We’re trying to make our way through the story and he’ll be revealing the path one step at a time without giving away the full narrative. He’ll give us little warnings, “This is the easy part guys, let’s not get bogged down…” and he will give us cues for precision timing, “I want the audience to hold their breath right … here and not exhale until … HERE!” And of course, we ultimately hear, “This has got to be the most powerful moment that we’ve had in the film so far!” The gift in this is that Chris is truly directing us. He’s directing us as mixers, just like he’s directing actors on set.

Gregg: Regarding no pre-dubbing, Chris feels that if you pre-dub the film, you take out the surprise element. In pre-dubbing, the individual elements, you (the mixer) will make decisions that may not be necessary to Chris’ vision. It’s an interesting process and I’m fascinated by it. Gary and I kind of stumble through reel 1, play it back, make a couple small tweaks and we move on to reel 2. We dub the whole movie that way for about six to seven days. Then it goes away. They screen it back in the Avid, they make some score changes, other changes and then we dub the movie the same way all over again. And we do that now on a weekly basis. Monday through Thursday, we dub the entire movie, screen it on Friday, maybe make a couple fixes, come back Monday and then go through the whole movie again. This way, you don’t labor on a scene over and over because you know you will see that scene multiple times. It’s an evolution week after week. Gary and I see this movie week after week in its entirety. As you go along, you don’t have to worry about certain things anymore where Chris has said, “Don’t touch. I like the way that is working.” You can start working on other stuff.

Gary: When things are working and Chris is happy, we leave them. He is a brilliant filmmaker. He can tell when something has been messed with. He can tell when something has changed. Not only does he have a photographic memory, but he has a sonographic memory. He remembers how things sound. That’s how good he is.

Gregg: When he says, “I like that pass,” that pass has to live for eight weeks and it cannot change. He likes the emotional attachment and the physical attachment that his films give him. And he wants his audiences to feel that same energy in their gut.

Gary: Sometime during the first or second pass, I figured out this three-word “code” for this mix. Every sound in Dunkirk was being manipulated by its pace, its pulse, and its purpose. The “Pace,” meaning its timing and its momentum. The “Pulse,” meaning where we are on the amplitude scale as things are constantly having to build. And the “Purpose,” as in “What are we leading up to?” Where are we in our story? Where are we in our energy? How fast does this need to be moving forward and how big, or small, does it need to be to get us from one point to another so that we can start a new cycle to allow the soundtrack to continue to be constantly pressing forward in its anxiety and self-propulsion.

Gregg: Ultimately, the soundtrack of this film was all designed to manipulate the audience. That was talked about in the very beginning and we constantly worked hard to come up with the right frequencies of sound, the right blends of elements that make you feel like there’s a primeval force coming down your neck so that you get a sense of fear, just like those guys on the Mole, just like those guys on the beach. Our job was to put a physical force on the audience. If you felt winded at the end of it, then we did our jobs. I give kudos to everybody involved on Dunkirk because we did our jobs.

The evacuation of Dunkirk is a phenomenal story of courage, grit, ingenuity, and sacrifice. Sir Winston Churchill hailed it “a miracle of deliverance” for both the stranded soldiers, as well as the people of the United Kingdom who desperately needed their forces to return home for protection against invasion. Christopher Nolan put images on the screen depicting the gravity of those circumstances. This talented team of sound mixers made us feel it.

It has been well publicized that this is Gregg Landaker’s final film. It’s difficult to imagine a more exceptional and storied career than one that starts with an Oscar® for The Empire Strikes Back and ends with an Oscar for Dunkirk. Gregg Landaker, the sound community wishes you and your family all the best in your retirement, and we thank you for the soundtracks you have given the world these last 40 years.
**Coco**

by David Bondelevitch CAS MPSE

*Coco* is the 19th film from Pixar. It is also the fourth film from Pixar to win the CAS Award for Animated Feature. The film tells the story of the Mexican “Day of the Dead” festivities. Animation is always a worthy challenge for sound design, and in this film, music also takes a central part as the main character wants to be a musician against his family’s wishes.

The original dialogue for the film was recorded by Vince Caro. Vince was born in New York and moved to the Bay Area for his job at Pixar. “Some of my earliest memories are of listening to records on my dad’s stereo. The smell of the glowing tubes, the sound of Sinatra’s *It Might as Well Be Swing*, The Beatles’ *Abbey Road*, or the RCA *Living Stereo* classical records—that set the hook. Then I started playing guitar and bass, and in my early teens, started building my own amplifiers.”

Vince went to the Berklee College of Music where he was a music production and engineering major. He also studied composition and arranging. “It comes in handy once in a while on sessions or in creating temp music at Pixar, and I still enjoy composing or writing a song now and again. Having a background in music raises your ability to edit dialogue and sound effects to a very high degree because so many of those tasks involve rhythm and intonation. Being able to read a score or chart is still enormously helpful on a scoring or music recording session.”

Vince has been involved with every Pixar feature since *Toy Story*, and all the Disney animated features from 1991 to 2011.

Vince explains the dialogue recording process at Pixar: “I became involved with *Coco* very early on, when it was being developed by the director Lee Unkrich. Not long after the first temp scenes (or script pages) were written, Lee was in the recording studio directing what we call ‘scratch dialogue.’ Basically, this dialogue is a placeholder for what will eventually become the final script. These dialogue recordings are put together in editorial with storyboards. Then we add temporary music and sound effects to create what we call ‘reels’ that we screen fairly often, and then iterate, iterate, and iterate! The script lines that come out of these years of work shopping will eventually be read by professional actors in what we call ‘production dialogue recordings.’ Production dialogue usually happens in the last year-and-a-half to two years of the film’s production. Scratch dialogue also continues almost until the very end, when it is finally replaced by the last of the production DX. As you can see, this entire process takes years to get the story where we want it to be, which hopefully pays off with a great story. It’s a thrill for me to see these simple ideas go from pencil sketches and temp sound to something as amazing as *Coco*.”

Vince occasionally records multiple mikes, the U87, and the Brauner, and maybe another for the director’s mic or even a boom (like a Schoeps CMIT-5 or Sennheiser MKH-50) if required.

Vince occasionally records multiple mikes, the U87, and the Brauner, and maybe another for the director’s mic or even a boom (like a Schoeps CMIT-5 or Sennheiser MKH-50) if required.

Asking about his mic’ing, Vince explains: “My usual setup is a Neumann U87 for the primary mic, a Brauner VMA for the backup mic, Focusrite Red 7’s are my preamps, and the recorder is Pro Tools. Everything is subject to change depending on needs, taste, or if you’re trying to replicate a sound from another time. In those instances, I might use an old tube mic preamp from the 1930’s or 40’s and a mic of similar vintage. Or sometimes a mic might add a little color or roundness to a particular actor/singer’s voice.”

Every film has unique challenges. *Coco* was slightly different from past Pixar films in that there were more musical elements. Vince says, “On many scratch and production dialogue recording sessions, I would have to jump into music mode and record that character singing to a track or, in some instances, with a studio guitar player or pianist.”

The main challenge was getting Miguel recorded before the actor’s (Anthony Gonzales) voice changed. Vince adds, “We had a young voice actor (Emilio Fuentes) recording the scratch dialogue for Miguel for a few years, and his voice changed before we got to the production dialogue stage. Lee Unkrich cast Emilio in a part in the film for all his hard work. I thought that was great!”
RECLAIM YOUR NAME

"THE EMMY®-WINNING DRAMA RETURNS WITH A ROAR"
- IndieWire

"A TRANSCENDENT CULTURAL PHENOMENON"
- WRAP

"UTTERLY ENGROSSING"
- The New York Times

"MOSS REMAINS EXCELLENT"
- Rolling Stone

"PRAISE BE, SEASON 2 IS GOOD"
- Vanity Fair

"TV'S MOST BREATHTAKING SHOW"
- Hollywood Reporter

A hulu ORIGINAL

THE HANDMAID’S TALE

hulu FYC
Asked about mentors, Vince says: “I was lucky to assist and learn from a lot of great and highly notable engineers—too many to mention, but I'll name a few who stand out because from them I learned useful techniques, or was given a chance to jump into the engineer’s chair in their stead: Shawn Murphy, John Kurlander, Frank Filipetti, Joel Moss, Elliot Scheiner, and others. That said, there are a few who really encouraged and guided me, so I consider them mentors: Paul Goodman, Jay Newland, Tony May, Malcolm Addey, and Doc Kane. Without Doc’s confidence in me and guidance, I would not have been able to jump into the engineer’s seat on Walt Disney’s *Beauty and the Beast* (1991), the first of my feature animated film credits.”

Music mixer Joel Iwataki previously won the CAS Award for *Inside Out* and for the *XIX Winter Olympics Opening Ceremony* (for which he also won an Emmy®). He has been nominated five times for the CAS Award.

Joel took a circuitous route into mixing. “I came into recording music rather later in my life than usual. I was raised in Los Angeles but, after a couple years of college, I moved to Alaska and became a commercial fisherman. After two years, I had a small boat and a crew—and it was 10 years before I moved back to LA.”

Joel started to study music and was writing big-band arrangements for singers in Vegas, as well as scoring documentaries and educational films, which he always recorded and mixed himself. “Then a couple composer friends would ask me to help them record and mix their projects, which led to working with film composer Elliot Goldenthal (*Alien 3, Interview with the Vampire, Frida*). When I heard his music, it was exactly the music I wanted to work on and I knew I would not be able to compose that in my lifetime—so I became a full-time scoring mixer.”

Joel continues, “I was good at reading user manuals and I took a two-day SSL seminar at USC and learned signal flow, and I worked with the composer Craig Huxley, who owned The Enterprise Studio with two huge SSL’s and a Neve VR, and who threw me in with any film or television composer who came in the door. That’s how I learned the basics of recording and mixing music, but I really missed the experience of being an assistant engineer to great mixers. I'm still studying and trying to learn. And I’ve learned a lot from assistant engineers who have worked with the great mixers.

“Working with Elliot Goldenthal really gave me the training in being a creative mixer and collaborator in the production of music. He showed me how important it was to think about the dramatic intent of the music. What is the feeling or emotion this music is supposed to affect? Try to determine what that sounds like. And then try to figure out how to execute that.

“When I saw *The Incredibles*, I was blown away by the score. It was a big-band score that recalled the James Bond sound of John Barry. It had great verve and was so freely expressive and fun. And I really wished I had been able to work on that score. Nine years later, *The Incredibles* composer Michael Giacchino’s first-and-only engineer, the legendary Danny Wallin, retired at the age of 85. Michael asked me if I would work on the score for *Star Trek: Into Darkness*, and now *Coco* is the 14th score I’ve been lucky enough to record and mix for Michael.”

Asked if he would like to thank anyone, Joel replied: “Vincent (Vini) Cirilli has been working with me for eight years as Pro Tools operator. He has made my life much better with his knowledge and skill. He makes the recording sessions run efficiently with his skills, and with his knowledge of how composers and musicians and engineers work together—keeping the pace of the sessions running smoothly. And he’s a good engineer himself, so I often ask him, ‘How does this sound Vini?’”

Foley mixer Blake Collins is from Paradise, CA, a small town in Northern California. Blake has played bass guitar since high school and played alto saxophone in elementary through high school. “I’ve always loved playing and making music. I also dabble in electro synth core.” He was brought to Skywalker to work on *Cars 3* (for which he was nominated for the CAS Award) as his first feature with them.

Blake explains: “I got into audio in high school, recording the bands that I was in on my white iMac (eMac back then). It probably weighed 30 pounds. I’d carry that thing around and plug a Mackie 12-channel live sound mixer into the stereo audio input of the computer and record into Garage Band. I went to CSU Chico for a couple years in the recording program, but it wasn’t for me. Class sizes were too big and not enough hands-
on for how complicated this field can be. I ended up going to the Conservatory of Recording Arts and Sciences in Arizona. Through my schooling there, I focused on post-production audio and fell in love with it. From there, I got an internship at Dubbing Brothers USA under Fred Taieb. Fred really taught me a lot and let me work and not just get coffee and empty the trash. After the internship, I was hired as an assistant and worked in the QC room and set up sessions for the engineers there. Eventually, I became the ADR mixer working on English dubs of foreign films and then sound designing for animated shows and ADR for features.”

He continued: “While working at Dubbing Brothers, I met Dan O’Connell, John Cucci, and Jim Ashwill of One Step Up, the Foley studio. I helped them out with minor group Foley cues and sat and watched Jimmy mix quite a bit over three years. It came time for them to move out of the building that we shared, and I said I was interested in working with them if they ever needed help. Two months later, they called me up and asked if I could mix Foley for them. I ended up working for them for about five years and learned a tremendous amount. What I learned from them paved the way for me to start my career at Skywalker Sound mixing for Dennie Thorpe and Jana Vance. We were asked to do the Foley for Coco. Those two have done just about every Pixar feature there is, and I was blessed to be their mixer.”

Blake spoke about the challenges for this film. “Bones were always a challenge. We didn’t want everything just to sound hollow and clacky or the same as each other. Getting different bone sounds for different characters was a trick. Hector, in particular, had maybe 5-6 tracks himself. We had the heel of the foot separate from the toes. We also had sounds of his rib cage as they’d hit together and general bone movement tracks for him. The idea in the movie is that the more you’re forgotten, the less put together you are in the afterlife, so Hector was pretty different than all the other characters with how many sounds he had going for him. He had to sound like he was going to be forgotten at any second.”

Asked about his mentors, he replied: “I’ve had quite a few mentors that I could not have succeeded in this industry without: Marti Humphrey, Mike Fox, Austin Creek, Ron Kimmel, Shayla Collins and Larry and Susan Collins. These people, along with my faith, influenced and taught me in every aspect of life and helped shape me to be the person I am today, and I am forever grateful to them.”

Dialogue and music re-recording mixer Michael Semanick CAS previously won the CAS Award for Finding Dory and Inside Out and has been nominated 14 times. He won the Oscar® for The Lord of the Rings: The Return of the King and King Kong, and has been nominated a total of 10 times.

Michael went to the Berklee College of Music and, like Vince, majored in music production & engineering. He returned to the Bay Area and eventually was hired at Fantasy Studios doing tape copy. He then started assisting sessions and then engineering. He did all types of sessions from rap & rock to Foley and ADR. David Parker, Matt Berger, and Leslie Schatz were working at that time and were mentors to him.

Later, Michael was offered a position in LA. Fantasy made a similar offer to let him mix film. He started with Foley. Joanie Rowe helped introduce him to re-recording mixers so he could study what they do. After talking to a mixer at Disney, Michael decided that he should stay at Fantasy. He and his wife had already packed the house up for the move, but he decided to stay with Saul Zaentz. He learned his craft by working on low-budget films. At Saul Zaentz, he met directors and worked with David Fincher, Paul Thomas Anderson, and David Lynch. Later, he worked with Baz Luhrmann.

Michael explained: “I had really good teachers [and] also learned to communicate with directors by watching. Coppola hired me for a few movies. I was on staff at Zaentz for 10 years, then I went to Zoetrope, then Lucasfilm.”

Michael’s first film for Pixar was Ratatouille, which established his relationship with the people there, including Lee Unkrich, who directed Coco. “Lee Unkrich is a detail-oriented director.” He explained, “Story is always first. What’s happening and how can sound support it. Mixers need to watch the big screen; computer screens are a distraction.”
One thing Michael learned from mixing many jazz records is that you need to create a vibe that the client is comfortable with. “I have been fortunate that directors continue to raise the bar, and Pixar has set it very high. Coco was intimidating. It was the hardest mix I have ever done. The music came from so many different sources in the movie, layered with many splits. The dialogue was exhausting, plus all the singing. Lee is great at listening.”

The film was mixed on the Kurosawa Stage on the AMS Neve DFC Gemini console. Asked about how they treated sound for the afterlife, he replied: “We used reverbs extensively. During the transition, we used a backward reverb but only for a few lines of dialogue when the main character first goes into the crypt. It would be distracting to continue that throughout the film. I use the Lexicon 960 and TC-6000 for reverb.”

Asked whom he would like to thank, he replied: “Chris Boyes and his crew did a great job. The real unsung hero was Steve Davis, who is a fantastic music editor. Composer Michael Giacchino delivered over 250 tracks of music. It was tough to match the on-screen guitar playing when you could see the strings vibrating. Also, dialogue editor Marshall Wynn was fantastic.”

Sound effects re-recording mixer Chris Boyes (who was also the supervising sound editor) has won the CAS Award twice, for The Lord of the Rings: The Return of the King (with Michael) and The Adventures of Young Indiana Jones. He is an 11-time Oscar nominee, with wins for mixing The Lord of the Rings: The Return of the King and King Kong with Michael.

Chris studied at San Francisco State Film School. He started with photography and later wound up making films at UCSC. He eventually got a job offer at Saul Zaentz in 1985. He offered his services to editors so that he could learn the craft, and he had a great group of mentors there; Richard Hymns, Anne Krober, Alan Splet, Walter Murch, and David Parker.

He later stopped by Lucasfilm (Sprockets Systems at the time) and was hired on the spot. He worked his way up from delivering supplies to editors to recording. Starting in the machine room as recordist, he moved to ADR and then Foley, then Gary Rydstrom hired him to record sound effects in the field. After only six months of film mixing, he was feeling comfortable with clients. “I had interviews with Don Rodgers, went to Todd-AO, met Chris Jenkins, Buzz Knudson, and mixed in LA for a while.” Chris added, “Coco was a dream job. Lee is wonderful to work with. They are wonderful clients, and Michael Semanick was great. It’s a gift that I get to experience all this.”

Chris did field recordings in Mexico with his son Daniel. Because Chris was also the sound designer, he was able to premix his material down to about 150–175 tracks before going to the stage. He pointed out that sound is cleaner when there are fewer elements to deal with. Interestingly, Chris uses no plugins when mixing. He uses traditional hardware, including the Lexicon 960 and TC Electronics 6000.

Asked about his approach to making sound for the afterlife world, Chris replied: “It needed to be a magical world, starting when there is a big giant sweep of guitar strumming in the crypt. It took several tries to get that sound correct. One element eventually used was a giant upright bass swiped with bow.

“It was difficult to keep things from sounding alike. There were many skeleton characters. We had to establish the skeletons as different, some are loose, some tight, some come apart. At some point, it starts to sound real. Hector had a specific gait that had a rhythm with his hip popping. I edited samples in the Synclavier to create the different sounds.

“When Miguel needs to get the blessing, Lee wanted it to be organic—it had to rise in intensity but not change pitch, it had to be organic. I wound up recording some pitched crystal glasses that sounded like singing tones. Both music and FX had to work together.

“The hardest sound was the flicker when the skeletons disappear [once] they are forgotten. We tried several passes, but nothing stuck. Finally, director Lee Unkrich said, ‘I want it to sound beautiful,’ which pushed me in the right direction. The sound must register emotionally.”

Asked if he had any mentors, Chris mentioned mix tech Gilly Semanick on Toy Story 3, which Lee edited. Lee carries a Marantz recorder so that he can record material he hears as suggestions for the movie. Because of his background in editing, Lee is very hands-on during early passes of the film, cutting music, sound effects, and backgrounds as the film develops for what he calls “proof of concept.” There is always a back-and-forth with post, as Lee turns over his temp work and Chris and his team would expand on the ideas. This allows the film to naturally develop and the sound designers can get approval for all sound concepts early in the process.

I asked Lee what the hardest part of the sound design was and, like Blake, he replied that the bones were the most challenging, along with vehicles. Another challenge was finding the right sounds for Dante, the hairless xolo dog in the film. Lee explained, “You have to remove as much artifice as possible—the sound needs to be organic enough that it starts to feel rich and immersive.”

Lee summed it up by saying: “It is always a joy working with both Michael and Chris—they are great to know as people, and Chris is a great, happy guy—always a pleasure to be on the stage with them.”
RECOVER THE TRUTH

“ANOTHER PRESTIGE HEAVYWEIGHT”
- IndieWire

“A FIERY POLITICAL DOCUDRAMA”
- TV

“MAGNIFICENT... IMPORTANT TELEVISION”
- Deadline

“...A BUZZWORTHY HIT”
- Variety

“...ONE OF THE BEST PERFORMANCES OF DANIELS’ CAREER...”
- Daily News

A Hulu Original
THE LOOMING TOWER
hulu FYC
Biographical documentaries often fit a very rigid mold of classic narration and found footage and/or dramatic recreations. This has the effect of either putting the viewer in a detached third-person perspective or creating a factual-based surreal adaptation of the subject’s reality. Jane does neither and is viscerally enchanting.

Director Brett Morgen (Kurt Cobain: Montage of Heck, The Kid Stays in the Picture) channels the innovative Jane Goodall spirit by combining with incredible skill hundreds of hours of actual footage much of which is over half a century old of Jane in the jungle observing her beloved chimpanzees. Jane is the only narrator and there are only a few sparsely littered interviews with Jane seen as she is in present day.

We observe Jane Goodall as other humans and the animals must have observed her in Gombe watching the chimpanzees. We learn of her incredible groundbreaking field work, her relationship with her first husband Hugo van Lawick, the National Geographic contracted photographer who is responsible for the footage, and the chimpanzees with whom she spends her life. Melding all of this rare and incredible material together is the phenomenal Philip Glass, who created an expansive score. The effect is that of a looking glass wearing back into time as a present observer.

The project was a true collage combining silent historical footage masterfully woven and accompanied by narrative read cut piece meal to provide a smooth narrative. This provided a unique challenge and great creative opportunity to sound. The team up for the task was: production mixer Lee Smith, re-recording mixers David E. Fluhr CAS and Warren Shaw, scoring mixer Derek Lee, ADR mixer Chris Navarro CAS, and Foley mixer Ryan Maguire.

Production audio consisted of Jane Goodall speaking about her life. Lee explains, “My main concern was to send Brett Morgen back with all I thought post would need, along with lots of extra Ambo [ambience] tracks to add color to Brett’s canvas.” He shared that the biggest challenge he faced was with the ambience of Tanzania. He explains, “One of the main issues many people do not notice within the East African region is how the background sounds change hour by hour. For example, even after finding the location of the home quiet away from road noise, the garden was large and left in its most natural state. Background bird sounds change within half-hours, along with the lush insect population. The vox recording was long with lots of breaks, so it was important that I recorded many Ambo tracks to allow post to give the final vox edit the feeling it had been a natural conversation.” This no doubt helped in the final mix. David Fluhr also treated narration differently from her interview sections. David details, “I spread her slightly LCR to give it some power … and a sonic difference to her on camera interview segments.”

As the historical footage was recorded without sound present, all sounds had to be reproduced. Thus, this required detailed sparse but integral background voices in ADR and copious amounts of Foley to describe everything from close-up termite movements to Jane chasing chimpanzees through heavily wooded jungles and up mountainsides to an an all-out chimp war. Chris Navarro recorded the ADR and Ryan Maguire mixed the Foley at Anarchy Post with artists Joanie Rowe on feet and Tara Blume on props. Ryan exclaims, “It was fun because we got to do everything … we did an ant! … [There was] tons of stuff.” And yet the team completed the task in 2-3 days. Ryan explains this was only possible because of the crew. “Once you get a crew that has worked together for a while, you develop a communication without speaking. We fly. I like to move. We just go … It keeps [the artist’s] energy up, too. I try to bring them up and keep them going.” Ryan has worked with Joanie now for 11 years and Tara for seven.
DON'T JUST CONSIDER. EXPLORE.

ANTONIO BANDERAS IS

“GENIUS IS A FORMIDABLE TOUR-DE-FORCE BY AN ENSEMBLE OF ACTORS AND CRAFTSPEOPLE”
— Variety

“BANDERAS'S PERFORMANCE IS HIGH ART”
— People

“SEDUCTIVE PERFORMANCE”
— The New York Times

“A TANTALIZING TASTE OF GENIUS”
— TV Guide

“HIS TRANSFORMATION IS A WORK OF ART”
— Us

Genius: PICASSO

THE EMMY®-NOMINATED SERIES FROM IMAGINE ENTERTAINMENT

Outstanding Limited Series
Outstanding Sound Mixing for a Limited Series or Movie
Outstanding Sound Editing for a Limited Series, Movie or Special
And all other eligible categories

natgeotv.com/FYC
While background trees and distant movements in ambience were clearly covered in sfx, there was layer upon layer of trees and bushes to fill up the sound and create intimacy and texture. Ryan explains his secret to providing rustling movements that can play over other rustling layers was to EQ and mix for perspective. “I usually like to work with frequencies. I record a high, a mid, and a low. The background, I’ll make a little deeper. The front, I will make a little brighter … I like to mix for perspective. I want to give them [the re-recording mixer] something they can bring up and play.” Indeed, the level of separation for the close-up hand movements and footsteps played perfectly over the continuous body movements or multiple chimps tussling in the jungle, as well as the emphatically exploring Jane. I never found myself as a viewer feeling as elements of movement meshed together so much that their intended source of sound was not identifiable.

Derek Lee, the scoring mixer, received the multitrack from Philip Glass’ team and ultimately provided stereo music stems to David Fluhr for final mix. The time frame provided to complete the scoring mix was a little over a week. When asked if there was anything special or unique about the project, Derik recalls, “Technically, there was nothing out of the ordinary but anytime you have an opportunity to work on a project with Philip, it is a special project.” David Fluhr echoes this sentiment. Fluhr expands, “I used three full premix days to mix all the music elements into 7.1. Philip Glass gave me total control over the mix and spreads … about 50 pairs of orchestral and electronic stems. Once it was premixed ‘in the box,’ director Brett Morgen and I continually fine-tuned until we released it.”

As a viewer, I specifically found the use of thick expansive backgrounds over very detailed panned Foley and sfx to be incredibly immersive in the final mix. I remember specifically feeling surrounded by apes and in one shot where Jane sits peacefully under a tree, I felt a chimp’s body approach her (my) right side and breathe curiously over her (my) shoulder. Warren Shaw was the supervising sound editor and sfx re-recording mixer on the project. Warren contracted the Foley and sfx editorial and prepared all the chimp sounds from scratch over the course of a year.

David estimates it took 5-6 weeks of him and Warren mixing over the course of a few months to complete this project. David summarizes the goal of the project: “The project for me was very attractive on several levels. Brett Morgen said from the beginning he wanted to create an ‘opera,’ and not a ‘traditional mix,’ which would enhance Jane Goodall’s life story presentation. We had lots of time to experiment with sfx and music, and Nat Geo gave us what we needed. To be able to participate and learn so much about Jane and her commitment to the earth and the preservation of its creatures was a real honor.”

Jane has been incredibly received. It garnered dozens of awards, as well as a BAFTA nomination. The sound team specifically won a MPSE Golden Reel Award for Outstanding Achievement in Sound Editing for a Documentary Feature, and became our own CAS Award winner for Outstanding Achievement in Sound Mixing for Motion Pictures for a Documentary film. Congrats to an incredible team on this amazing success and adventure.
IT TOOK A WOMAN TO UNLOCK THE SECRET OF EARLY MAN

“ONE OF THE BEST DOCUMENTARIES OF ALL TIME.”
VOGUE

“A NEW HIGH IN DOCUMENTARY FILMMAKING.”
Cos

“AN EPIC ROMANCE BRIMMING WITH A LOVE FOR LIFE.”
Entertainment Weekly

“THIS YEAR’S BEST DOCUMENTARY.”
IndieWire

“BREATHTAKING. THE YEAR’S MOST BEAUTIFUL DOCUMENTARY.”
San Francisco Chronicle

“ASTONISHING. MESMERIZING. SPECTACULAR.”
Los Angeles Times

“STUNNING. A MESMERIZING PORTRAIT OF A FIERCE ICONOCLAST. A TRIUMPH OF FILMMAKING.”
San Francisco Chronicle

“I N S T R U M E N T .”

JANE
A FILM BY BRET MORGAN
ORIGINAL SCORE BY PHILIP GLASS

Exceptional Merit in Documentary Filmmaking
Outstanding Sound Mixing for a Nonfiction Program (Single or Multi-Camera)
Outstanding Sound Editing for a Nonfiction Program (Single or Multi-Camera)
And all other eligible categories

natgeotv.com/FYC
This year’s CAS Award for Television Movies and Mini-Series went to an episode of the always intriguing anthology series Black Mirror, which, in stand-alone episodes, explores the intersection of high-tech environments and the human condition. The episode is entitled “USS Callister” and it chronicles the adventures of a Star Trek-like spaceship set in a video game. The designer, a meek software nerd on the outside, is able to put himself and his colleagues (including his boss) into the game. There, he is the captain of USS Callister and takes on a tyrannical role, dealing harshly with his crew who are the aforementioned colleagues. A very enjoyable episode, made more so by the homage to Star Trek.

The sound team that created this wonderful work consisted of production mixer John Rodda CAS, ADR mixer Nick Baldock, Foley mixer Sophia Hardman and re-recording mixers Tim Cavagin (dialogue), Dafydd Archard (FX), and William Miller (FX). I reached out to each one and received some informative and entertaining answers.

John Rodda CAS: Production Mixer

What is your background and what other shows have you worked on?
I’ve been working in film and TV for nearly 40 years. Through news on film in the old days to documentaries, TV drama, and feature films. From the news and documentary background, it was always the responsibility of the sound recordist on location to record a high-quality balanced mix of the microphone sources, so I was used to the pressure of having just one track on my Nagra and capturing the complete performance on the day. This is a very useful skill in the fast-paced production environment we find ourselves in today—as opposed to recording a bunch of ISO’s and leaving it to post production to sort out.

Please describe your workflow and any problems you encountered.
Upfront on set, we record through Schoeps microphones. CMC 6 preamps with MK40/41’s on interiors with the new mini-CMIT’s outside, protected in Rycote Cyclone baskets and mounts. Radio mics are exclusively from Audio Ltd. PTX2040 transmitters on the booms completely dispense with the need for cables and match perfectly against the personal 2040 transmitters we fit to the cast along with Sanken COS-11 and Voice Technologies VT506 lavaliere microphones. Not only do Audio Ltd. deliver the most natural sound to my ears, the factory is less than an hour from my home, handy if I need a quick repair and where their customer service is second to none. I mix and record on Zaxcom. The Mix-12 hooked up to my Fusion 12 has served me pretty well over the last nine years despite a few glitches along the way. The intuitive touchscreen interface makes last-moment changes quick and easy.

We shot with two cameras and many separate scenes linked together. Ending up with 11 pages to shoot and “rolling resets” to the top without a cut certainly gets the adrenaline flowing.

How much time did you have to complete the production and how big was your team?
The whole 76-minute episode was shot in just 20 days and I worked with a team of three. My boom operator/1st AS was Kyle Pickford and assistant/2nd AS was Emma Chilton. They’re invaluable members of my team with great attitudes on set. They’re prepped and ready when it’s time to fit radio mics and always on the lookout for wrinkles that may become problematic later, so we can work on finding a solution before it becomes an issue.

Have you been surprised by the popularity of Black Mirror internationally and how the sound community is viewing your work on this project?
Channel 4 in the UK, who was the original commissioning broadcaster, has always nurtured new talent and ideas. I’d
THE LONG ROAD HOME

Outstanding Limited Series
Outstanding Sound Mixing for a Limited Series or Movie
Outstanding Sound Editing for a Limited Series, Movie or Special

And all other eligible categories
What was it like collaborating with the producers and directors of this project?

The producer and director were very encouraging. [Director] Toby Haynes will undoubtedly go on to great things fired by his enthusiasm and “can do” attitude, which rubs off on everyone else.

Is there anything else you’d like to add?

I think I’ve just about covered everything except to say that the recognition of our peers has been amazing and humbling. Having won the CAS Award, our current nominations for sound awards by AMPS and BAFTA have been another fantastic honor for which I’m profoundly grateful. I won my first CAS Award 20 years ago and couldn’t attend the ceremony. So this year, win or lose, I was determined to come to LA where I was overwhelmed by the warmth of the reception and encouragement given by sound colleagues from all of the United States.

I should also mention that through pretty much the whole shoot, we were high page counts (because many scenes were joined together) but also every time we rolled, it was to cover seven-handed dialogue. Challenging, fun, and totally my cup of tea!

Nick Baldock: ADR Mixer

What is your background and what other shows have you worked on?

My first glimpse into the industry dates back to 2001, where I was a trainee assistant editor in the picture department. I do remember getting as far as 2nd assistant editor and realizing that my passion truly resided in audio.

In 2003, I began working alongside Paul Davies (a sound designer in the UK—known for working on Lynne Ramsay’s films) and slowly started building my credits from there on. I’ve worked on many features as an ADR mixer, including Welcome to the Punch (James McAvoy), How I Live Now (Saoirse Ronan), Humans (Carrie Anne Moss), Sand Castle, Three Billboards Outside Ebbing, Missouri, The Current War, and Stranger Things. There’s probably a few too many to list, but in essence, my ADR mixer credits sum up how much I enjoy my role in helping ensure...
good results. As well as ADR mixing, I’m also a supervising sound editor. I’m working on an exciting independent British film at present.

**How did you get involved in this episode of *Black Mirror***?
It was actually thanks to the post supervisor on the job who put myself forward (Moira Brophy). We’ve also got a good working relationship with Pinewood/Twickenham Studios.

**Please describe your workflow and any problems you encountered.**
The ADR stage at Art4noise, the facility I work, is in my opinion one of the best in Soho, London. It’s been rigorously tested during its construction (Munro Acoustics) and performs very well in the ADR setting.

I tend to shoot ADR two tracks most of the time with a Schoeps CMIT 5U or MKH60. On this particular episode of *Black Mirror*, we used the Schoeps as boom and DPA 4060 as the clip, which matched extremely well with what we had on production. Another important part of the job was the crowd session which, firstly, was great fun, but challenging in the sense of replicating a texture which would sit in seamlessly. In addition to the two microphone setup, we added a U87 (set to figure of 8).

**How much time did you have to complete the production?**
I believe we had two days. The first day was broken down with principals and the second day was the crowd session.

**Have you been surprised by the popularity of *Black Mirror* internationally and how the sound community is viewing your work on this project?**
I actually had involvement with the second series of *Black Mirror* and could certainly see its potential then. [Creator/Writer/Producer] Charlie Broker has an amazing vision. I’m honored that the show amongst others has been recognized.

**Is there anything unique about this project’s workflow or treatment?**
The crowd session had some interesting moments; we had enough time to add vocalized noises that would be used in sound design.

**How much of the show was ADR?**
Not sure if I’m allowed to say! John Rodda did a great job as the production mixer and most ADR was purely extra sweeteners or crowd.

**Was there a big group for the office scenes?**
Our crowd session consisted of 6-8 artists.

**What was the most challenging aspect of working on this show?**
I guess as with all ADR jobs, they come with varying degrees of challenges. I can’t recollect there being anything different from the usual set (from a technical perspective). I do remember quite enjoying the sessions.

**What was it like collaborating with the producers and directors of this project?**
Everyone on the team were great to work with! That’s me being honest.

**Sophia Hardman: Foley Mixer**

**What is your background and what other shows have you worked on?**
I started working in sound three years ago after completing a degree in sound technology. I have worked my way up from sound assistant to Foley assistant to Foley mixer in this time. Working on feature projects such as *Jason Bourne, Alien Covenant, Victoria & Abdul* to TV projects *McMafia, Poldark,* and of course, *Black Mirror.*

**How did you get involved in this episode of *Black Mirror***?
I was originally assisting the Foley mixer on this project but, due to scheduling, I ended up working on this episode. I was very lucky—a case of right place, right time.

**Please describe your workflow and any problems you encountered.**
We usually start by recording a pass of cloth moves, which gives myself and the artist time to also see if there are any sections that might be tricky ahead. As we have three days to do an episode, keeping an eye on what we have coming up is key. After moves, it’s onto the footsteps. Breaking the feet down surface by surface (leaving the messiest till last) allows us to manage our time and the space well. When we’ve finished the feet, we start the spot FX, going through the episode scene by scene, ensuring we cover everything.

**How much time did you have to complete the Foley and how big was your team?**
We had three days in total to complete the Foley recording for the episode. Our team comprised of Adam Mendez and myself, Ricky Butt (Foley artist) and Oliver Ferris (Foley assistant), along with Dario Swade (Foley editor).

**Have you been surprised by the popularity of *Black Mirror* internationally and how the sound community is viewing your work on this project?**
Not surprised with the success of *Black Mirror,* but completely shocked by the reaction of the sound community. It was such a blur working on this project. For it to have been well received by our peers is very satisfying.
Is there anything unique about this project’s workflow or treatment?
What was unique about this project was that the mix for the entire project was being done in the next room. This meant that the workflow between the mix and the Foley theatre and the producers and directors was very fluid. We were able to provide whatever update was urgently required for the mix. Normally, it doesn’t quite line up this way, so it was a unique experience to work like this.

Was there anything special or different about the Foley for this show?
The Arachnajax [creatures] was the most different and special thing about this episode. We experimented with alternate versions of the sound of the tentacles because, when the Arachnajax roared, the tentacles flapped violently. We tried hand slaps, bicycle inner tubes, and even octopus tentacles!

Did the creature’s movements require any special props?
The footsteps of the creature were created in two layers—it was a big and heavy creature but also had sharp talons. To create this, we used a pair of boxing gloves and climbing shoes to get the sharp-edge sound.

What was the most challenging aspect of working on this show?
The time schedule. The length of the episode and the amount that was needed to be covered was something like a feature. We worked very hard to get it done.

What was it like collaborating with the producers and directors of this project?
Very fun. Toby was very passionate about getting the sound of the Arachnajax clear and so it was good to work with someone so involved.

Tim Cavagin: Re-recording Mixer

What is your background and what other shows have you worked on?
I’ve been at Twickenham Studios for more than 20 years. I generally mix the dialogue and music but started out mixing FX, largely mixing films. However, before that I worked in small sound houses in both SoHo and Leeds. In Leeds, I actually co-built and wired the studio from scratch. It was all analog, so you can imagine the amount of soldering!

How did you get involved in this episode of Black Mirror?
I was aware of the director’s (Toby Haynes) work in high-end TV dramas such as Sherlock Holmes, and knowing the studio had pitched for the series, this was the episode that took my eye. And so I literally said, “I’m doing that one” and, unbeknownst to me, Toby had said that he wanted me to mix it, too. So it kind of fell into my lap.

Please describe your workflow and any problems you encountered.
I mixed the “Metalhead” and “Black Museum” episodes. What I became aware of was that, in fact, these are essentially movies with a TV timescale for mixing. Two days’ premix and two or three days for final. And yet the content in each would generally require at least twice that amount of time. So, I’d say that was the only problem we had.

How much time did you have to complete the production and how big was your team?
As mentioned, we had five days mix time. However, on “Callister,” that stretched out into about eight in the end. Sound editorial-wise, it’s a lot harder to quantify as the sound editors would often be working across one or more of the series—parking one, picking up another and so on.

Have you been surprised by the popularity of Black Mirror internationally and how the sound community is viewing your work on this project?
I knew Black Mirror already had a large cult following in England, but had only a little idea of its international popularity. It doesn’t surprise me that it does though, as the show taps into so many things that are so relevant and asks moral questions of the viewer in each of its episodes. As for the sound community, it’s always lovely to work on a show with some kudos. And everyone has been very appreciative, which is so nice.

Is there anything unique about this project’s workflow or treatment?
Nothing unique, I guess, other than it seemed absolutely everyone was waiting for the show to drop onto their iPads! Always wanting to know if the new series was as good as series one, two, and three. Knowing that the show already had a massive audience was kind of unusual for me. When mixing a movie, you generally have no idea how many people will pay to see it. On this show, you knew there were millions waiting!

What was the most challenging aspect of working on this show?
Because of its sci-fi nature, there can be a tendency to over complicate the soundtrack. So we spent a lot of time stripping back the beeps, bleeps, whooshes. Making sure that, in what’s still a dialogue-driven show, we didn’t make the soundscape overly dense.

How much of the sound design for the creature vocalization was delivered from sound design and how much was created in mix?
I’d say 50/50. We went through a few stages of development whilst mixing.
OUTSTANDING SOUND MIXING
FOR A LIMITED SERIES OR MOVIE

"REVOLUTIONARY. ITS PRODUCTION VALUES ARE EXTRAORDINARY."

GODLESS
Was there an intentional reference to Star Trek in the sound design of “USS Callister”? 
Of course, you can’t get away from the Star Trek “thing.” But we had to stay well-clear of any sound design that could be accused of plagiarism. That’s not to say we didn’t pay homage to that great show.

What was it like collaborating with the producers and directors of this project? 
Toby is so full of enthusiasm. He brings that to the room in abundance and so it’s impossible not to get caught up in that, too. New ideas would constantly be tried out but, whereas that can be exhausting, this always felt like we were always honing in on what was best for the show. Charlie’s attention to detail is second to none. With a wonderful logic, he would lead us through the episodes—explaining how he felt it should be. And I have to say, he’s generally right! (Sometimes annoyingly so. Ha! Ha!)

Dafydd Archard: Re-recording Mixer

What is your background and what other shows have you worked on? 
My background is in audio post production. Previously serving six years at De Lane Lea, now WB De Lane Lea, as a mix technician. I joined Twickenham Studios about five years ago in the same capacity before moving into mixing shortly after. More recently, due to issues with tinnitus, I have moved into an operational role at the studios. Black Mirror happens to be one of the last shows I mixed, so it was nice to get some recognition before moving out of mixing. I have previous mix credits on Hitman’s Bodyguard, Alien: Covenant, The Martian and Victoria & Abdul and more.

How did you get involved in this episode of Black Mirror? 
The series was being mixed at Twickenham Studios. So we had the mix in-house anyway, but I think as it happened, Tim Cavagin and myself were requested to do this particular episode by the clients.

Please describe your workflow and any problems you encountered. 
I mixed FX on this episode. I premixed in the box using a D-Command and then bussed my outputs to the console as wide as possible for the final. I like to have some overall masters on the DFC to apply more general eq, compression and level to whatever 5.1 inputs I had coming in. But the majority of the nitty-gritty work was still taken care of by Pro Tools. I like the hybrid approach. It gives access to best of both worlds.

How much time did you have to complete the production and how big was your team? 
I think, initially, it was meant to be a couple of days premix, each for DX and FX, then a four-day final, M+E for one day and then deliver. I think in the end, it turned out to be more like a 10-day final over a couple of separate phases. The clients came back on a few occasions with more up-to-date VFX, so the mix had to be revisited to make fixes. The team was five.

Is there anything unique about this project’s workflow or treatment? 
The approach to the soundtrack and the concept behind it is pretty unique. Dipping into a game world, then real life and back, different planets, spaceships, creatures, etc. There was a lot to cover in an hour-long episode. Toby (the director) wanted the ship’s beeps, whirs, etc., to give a nod to Star Trek. Giving it a familiar feel but with originally designed elements. The ship’s sounds were used like a character in itself. When the game is in play, with Jesse Plemons’ character, Robert, present, the ship is alive, buzzing, bleeping, whirring, etc., full of life. When Robert exits the game, the ship powers down, leaving the remaining characters behind in a cold, quiet environment—adding to the feeling of isolation and despair that the characters feel. The same technique was used on some of the planet sequences. When Robert is there, the planet is alive, plenty of atmos and BG’s. When he leaves the game, all falls silent.
What was the most challenging aspect of working on this show?
The biggest challenge was in dealing with unfinished VFX. It’s always a factor in VFX-led films or TV shows that, at some point, you’ll hit a sequence which is unfinished. Keeping up with the VFX updates and keeping on top of the conceptual sound changes was challenging. But the results are clearly worth it. We now have a CAS Award to show for it amongst others.

What was it like collaborating with the producers and directors of this project?
Toby, Charlie, and [producer] Annabel [Jones] were great. Full of ideas, concepts, and enthusiasm for the process. Toby really drove the mix and always pushed to get the best out of us and our tracks.

William Miller: Re-recording Mixer

What is your background and what other shows have you worked on?
I’ve been working at Twickenham Studios for the last three years as a mix technician. I have worked on movies such as Baby Driver, Murder on the Orient Express, and Alien: Covenant. More recently, I have been mixing, with credits that include Eric Clapton: Life in 12 Bars and Black Mirror Season 4. Both of these mixes received CAS Award nominations at this year’s awards, with Black Mirror going on to win.

How did you get involved in this episode of Black Mirror?
We mixed all six episodes of Season 4 of the show here at Twickenham. So, between all the mixers here at the studio, we all had opportunity to work on a few episodes each. I mixed FX on two out of the six episodes in this season, “USS Callister” and “Hang the DJ.”

Please describe your workflow and any problems you encountered.
My usual setup is a hybrid between Pro Tools mixing on a D-Command and console mixing through the DFC Gemini. I usually do all my premixing in Pro Tools and then have tracks coming up DFC faders for the final mix, along with a small amount of hardware, typically a Lex 960 and dbx 120A. On “USS Callister,” I shared the FX mixing with my colleague Dafydd whilst Tim Cavagin mixed dialogue & music.

Have you been surprised by the popularity of Black Mirror internationally and how the sound community is viewing your work on this project?
I’ve been a huge fan of the show since it began on TV here in the UK. I’m not at all surprised how popular it has become. It’s great to see it growing more and more with each season that gets made. We are all very proud of the hard work that went into making these episodes the best they can possibly be, and it’s always a great feeling to have our work recognized by our peers in the sound community.

Is there anything unique about this project’s workflow or treatment?
Even though this show would technically be regarded as TV, what is being made is more like mini-feature films. So, we took a more theatrical approach to this mix, which took place in our large dub stage, Theatre 1, here at Twickenham Studios.

What was the most challenging aspect of working on this show?
This episode involved a large amount of VFX, which wasn’t finished at the time of the final mix. So, trying to imagine what the final VFX is going to look like whilst mixing FX was definitely a rather challenging aspect of the mix process.

How much of the sound design for the creature vocalization was delivered from sound design and how much was created in mix?
It was a mixture of both. Kenny Clark, the sound effects editor, had done such an amazing job creating the sound of the creature, but the character of these sounds did change quite dramatically throughout the mix process and went through a number of iterations. During the mix, Toby Haynes, the director, got in the ADR studio to record his own voice, along to the creature. Which we then re-pitched, re-speeded, and processed to combine with the animal vocalizations that Kenny had made.

What was it like collaborating with the producers and directors of this project?
Working with Toby Haynes was a fantastic experience. He had such great energy and vision for this episode and made us all work hard to achieve a fantastic mix for an epic episode. Charlie Brooker and Annabelle Jones were also a pleasure to work with. They have such a talent for creating a beautifully dark and thought-provoking show. It was a privilege to be able to collaborate with them and be part of a show I’m a huge fan of.
Game of Thrones
“Beyond the Wall”
by Thomas Rush

Game of Thrones “Beyond the Wall” is a fan episode with many story lines starting with Arya and Sansa and continuing with Daenerys and Tyrion talking in Dragonstone. However, the bulk of the episode follows Jon and his team going traveling beyond the wall to capture a Wight to bring back for Cersei to realize that the threat is real. While traveling beyond the wall, the group encounters and are attacked by a massive bear. An undead bear, actually. They fend off the bear and are attacked by the massive Wight army and the show climaxes with the Night King killing one of the dragons and then taking it as his own.

Following is a conversation with this year’s Television Series – One Hour CAS Award winners: re-recording mixers Onnalee Blank CAS and Mathew Waters CAS; production sound mixers Ronan Hill CAS and Richard Dyer CAS; and Foley mixer Brett Voss CAS.

After seven seasons of the show, how do you keep it fresh?

Ronan Hill: Game of Thrones is an amazing show which has been a joy to return to year after year. This is down to the quality of the scripts and also due to the talented cast, crew, and production team who collaborate to make drama of the highest caliber.

Onnalee Blank and Mathew Waters both agreed that the show never gets old. It is so well written and everyone does such a great job all of the way around. Mathew Waters says that “We do try to keep improving our sound every season while staying within the show’s sound language that we have previously created.” Onnalee added that “We try to be stylistic without being repetitive. This is a great show that allows us to grow in our craft because the show continues to grow. Also, what helps keep it fresh is working with a great team. We all get along and truly love working with one another. Our sound editorial team is led by sound supervisor Tim Kimmel, [who] does a great job of getting us great sounds to work with and [sound designer] Paula Fairfield continues to build and grow the dragon language.”

Brett Voss: Season 7 was the first season in our newly built Foley stage out in Westlake Village. Seasons 2 and 3 were shot in West Hollywood at The Lot, and 4-6 at the Dubbing Brothers’ Foley stage, next to The Dub Stage, Marti Humphrey’s dub stage in Burbank.

Because we knew we were going to be under such a large, sonic microscope, [Foley artists] Jeff [Wilhoit], Dylan [Toumy-Wilhoit], and I spent more than a week trying to recreate and match the key sounds we had recorded in the other rooms for the previous seasons.

Are you using different plugins or gear that you would like to share?

Hill: Episode 6 “Beyond the Wall” was primarily shot in a mountaintop quarry outside Belfast, which was the set for the Ice Lake. The location was accessible and I was able to use the normal rig on my sound cart. However, some of the episode was shot in Iceland and this was our biggest challenge on Season 7. We traveled to Iceland in January, mid-winter. I don’t know if I should mention the weather or locations first! Most of the locations were remote, traveling in by four-wheel drive and then walking and pushing the rest. The weather was hostile with snow, rain, hail, high winds, and temperatures well below freezing. The first day, we had gale force winds gusting in excess of 60 mph and a wind chill below -30C. I had been to Iceland once before with the show and you soon realize that most locations are not suitable for a cart-based system.

I had a Polar Bag made for the 788T by KT Systems in the UK. The bag was thermally lined and had arm holes and a clear cover to allow mixing in any conditions. It also had space for...
two Audio Ltd. RK3 racks with seven 2040 radio mic receivers for the seven cast members who were wired every day.

We filmed in some amazing places, like glaciers and mountaintops. When you are traveling for hours to a location facing the worst of the weather and temperature and having only a few hours of daylight to shoot, you need to be able to rely on your equipment. The Sound Devices 788T and Audio Ltd. radio mics performed very well. I had ordered several heavy duty DPA 4071s and they proved very reliable and sounded great.

Richard Dyer: Well, of course, Dragon [unit] shot most, if not all, of “Beyond the Wall” in NI while we were away in Spain.

Our ‘biggest’ sequence was the Loot Train Attack, filmed over a five-week period in a national park near Caceres in Spain. There was a very strong case for keeping things pretty much the same operationally to what we’d done on previous seasons. We did throw a couple of Zaxcom ZFR300 recorders with COS-11 mics onto Dothraki riders and horses to get in amongst them as they galloped standing on their saddles screaming.

A larger challenge sound-wise was the Dragon Pit, where many of the principal characters congregated for a long dialogue sequence requiring 13 radio mics and including a walk/talk approach sequence over quite a large area. Due to the necessity of having to use my sound cart working at close to max capacity, we had sourced a golf cart, which needed modifying in order to track silently within range of the artists. Also, I decided to split frequencies between VHF and two bands of UHF to reduce potential clashes between channels.

Blank: McDSP SA-2, all Fab Filters, 480 complete reverb.

Waters: I am using Fab Filter Pro-R verb now and, of course, Slapper like crazy. I still use the Lexicon plugin verbs for chambers and halls. I also started using McDSP ML8000.

What about Foley, anything different?

Voss: One thing we have tried to improve over the years is the jackhammered dirt pit surrounded by concrete. It never seems to matter how deep they are; almost always sound unnaturally thumpy to me. In our new stage, we opted for the “pitcher’s mound” style of dirt pit. It requires slightly more maintenance, dealing with grit, and less time to sit. But after the work, it sounds more legitimate. We also built our wood floors above concrete. It gives us some access space under the wood floor to add or subtract desired wood floor tension.

As far as gear, I added a Grace preamp to occasionally warm up a couple of specific interior things. Also, we made use of our PZM a bit more this season for some of designy moments.

What does the CAS Award mean to you?

Hill: This award means every bit as much as the first. Becoming a member of the CAS was a proud moment for me. My membership was accepted following my nomination for Game of Thrones Season 1 and I am immensely proud that my peers in the Society have nominated the show every season and bestowed us with wins for the last five seasons.

I would like to thank my team which last year was James Atkinson, 1st assistant sound, Jonathan Riddell, 2nd assistant sound, and Andrew McNeil, sound trainee. The crew on Dragon Unit helps us on every scene and production to ensure our needs are met. We hand over to a fantastic team in post, and producer Greg Spence certifies the quality of sound and vision.

Dyer: The CAS Award feels very special coming from like-minded professionals who share the same (or different but equally challenging) experiences as we have done. Only when you factor in all the elements, technical, practical, logistical, political, weather, and location of what it takes to produce high-quality production sound, not just for one set of circumstances but for many over the duration of a five-month shoot can one really understand our true role. To be acknowledged by the CAS brings a lot of pride and gratitude.

Blank: Praise and recognition by your peers and people that truly understand our craft and what we do. People who hear our subtleties is nice.

Waters: We have been on a great run, but being nominated and then winning a CAS Award never gets old. We feel very honored to be recognized by our peers. It means a great deal.

Voss: Definitely being recognized by your peers in the industry is unequalled.

To read more about the technical setups the Game of Thrones sound team has used, refer to our prior spring CAS Quarterly “Meet the Winners” articles.
MEET THE WINNERS

Silicon Valley “Hooli-Con” by Devendra Cleary CAS

HBO’s comedy series Silicon Valley follows Silicon Valley engineer Richard Hendricks as he tries to build his company, Pied Piper. Production sound mixer Ben Patrick CAS and re-recording mixers Elmo Ponsdomenech and Todd Beckett brought home the award in our Television Half-Hour category for the ninth episode of Season 4, “Hooli-Con.”

Ben Patrick CAS: Production Sound Mixer
I sat down with Ben Patrick on a quiet Tuesday at his house nestled in the hills above Laurel Canyon. We settled into his cozy reading room and started our chat.

Talk to me about where you are from and some of your upbringing.
I’m from Iowa City, Iowa, where both my folks taught at the University of Iowa in the art department. I went to school in Saint Paul, Minnesota, at a school called Macalester College, [but] I didn’t study sound or film there.

What did you study in college?
I was a humanities, journalism minor. It’s basically literature, philosophy, and art history. I did do a lot with the radio station and also mixed live bands. I was a musician, too. I grew up playing piano and then played in a lot of bad punk rock bands in the Minneapolis-Saint Paul area.

What sparked your interest in getting into this field?
When I finished up school, I interned and then worked at Minnesota Public Radio and at KFAI, Fresh Air Radio, which was another community public radio station up in Minneapolis. I did that and painted houses for the next two years, and then I went back to grad school in my hometown of Iowa City in the film department. I went to study film theory and film history to become a teacher. But then I got really into the production side of it and making 16mm films and having access to their facilities was really great.

The business hooks you in!
I really thought I was going to go be a teacher but the last year of grad school, I ended up being a PA on a movie shooting outside of Chicago and I met the sound mixer there named Chat Gunter who teaches at NYU, still to this day. He was still mixing things in the summertime. He sometimes sends his students my way and I try to help them when I can.

Who are some of your mentors? And he sounds like he’s one of them.
Chat was definitely a big mentor and he had such an easy way about approaching work. He would say, “Just try to keep it simple and keep in mind what’s important for what you’re doing at the time.” So, I sold all my stuff and then came to Los Angeles with three phone numbers that Chat gave me. He’s a great teacher and just a good person.

Any other mentors that you’d want to bring up, like maybe once you got to Los Angeles?
The first people I met were at Location Sound and Coffey Sound. John Coffey was super-friendly and very supportive as was Lee Strosnider. Lee was a mixer who also rented out gear. Sadly, he passed away not too long ago. Lee was great. He used to say, “Come on in and I’ll show you how to wire stuff up and solder it.” I used to rent his Vega wireless because I had really no equipment and I would try to rent exactly whatever a little job needed, and just eventually try to build the sound kit. Also [there was] Rick Waddell, another mixer here in LA. He used to quiz me, asking questions like, “So what are you gonna do if this happens and what are you gonna do if you get all the way out there to the desert and this happens?”
So, for *Silicon Valley*—congratulations on your big win!

Thank you, thank you!

**Modern Family** has won in this category for years, well-deservingly so, though.

Steve Tibbo CAS was the first one who contacted me. He wasn’t [at the awards] either. He and I are very good friends. So every year he wins, I’m always happy for him. It wasn’t ever really about winning. To get acknowledged, for me, it was enormous. We’re all doing the same job—and the job is to support each other.

It’s a great community of friends and colleges and mentors and students.

When you’re also asking about mentors, I think your actual crew are your mentors because so much of what we do we learn through experience of others, and you go through it together. My old boom operator, Brian Wittle, who I was with for so long, had worked with some great mixers around town, he got a lot of experience from them, he brought that experience with him.

Excellent point because you’re in those trenches together and you’re figuring out a problem you have to solve. Tell me about your crew.

Chris Diamond and Corey Woods were my crew on *Silicon Valley* up until this last season. Corey was the boom operator on *24*. Chris was the boom operator on *Sons of Anarchy*, working with great mixers. They just had good pedigree and were recommendations for my old crew on *The Office*. I helped move Brian Wittle up to mixer and Nick Carbone moved up to boom. I had to leave my old, comfortable team—which was one of the hardest things I’ve ever done, quite honestly. They’re my friends and I wanted them to be able to make that move, but at the same time I missed that family for my next project. However, being able to land with Corey and Chris made up for it in how competent they are.

It’s a half-hour comedy and very challenging.

I am guilty of over-mic’ing, I freely admit it. But if we have the time and we’ve got the equipment, why wouldn’t you try it?

I don’t think you’ll ever hear a supervising sound editor say: “You’re giving me too many options.”

No! Speaking of sound editors, I love ours on *Silicon Valley*, Matt Taylor. At the beginning, he and I spoke and I asked, “Well, what can’t you handle?” And he said, “I can pretty much handle anything you throw at me.” I said, “Well, thank you very much. But I’m not going to ask for you to work that hard and I’ll give you a heads-up when a rough patch is coming to you.”

Having a relationship with your sound editor gives you the priceless knowledge of what is repairable. On the day, if pressed, I can turn around to the director and say, “Yeah, that didn’t sound good right now but don’t worry, you’re gonna be fine.”

I want to have you discuss how *Silicon Valley* compares to other TV shows you’ve worked on.

I’ve been really lucky to work on mostly comedy in my career, which I love because it keeps me on my toes. In the sense that the comedy only happens once. [It’s typical to tell an actor] “I’m mic’ing you, I have a boom mic on top of you AND at the same time there’s a plant mic for you.” It may sound silly, it may sound like overkill, but at least I know I got it.

On *Silicon Valley*, they run with ad-libs. They will be adding stuff left and right and you have to be ready for it. One great thing about *Silicon Valley* is that the cast are all standup comedians making their riffing pretty funny. I really strive to get it all on the boom to have a sense of the room because one thing that’s very important for comedy is to base it in a space. Radio mics don’t do that. Even a great sounding radio mic still doesn’t have much presence of the surroundings. I kind of picked that up on *The Office* that something’s not funny unless it has the pressure of where it is. So, I like to think about what’s going to serve the comedy.

So back to the night that you won. You said Tibbo was one of the first people to reach out to you. It sounds like you were working.

We were shooting *Silicon Valley* that night of the awards. We were madly bouncing from stage to stage on the Sony lot and we were under such a deadline that they were tearing down the sets as we were rolling off them. And when I got that text I was in a casino set on Stage 25 and I was like, “Oh, no way, really?! That’s amazing!” And then the next person who texted me was Elmo Ponsdomenech.

He was there so he could accept. I was so glad that they could be there. Elmo was like, “I can’t believe it, I can’t believe it, we won, we actually won!” Noel Espinosa texted, you texted, and others. I thought you were playing a joke and had all these people in on it!

Talk to me about Elmo and Todd, the show’s re-recording mixers.

They have such a great sensibility and ears and we’ve been able to keep each other in the loop on almost everything. I could just tell by meeting them that they were going to be great to work with. And those guys are always so accessible. If there’s any kind of question—“Hey, I’m gonna try to get away with this, what do you think?” And they’re forthcoming with their opinions. They couldn’t be more competent or nicer guys.

Do you want to talk about what it was like shooting the winning episode “Hooli-Con”?

I could talk about the episode. That was a bear! I’m sure a lot of people can commiserate with this. We were shooting in the conference center downtown, and using their practical lights—which are up high and cast about 20 to 30 shadows around everybody. So Chris and Corey boomed all of that crawling around on the floor from below, boom poles underneath tables, popping in plant mics. But we boomed it! They are so good at what they do … just figuring it out as we go.

But the location’s practical lighting kind of forced that in a way?

That … plus it was not a quiet location. No matter how stressful it was, we all still managed to have fun. It was the end
of the season and we were all a little tired. Five days of rest and then we were right back onto a show called Barry, another HBO show that just premiered.

What are some of your favorite pastimes outside of work?
Well, my wife and I are big campers and hikers. She used to be in the business and she transitioned to teaching, which she loves. And when she gets her time off in June, we normally head up to the mountains or the coast or we see family up in Northern California. We’re also both big cooks, my wife and I, and we do almost everything together.

Toward the end of The Office, me and a couple other people on that crew started brewing beer. So, I fill up my crews’ growlers on Friday morning with whatever I’m making and Chris and Corey can give me notes. I’m sure some of it hasn’t been great but they never complain. I think I’ve been doing it long enough that some of them are drinkable. I may have five gallons of an experiment that they’ll have to help me motor through it. It’s still beer!

Is there anything that you wanted to add, anything you want the readers to hear?
I didn’t get to give a “Thank You” speech. I just want to say how much I appreciate winning the award. I don’t feel like I am any better than anybody else and I have a great amount of respect for everyone who does the same job. I feel a lot of camaraderie nowadays, more than I did 20 years ago.

But I’m sure it’s great to get recognized by your peers. They know what it takes and they pick the person who should win this go-round.
Yeah, I’ve received some Emmy® nominations, which was great but those people aren’t as tight of a peerage as CAS.

How do you listen at home?
I just use a Marantz AV system with a stereo pair and I bought a really nice center channel. Because the center channel is where your and my work lives.

Yeah, if it sounds good to your ears, your ears are very discerning, so it’s probably good.
Hopefully my ears stay that way. A lot of this game is how much longer you’re going to be in it. I like to think I’m two-thirds through my time but, at the same time, I can’t think of anything else I’d want to do. Other than teach—I like teaching, but maybe not full time.

Elmo Ponsdomenech & Todd Beckett:
Re-recording Mixers

Now it’s a bustling Thursday and I’m rolling up to the Sony lot to talk to re-recording mixers Elmo Ponsdomenech and Todd Beckett. I head across the lot to their dub stage, where they are knee-deep in a mix for a Season 5 episode of Silicon Valley.

Elmo, where are you from, where did you attend school and when did you arrive in Los Angeles?
EP: Born in Boston, raised in San Antonio, Texas, went back to college in Boston, then came to LA. I’ve been in LA since 1986. Boston until I was five, Texas until I was 18 and back to Boston to finish college and then LA since 1986.

What about you Todd?
TB: I’m originally from Canada, Toronto. I moved here 10 years ago.

Elmo, what did you end up studying in college, specifically?
EP: I went to Berklee College of Music. There were some music production and engineering classes involved as well as acoustics. I also did some recording when I was in college, but I was more on the performance side of things. I started mixing out of necessity because I wanted to get my songs and my bands recorded. A friend handed me the keys and said, “You can use the studio as long as you don’t ask me any questions, the manuals are over there…”

Todd, what did you study in college?
TB: I went to a trade school for producing and engineering, sort of like Elmo, only my plan was to sit behind the desk and work in records, which I started in, and then I did a lot of live sound. And almost the same thing; necessity was if I’m going to make some money, music is not going to be it.

A loaded question but, how does Silicon Valley compare to other shows that you guys work on?
EP: Essentially, they don’t like too full/busy a mix, generally, in terms of backgrounds and other activity other than what’s on camera, it’s primarily dialogue and music, except when it serves the comedy and the plot of the story. Over the years, we’ve been able to get into the heads of Mike Judge and Alec Berg and see, basically, how they serve the jokes and the gags. The story pops to the front and there’s not a lot of distraction unless you’re meant to be led by it. They’re very good at the way they set
"A STUNNER, START TO FINISH."

FOR YOUR EMMY® CONSIDERATION

OUTSTANDING SOUND MIXING
FOR A COMEDY OR DRAMA SERIES (ONE HOUR)

OZARK
things up with sound. They’re both very clever people, very smart writers and directors. They know what they’re after.

So, were you guys surprised when you won? I know Ben Patrick was.

TB: Oh my God!

EP: Incredibly! You have no idea. I literally sat back in my chair and went, “Oh cool, let’s find out which of my buds won this year.” When they said our name, my wife looked at me, and I said, “They didn’t just call our name.”

Ben couldn’t be there because he was actually still shooting the last episode of the current season.

TB: Which is a bummer because we’ve been all together for all of them.

EP: It so happens that this episode was a little busier than most. It was on location at a convention center. There was stuff going on that’s way more than the average Silicon Valley.

Did you approach it differently?

EP: In cases like “Hooli-Con,” we were pretty sure we were going to get away with playing a fuller show. They let us run with it. They wanted it to be busy and a little crazy. That’s what made that episode fun. They all make us laugh, man. They’re funny episodes. The writing is really good. We’re lucky we get to work on it.

TB: There was a point during the whole opening, it was big and windy and crazy and I don’t think we underplayed it but I remember thinking: “Are we going to get away with more?” And, by the time that thing was over, we ended up going farther, which was great, because sometimes you’re just suppressing a little. There were a few things that got thrown in on the stage just out of nowhere.

Elmo, who are some of your influences and/or mentors or both?

EP: Joe Hostetter at Berklee College of Music, who was a professor of music production and engineering. He taught an acoustics class and that was a big influence on me because it got me into the science of sound. As far as mixers: Ray Vaca & Mike Abbott while we were at CBS Television City. Chris Jenkins at Todd-AO gave me my break to mixing features with Gary Bourgeois and Scott Millan. I look up to both of them very much and learned a lot from them. I learned some tricks about how to organize large sessions from Anna Behlmer, who started mixing around the same time I did at Todd-AO. Gary Alexander, who I sat next to as an effects mixer. If you watch what the man does and did, he was carving ... he was a sculptor, very talented. They were models for me as dialogue mixers. Dennis Kirk, who I sat next to for a long time, he was a music mixer in the three-man mixing team days. Dennis had done a lot of great records that I admired. When I was in college, I was listening to Jackson Browne and he was the guy who recorded those records. Dennis just had great ears. He had just a fantastic sense of sound, and I learned a lot from and had a lot of fun mixing with him. We’ve remained friends for a long time.

Todd, what about you?

TB: I had a guy that I interned with who is still quite active. He records concerts all over the world and I started working with him on a remote truck. I learned a ton from him, even just outside of the job, just dealing with stress and people. Then I ended up at what used to be called Film House in Toronto which then became Deluxe. And there were a couple of very senior guys there that took me under their wing that mixed things like A Christmas Story. They’re big names and I spent a lot of time working under those guys. They brought up a number of people, but I’m working on a stage where Paul Massey spent a bit of time, and Gary Bourgeois. Keith Elliot and Dave Appleby are the two guys in Canada that were big for me.

As we were walking up, you were saying that you guys were big fans of Ben Patrick, the production mixer. Can you expand on that?

EP: Ben is a team player. Right from the beginning, he introduced himself to us and we’ve just had a good rapport over the years. If any problems come up, we know that information is going to get back to us. He’ll just drop an email saying, “Just so you know, on this set for this episode, you may have trouble with this.”

He keeps you informed.

EP: But he’s just really communicative and a nice guy and very talented. It’s been a good team. I grew up with seeing a little separation between the production mixers and the re-recording mixers. Ben is a stellar example of the kind of relationship I wish I had with all my production mixers. He’s fun to hang out with and records some great sound and he cares, you know? He’s aware when there are problems and tells me what they’re doing to resolve them. He’s the real deal. And the producers are aware. The producers are very sound-savvy. Mike Judge is a musician himself, so he gets “sound” and he has great ears. They always shoot booms and lavs so that we have the option. It’s time for Ben to get an Emmy. I just thought I’d throw that in there!

What kind of gear are you two using?

EP: We’re in a transition right now. I don’t know if you noticed, we have small Avid S6s sitting on top of the Harrison next door. We mixed that episode and the last four seasons on a Harrison MPC4-D digital film console. iZotope is my friend. Actors can sometimes have chunky quirks. You hear sinuses, you hear weird things. Good mic’ing doesn’t always bring out the best sound in people, or they are quiet with poor signal-to-noise. I live in iZotope. I freaking love it. It’s changed our world in a lot of ways and especially now that even the booms are wireless, right?

Oh yes, 100 percent. At least, that is the case in my world.

EP: So there are still artifacts that come with that occasionally. So iZotope has been great for cleaning that up. We use it
occasionally for an EQ match when there are different sounding microphones between ADR and production. The setup is different this year than last year, but I was mixing with Rupert Neve Design’s Portico II Channel Strip at the end of my chain, which is a beautiful warm-sounding analog Neve Design device. And other than that, it’s not too different from what probably most people in town are using.

**TB:** A lot more nonlinear, too, which actually buys you some time. I have to spend some time de-clicking and de-noising and working on the dialogue, and now I can go offline and tweak and do some housekeeping with the tracks and then jump back on and be a little further ahead.

**Is two days about average for a Silicon Valley episode mix?**

**EP:** We basically mix it the first day. Playback for the picture editor at the end of day one, do the fixes for them, the co-producer and us the second morning. Then Mike Judge and Alec Berg come in and we play back for them. We spend the rest of that afternoon doing their notes and then there’s a final playback for HBO at the end of that day.

**What do you like to do in your non-work time?**

**EP:** I play guitar. I like to hike. Man, there are so many things. I like to get outside.

**TB:** Anywhere that’s not a dark room with people sitting behind you!

**EP:** Bam, what he said! You got to have sunshine. I think we’re both that way!

**Is there anything else you would like to mention—that you want the readers to hear?**

**EP:** “Thank you very much to the CAS! We’re seriously grateful.”

**Todd, is there anything you want to add?**

**TB:** As an effects mixer, you want to work on really busy, huge shoot-em-up sort of projects. This has been a great exercise in minimalism and keeping things simple and to the point, there’s always something to be learned.

**EP:** Finesse.

**TB:** It really is true what they say, that comedies are pretty hard. And it’s amazing how many different ways you can play something and then to sit and hear Alec or Mike just make a decision on something and then you think, “Wow, incredible!”

**EP:** I wish I’d said this when we accepted our award: I am hyper-inspired by all of the other nominees in all the categories. These are people that have been raising the bar for years and some of them are friends, some of them grew up with us and all of them are doing excellent work. There is an inspirational aspect to it and there is a competitive edge to it and both are healthy. It makes us work harder.

**TB:** I would say, too—a shout out to Matt Taylor and his crew because when the tracks come in great shape, it just gives you that much more time to play and you’re not doing damage control. You’re already there.

**EP:** We should also mention Sean Heissinger and David Barbee, who are respectively, the dialogue and effect editors.

**TB:** And Joe Deveau, music.

**EP:** Yes, our music editor who is—man, an incredible editor and our composer, Jeff Cardoni.

**TB:** A machine.

**EP:** Joe has to cut stuff on the fly all the time. For example, “I don’t like the way this cue ends here, I wish it went darker here.” Composing notes … He does them live on the stage and a dozen times an episode probably. He’s ridiculously talented. When you have a show that has this short of a [mixing] turnaround, it’s huge because we couldn’t get it done otherwise. We’re big fans of theirs. So yes, they’re really a talented bunch and did a great job and we’re lucky. They made our lives easier.
Rolling Stone: Stories from the Edge
by Matt Foglia CAS

HBO’s Rolling Stone: Stories from the Edge walks us through the origin of the magazine with archival interviews and footage (seems like a camera was rolling on most days), along with recent interviews of those who were involved and those who were influenced. Interspersed with performances relevant to the social and cultural changes being discussed, the doc opens with Jimi Hendrix doing a great version of “Like a Rolling Stone.”

The inspiring stories of the writers—such as the Cameron Crowe section—rekindles some of that initial passion for art—whatever art that may be.

Our art is sound and, through our CAS Awards, we recognize the achievements of our peers. Here, we get to meet first-time winner Tom Tierney and speak again to multiple CAS Award-winning re-recording mixer Tom Fleischman CAS. (Production mixer David Hocs was, unfortunately, not available.)

Tom Tierney: Production Mixer

What’s your background relative to audio?
I got into recording audio through playing music in my hometown of Newton, MA, just outside Boston. I’m an electric guitar player, which sometime in high school inspired the elusive “Tone Quest.” I got my hands on a cassette 4-track sometime in high school, and quickly that turned into an 8-track, and so on. I started recording my band and local bands and projects, and quickly got the bug.

Did that lead you to study audio in college?
I went to Sarah Lawrence College, where I studied music. I focused on recording and production outside of class and in independent studies. It was a very small school, and there weren’t many other people who were recording, so most of the people I knew who wanted to make a record or a demo didn’t have many options! It turned out that being in this tight-knit music department led directly to working a ton and gaining a client base of friends and peers—something that could otherwise have been difficult if I were in a program surrounded by other recordists.

What did you do after college?
I moved to Brooklyn in 2008 to start a recording studio with friend and fellow engineer, Alex Mead-Fox. That year, we founded our studio, Spaceman Sound, which was then located in Bushwick, and is now in Greenpoint. Quickly, word of mouth brought in a whole new community of local Brooklyn musicians. I spent years doing very little outside of bungling over our desk, recording, mixing, and mastering records of all kinds—rock, jazz, folk, metal, punk, classical, etc., and at this point, I’m lucky to have recorded some of my favorite New York artists.

Sounds like you had some good times working with music. How did you get into the sound for picture side?
Soon after opening Spaceman Sound, we branched out from music into recording VO, ADR, and sound design, which was my first foray into sound for picture. Then my wife Kara Elverson started producing her own films, and I began doing production sound on a few of her and her friends’ shoots. Meanwhile, my friend and Spaceman Sound studio partner Patrick Southern had begun his career as a production mixer. He was very helpful in pointing me in the direction of the right gear to use, and proper booming and wiring techniques. Patrick started throwing me jobs that he wasn’t available for, and I immediately loved the work and pursued it more and more. I had spent so much time thinking about mic placement, eyeballing acoustic reflections, and avoiding phase cancellation in the studio, so it was really fun to be able to actively manipulate the microphone in a way that you can’t during a take in the studio.

So you started out handling all aspects of production sound yourself?
I started in a solo run and gun, boom and bag, scrappy indie kind of setting. I did a handful of jobs as a boom op for Patrick Southern a couple of years into working. Those shoots were fun because he and I had worked together for years in the studio, and could communicate quickly and efficiently. It was also fun
because they were big commercials, and I hadn’t been on those 50-person sets before. I enjoy doing boom op work, but after years of working in the studio with 20 to 30 mics out at a given time and sending signal all over the place, it felt more normal to mix. These days, a lot of my work continues to be boom and bag, a nice combo of having fun with the boom but also overseeing the whole audio scheme.

I see that you’ve worked on a number of documentaries. Is that a conscious decision or where things have led relative to clients you’ve come across?

Working in documentary was definitely a conscious decision. I love working on docs. For vérité style work, it’s exhilarating knowing that anything could happen, and the adrenaline of having to roll with the punches and try to get the best sound possible amidst the chaos can be really satisfying. The other side of docs is the sit-down interview, which I enjoy because sometimes it feels a bit like recording a musician or singer. Interviews are great because, if someone is being interviewed by a film crew, they likely have something interesting to say! Whether or not I agree with what’s being said, I feel like I’m always learning something.

How did you get the call to work on the Rolling Stone project?

I got the call to work on Rolling Stone: Stories from the Edge because I had worked with one of the film’s directors, Blair Foster, on a previous film that she executive produced for Netflix called Get Me Roger Stone. I remember clearly when she asked, “Are you free next week to interview Bruce Springsteen?” You can guess my response! That was the first of many interviews I worked on for the film. I had a blast on Rolling Stone with Blair—she is really a master at getting great answers out of the interview subject.

What’s your go-to setup for recording interviews?

My main mixer is the Sound Devices 633. It really has a huge sound in a small package. My go-to boom for interviews is the Sennheiser MKH50. I love how larger-than-life it can sound. When it’s in the ideal focal point, there’s just nothing like it. In a wider frame, I’ll use a Schoeps CMIT 5U. For wires, I typically use Sanken COS-11d into Lectrosonics wireless.

When recording interviews, I’m always trying to create the ideal situation for the boom to live in. I typically bring one to several sound blankets and some grip gear to suspend them out of frame where possible, so I don’t have to dip into the DP’s grip gear. The goal is usually to kill as many of the first reflections as possible. Recently, I’ve been using smaller strips of blankets that are black on one side and white on the other, so when camera would otherwise use duvateen or a reflector, I can offer a sound blanket to put there instead (if they want). I find this allows me to get dampening as close as possible to the contributor while help serving the goals of the camera crew. Teamwork!

On your website (www.TomTierneySound.com), there are shots of you gathering sound effects and recording live music. Tell us about some of your non-production sound work.

I really enjoy recording sound in unconventional situations, for film, music, podcasts—whatever it is. I recently worked on a piece for BBC radio about echoes. There’s a bridge near where I grew up in Massachusetts called “Echo Bridge” which has an echo so robust that it regenerates and gets louder after the seventh or so repeat (I’ve heard up to 20 repeats on loud transients). So I schlepped a rig to beneath this bridge and
made a bunch of racket for the BBC. I also have done a lot of stereo field recordings for sound design work, like recording waterfalls in New Zealand or a beach in Maine or the NYC subway. I’ve gathered a modest library of my own sounds, and I love using them in sound designs because every time I use one of my sounds instead of stock stuff, it transports me to where I was when I recorded it.

I also do a fair amount of on-location music recording. It’s a nice marriage of my roots as a music recordist and production work. So whether it’s multitracking a concert or recording a band in a field for a live video, it’s fun to use techniques and equipment from both disciplines together.

**When you’re not working, what do you enjoy doing?**

When I’m not working, I enjoy spending time with my wife Kara and with friends and family. I still play as much music as my schedule will allow, which is a cathartic balance to the rest of life. I am truly passionate about this work, and often when I get off the clock, I just start thinking of the next shoot, recording or mix. Healthy? Who’s to say, but I don’t know any other way.

**I see you went out to the CAS Awards. Did you have a good time?**

I loved attending the CAS Awards. It was really a dream to be in the same room with so many distinguished members of the community. I met some folks that I definitely intend to keep in touch with. It was a night of great conversation! I truly enjoyed meeting Gordon Moore, president of Lectrosonics. What a kind man. The CAS Awards ceremony was really life affirming—there were so many great people who were all there in service of sound and fostering a community around it. I loved every minute of it.

**Tom Fleischman CAS: Re-recording Mixer**

Your father Stephen was a documentary filmmaker in the sixties—with a number of them focusing on music. Did his work have an impact on the teenage Tom Fleischman?

My father’s work had a great impact on me. He was a writer/director/producer for the news divisions of both CBS and ABC television. In those days, the network news divisions were separate from the entertainment divisions and the networks were required to produce content “in the public interest.” Part of that was the production of hour-long documentaries on a wide variety of subjects. My dad traveled a lot. He went all over the world shooting his subjects and spent countless hours writing the scripts. One of the things he taught me about documentaries was this: “You’ve got to tell ‘em what you’re going to tell ‘em, then you tell ‘em, then you tell ‘em what you told ‘em.”

His shows covered many topics but several of them were about musicians and the music business. Music was big in our household and as a child, one of my favorite things was pushing the red button on the record player (which started the record playing) and recording things on our reel-to-reel tape recorder. My parents took my sister and I to concerts and to many Broadway shows. In grade school, I took clarinet sessions but never really took to that instrument and gave it up after a few years. I didn’t play another instrument until taking up guitar in my mid-50s, but music has always been a big part of my life.

**Early on, before turning to sound, you apprenticed for your mother (renowned film editor Dede Allen). Aside from the obvious exposure to the technical process of how film editing works, what did you learn from her during this time?**

With both parents being in the industry, I absorbed a lot of the day-to-day politics of the cutting room listening to discussions over the dinner table, but I think the most important thing I learned from my mom was to just show up, be dedicated to the work, and do the best I could at whatever task was in front of me. I spent a fair amount of time growing up visiting her workplace. I went with her to sets during shooting, to her cutting room when she was editing, and a number of memorable visits to her mixes. She mixed many of her films with Dick Vorisek, and I visited his mix stage at Reeves Sound Studios on several of her films. I can remember one time visiting the mix on one of her films and during the lunch break, I got up on Dick’s chair and started fiddling with the console. Dick was in the room and when he saw me he said, “I don’t mind you doing that, as long as you put everything back just as it was when you started.” This was in the days before console automation and that memory came back and stuck with me when I began to learn about mixing.

**Since you had been working in film editing with your mom, was it while attending NYU’s School of the Arts that you became interested in sound?**
FOR YOUR EMMY® CONSIDERATION

OUTSTANDING SOUND MIXING

""USS CALLISTER' IS A MASTERPIECE.""
I didn’t really become interested in working in sound until I got a job in a sound studio. At NYU, I was looking forward to a career in directing, acting, or film editing, but academia wasn’t for me and my time at NYU was short. I knew I wanted to work in the industry and I had the family connection so, after two semesters, I dropped out and began looking for work. This was in 1970. There were no editing jobs for me at the time but one of my mother’s assistants told me about a small new sound effects house that had opened in the Brill Building and recommended me for a job. I was hired by Elisha Birnbaum at Image Sound Studios, which later merged with and became Sound One. After working for two years at Image building a sound effects library, selling sound effects, and recording effects, narration, and Foley, I was hooked on sound and I’ve never looked back.

Legendary re-recording mixer Dick Vorisek was one of your earliest sound mixing mentors. You mentioned meeting him during one of your mother’s projects, but how did you develop a relationship once you were working in the field?

I had met Dick as a child when I visited my mother’s mixes, so he knew me. After working at Image Sound for two years, I was offered a job at Trans Audio. Dick had left Reeves and he and his brother Jack went into business with another partner and opened Trans/Audio in 1972. I was hired in 1973 to work in the transfer room. I was able to join the union, which was a big thing for me and worked doing all kinds of transfers for six years before I started mixing. The best thing about working at Trans/Audio was that in my free time, Dick allowed me to sit in on his mixes and observe. I learned a hell of a lot just doing that.

You must have learned and proven yourself pretty well because, at the age of 30 and with only a couple years’ credits, you were nominated for an Oscar® for Reds. What do you remember about that time?

I began to do some mixing in 1978. I did sound effects pre-dubs on The Wiz, and mixed two feature documentaries, one for a very young Errol Morris. Then in 1979, I got to do my first commercial feature film, Melvin and Howard for Jonathan Demme. That was followed by two more features and then we began work on Reds. In New York at that time, mixers generally worked alone. We didn’t have two- and three-man mixing crews like they did in Hollywood. But Dick had survived a heart attack and was under doctor’s orders to work no overtime. So I became his second chair on several films, Reds being the first (and again a couple of years later when I first worked with Martin Scorsese on The King of Comedy).

Working for Warren Beatty (and Scorsese) meant working overtime. Warren wasn’t a morning person so Dick would clock out at 6 p.m. and I would stay and work into the night. Reds took four months to mix and the sound crew was the biggest in New York history. Then we got nominated for an Oscar. I was so thrilled I couldn’t really believe it had happened. It was the first time a New York crew had ever been nominated for Best Sound. Going to the Oscars was a wonderful experience. We lost to Raiders of the Lost Ark and I was crushed, but at the Governor’s Ball that night, Jack Nicholson said to me, “Don’t be upset that you didn’t win. If you win, everyone thinks your price went up and no one calls you.” That made me feel better.

Since that first nomination, you’ve received the highest of accolades from your peers, including Oscar, Emmy®, CAS, and BAFTA Awards. Reflected in those is a diverse catalog of material spanning multiple formats: documentaries, music programs, scripted TV, film. Diversity like that—at that level—is very rare for re-recording mixers. Do you feel being New York based allowed for you to attract all these different genres?

Yes, I think it did. During the eighties and nineties, there was very little television being done in New York, but there was a lot of documentary and independent feature work and there were a number of mainstream New York-based directors making features who kept the small number of New York re-recording mixers busy during those years. I had the opportunity to work on a wide variety of projects, and this is a big reason why I stayed in New York and never moved west despite a number of attractive offers. New York was my home and I loved it here. The film community was small and close-knit and everyone working here was incredibly dedicated.

For your last CAS Award win (for History of the Eagles), you were mixing on the Euphonix System 5. Is that still your console of choice?

I am still doing most of my work on the System 5, but in the past couple of years, I have done more and more in the box—both on the System 5 and also on D-Command and Icon. I have yet to work on System 6, but I look forward to moving to one of those one day soon when the System 5 tech support ends.

How does your setup change when working on a cinema project compared to something like Rolling Stone: Stories from the Edge? Are you still using multiple Pro Tools systems for playback and print?

Yes, we still use multiple Pro Tools and the setup is basically the same. I think the biggest difference is that I rarely do any pre-dubbing on documentary projects. Just put up the tracks and mix them. Obviously, feature films provide a lot more time and there is a lot more attention to detail on a feature film compared to documentaries or series television.

Are you doing playback of the stereo with client in addition to 5.1?

I don’t generally use stereo monitors unless it is requested. I’ve been working in the room at Soundtrack long enough to trust how it’s going to translate to small speakers, so I work almost exclusively in 5.1 on documentary and television projects.

As you stated earlier, you began mixing in 1978, which is reflected in your IMDb credits, if you could travel back to that time 40 years ago, what advice would you give to the young Tom Fleischman?

Protect your hearing, floss daily, and don’t take yourself too seriously.

Thanks for taking the time to chat, guys—and congratulations!
MEET THE WINNERS

Student Award Winner
Xiang (Lisa) Li
by Peter Damski CAS

This is the fourth year that the CAS has given its Student Recognition Award. The award this year was presented to Xiang (Lisa) Li from Chapman University in Orange, CA. I have spent the last 10 years working as an educator in the field of sound design. It had become obvious in my classrooms that there are many more women who have taken an interest in the field. I have had the pleasure of working with some of these talented women and have nothing but respect for their desire to move into a field that has traditionally been served by men. Lisa is a strong example of this trend. Not only is she a woman, but she is from Beijing and has the language barrier to contend with as well. I had the pleasure of viewing Lisa’s introductory video and I was entertained and informed by it while getting to know a little about her background and future goals. Lisa is currently serving an internship at a post house in Los Angeles and she was able to work with me on this interview between projects.

When did you first discover your love of sound and how did that direct your life to get where you are now?

I played the piano for 15 years, since I was 4. Music had such a big influence on me that, when it became time to finish high school, I knew that I had to do something in the field of music (sound). My father was the one who suggested I go into sound for film. (He was a photographer and cinematographer.) He told me I could do a great job if I know how to use my music background appropriately. The sense of rhythm and pitch would be the best tools helping me while working. That’s how I decided to give it a try. During my time in college, I met so many talented young filmmakers in China and I found I was in love with what I was doing, so I chose to continue doing sound. After I graduated from college, I didn’t feel I was ready to go into the professional film world in China. Besides, I always had a “Hollywood Dream” since the time I became a film student. After talking with my parents, I was lucky enough to have their support and got my US journey started with Chapman University.

How did your education in China compare to your advanced degree in the US?

I think four years of college study at Beijing Film Academy taught me the general knowledge of not only about sound, but everything about film. It is very necessary to have a basic understanding of sound/film before you really get in touch with the actual filmmaking process. I helped some of my Chinese friends shoot their own shorts during college, but since the film industry is different between China and the US, it still took me some time to get used to the American way of filmmaking. Chapman University gave me a lot more chances to work on short films. Based on my experience and what I’ve learned from college, I felt comfortable even under a high pressure. I did more than 30 films in three years (including production and post). To me, Beijing Film Academy was like the bones of the human body, and Chapman University is more like the blood and skin. Two schools together make me a sound person now.

Has the language difference caused much difficulty in your time here?

To be honest, working by your second/third language sometimes can be really painful, especially at the very beginning. But I’m glad I made so many American friends and they were very patient with me when we had difficulties communicating. They not only helped me with my English, they also taught me a lot about American culture, which is actually much more important than just learning the language itself. Luckily, I feel much more comfortable and confident now.

Do you see yourself working in production or post now that you have completed your degree?

I would say I like doing post better, this is also what I’m doing right now.

How did you arrive at that decision?

There’s not any specific moment where I made a decision of doing post. But during the time I spent at school, I figured that I enjoyed sitting in front of the computer and listening to the sound I made. Working in post makes me feel that I have more
control and allows me to be more creative. Those plugins and apps are like an ice cream machine which I can throw all my ideas into and get the ice cream that I want.

Will you be returning to China for work or do you intend to stay in the US?
Getting a job in Hollywood is every film student’s dream, as it is mine. And I’m always excited to learn new things. To me, I believe the US is the place where I can learn the most right now, so I would be really happy if I could have a chance to stay. Meanwhile, the Chinese film industry has grown up quickly in the past a few years, and chances there are very good, too. All I’m thinking now is I’d love to go any place where I could learn new things.

What do you feel was the most valuable part of your education?
I really appreciate that Chapman had provided us with so many chances to work on short films at school. Nothing would teach you more than doing it by yourself. From doing student short films, I became familiar with different kinds of production equipment, software, plugins very quickly. Although sometimes it was so crazy during finals week that we barely had time to sleep. But all the crew members spent the hard time together and we became good partners, and good friends at the end.

Is there anyone you would like to thank?
There are so many people who have helped me during my long journey. First of all, I need to thank my parents. They financially supported me so that I could have this chance to study in the US and meet so many amazing people. They always have my back no matter what I’m doing and where I am. I also need to thank my mentors at Beijing Film Academy and Chapman University. They are truly enthusiastic with teaching and there’s no way I could be what I am now without their help. Last but not least, I have so many great friends that gave me support when I was tired. Being alone in a foreign country sometimes can be really hard but with my friends here, I feel like I have a second home.

I met Lisa on the night of the awards and she greeted me with a big smile and a firm handshake. Four out of the five students nominated this year were women. I was very honored to have had two of them as students. I am enthused by their intelligence, drive, ability, and political finesse in a traditionally male-dominated industry. There are challenges ahead for all of these students as the world shifts to increased automation and decreased attention spans. The good news is that it is becoming apparent that there are many talented students out there and that the future is bright for our industry as a whole.
Outstanding Product – Production
Sound Devices MixPre-10T

by G. John Garrett CAS

Sound Devices took home the prize for Outstanding Product in Production Sound this year, among a field of elite contenders; DPA (DPA Slim), Lectrosonics (Duet Digital Wireless Monitor System), Sonosax (SX-R4+), and Zaxcom (ZMT3). The MixPre-10T comes away as a surprisingly powerful, lightweight, affordable mixer/recorder that fills the niche between high-end competitors with all the bells and whistles and budget recorder/mixers.

With the success of the MixPre-3 and MixPre-6 last year, Sound Devices thought it would be great if they could get eight of their mic preamps in one mixer, with a TC generator and USB interface built in. They were looking for something a little more professional, feature-wise, than the MixPre-3’s and MixPre-6’s. Its price point made it somewhat more accessible. It can be tossed on the cart and rolled throughout a production or tossed in a bag for an ENG type of job.

I got a chance to ask co-founder Jon Tatooles about the Sound Devices philosophy and how they came to develop the MixPre-10T.

How did you get from the 302 to the new MixPre’s? Do you start making a list of new features you’d like to see as soon as you’re done designing something?

Our core customer is the professional who does dialogue and FX for film and television, a deep discipline, inch-wide, mile-deep kind of world. And over the years, we have acquired a lot of knowledge about that user type and the workflow, and what’s required to be successful doing that. And what we saw behind the motivation for the whole MixPre line is that there’s this other area of production happening, where they may not necessarily do this as their livelihood, but they also want to have best-in-class tools. And they want to have high-quality mic preamplifiers, and high bit rate recording, and what they may not necessarily need are all the nuanced tools that something like a 7 series or 6 series has to manage—the hundreds and hundreds of clips that get generated in a typical day of professional production.

These tools came out as products that were intended to be best in class for an application segment. They happened to come out at a very competitive price point ... it’s not that we said, “Let’s come out with a low-cost product.” We know that we want to have a broader reach to folks that may not know about Sound Devices or may be considering Sound Devices, but it’s outside of their realm of possibility, so let’s bring that product to that new category.

It really started with the 302, didn’t it?

What we saw with the 302 for many years was a lot of camera ops wound up buying 302’s and kept them in their kits as an analog mixer. What we’ve seen is that the definition of a high-quality mixer has evolved and high-quality field mixer, at this point, more or less includes a recorder. So what we were able to do with these MixPre’s, a lot of this is driven from the general upswell of capabilities of the parts that are available. We have such powerful tools, from a computational standpoint, that are available at low power and at reasonable price.

It is remarkable that you can build something so powerful and sell it at the price you do.

These products are far more software-intensive to develop than they are hardware-intensive, and we made many compromises to bring this product to this price point. But those compromises were in areas where the non-professional would not be impacted. They may not need to have AES42 inputs for their SuperCMITor AES out, for instance. Things they won’t miss. The display and controls are smaller. As a consequence, these products wound up being lightweight and cost-effective, and what we ended up seeing is that professional customers began using these as a secondary kit. They wanted an ultra-lightweight rig with a couple of wireless and the MixPre-6. Then the MixPre-10 was part of that development all along, and then we were able to add a timecode generator and bring it in at a $1,700 price point. For us, that’s a pretty exciting price point to be able to bring our professional products to. This allows us to get into those not
full-time professional applications and have somebody use no-compromise audio inputs, analog limiters and all those tools that professionals expect, in a product that has the right compromises for them.

**How did you decide to do a 3, a 6, and a 10?**
From the earliest days, small was always something that was important to us. The 744T represented the next thing after DAT, and we came with the 744 and the goal was let’s have as small a product as we can that has all the capabilities of DAT plus a couple of extra channels in this file-based world. We’ve always been attracted to keeping things small because we know many of our customers are working out of a bag, and we’re really conscious of that. We also see the world of cameras and the visual side getting smaller and smaller. That, to us, is important. For us to have products that are consistent, lightweight, capable. When we said, “Let’s come up with a product line,” we wanted something that was a boom and a couple of wireless. That was the MixPre-3. Then something that was the classic four-input. That was the MixPre-6. And the MixPre-10 is the classic eight full microphone input device to bring to a new customer.

**But your existing customers recognized the MixPre’s right away, didn’t they?**
We’ve also seen that existing customers have gone down this path as well because this is something they want to add. The things that are exciting are that we’re able to put timelapse and eight Sound Devices great mic pre’s in a super-teeny product. Again, there are compromises that, for its target customer, may or may not be an issue. Also, what it represents is a capability for us to engineer and build a product with so few of those compromises at that price point. It also represents a tell of what we’re capable of doing in future generations of our full professional products.

**It seems natural that once the Mix-3 was done, it was not a stretch to build a 4-input and 10-input model.**
Not minimizing hardware design, as it’s something so core to our ethos, and that has come out of Matt Anderson from day one. But what we’ve also seen is that it’s a world of software. The first microcontroller-based product we did was the 302, then the USB Pre and the 744T. That was a super-challenging product and, frankly, some of the earliest versions of 744T firmware were really pretty rough, but we were absolutely committed to making these products as robust as they could be. When you look at where the MixPre is, from a software evolution standpoint, we are building products that are so far more capable and robust compared to the professional products from 2004. You see the evolution of the company, you also see an evolution in the industry and the computational power that’s available for manufacturing. That’s the exciting thing. It used to be that professional products led the consumer world and now, in many ways, the consumer world is where some of the highest technology ends up first because it has to be made at such scale, and we’re able to take advantage of that.

---

**Alexey Lukin:** The problems are getting harder with each version of RX. A lot of the conventional algorithms that we used in RX prior to RX 6 have been based on the same kind of approach: The programmer has to explain to RX exactly what to look for and how to identify the problem on the spectrogram or in the waveform. Once the problem has been identified, the programmer writes an algorithm, step-by-step, for removing the problem.

This method worked well for five versions of RX. But it became very difficult to explain certain problems, like...
machine microphone rustle, to RX. That’s where we came to the limit of our explanatory skills. It’s easy enough with some problems, like clicks, which you can identify easily as vertical lines on the spectrogram, to write a program like De-Click. But if you’re looking at problems like lavaliere microphone rustle, you will quickly come to the conclusion that it looks very much like speech on the spectrogram. They have a similar frequency range and both often occur in bursts. Visually, rustle often resembles speech sibilants. So, instead of trying to write a step-by-step rustle removal algorithm, we’ve decided to let the machine itself learn the differences between rustle and speech.

**CAS: What is Machine Learning?**

**AL:** Machine Learning is a technology that allows us to skip the task of explaining to the machine, step-by-step, how to solve a certain problem. All you need to do is show the machine a lot of examples of speech and rustle—and it begins to make connections on its own to identify which shapes on the spectrogram look more like speech and which look more like rustle. Once it knows which shapes are speech and which are rustle, it can attenuate only the rustle portions of the spectrogram.

**CAS: How does a machine learn?**

**AL:** In order to train the De-Rustle module, we made two databases. The first was of clean speech, many hours from different sources. We found as much clean speech as we could, because we needed to show the machine a great variety of desirable results (what clean speech looks like).

The second database that we collected was all sorts of lavaliere microphone rustle. This is where we got into trouble because there is no known database of isolated lavaliere microphone rustle. So we had to do a lot of in-house recording of rubbing all sorts of microphones against different kinds of clothing. Our sound designer did it for us for several days.

Once we got those two databases in place, we started training the neural network to recognize the patterns of speech and those of rustle. The neural net is like an artificial brain with neurons that receive, process, and output information. The process of training adjusts connections between neurons to constantly improve the rate of recognition. Like a baby who learns to connect sounds into speech, the neural net, with enough training, starts to identify phonemes, words, and sentences.

Our neural net has about 10 million neurons. That’s a good-sized brain, for a frog!

We train the neural net by randomly combining segments from the speech database with segments from the rustle database in all possible combinations. This ensures that the neural net sees a great variety of real-life mixes during training, and always knows the correct answer (the clean speech).

Over time (and millions of examples), the net starts to see the differences between rustle and speech. After it’s trained, the neural net can be deployed on the user’s machine to be run locally.

**CAS: Which other RX modules incorporate Machine Learning?**

**AL:** Currently, the only modules in RX 6 that are based on Machine Learning are De-Rustle and Dialogue Isolate.

Dialogue Isolate removes non-stationary noises from speech. Such noises are often difficult to identify on a spectrogram. Although in RX, there are a lot of ways to identify problems and separate noises from speech, none of the traditional ways work well when you have a non-stationary noise in a mono signal. This is where Machine Learning helps us because the machine can learn what typical speech looks like.

Machine Learning incorporates the concept of generalization. It’s impossible to show the neural net every possible combination of speech and noise it may see in real life. But after seeing thousands and millions of examples during training, the machine learns how to look at new material and determine what we want to keep and what we want to extract.

While the RX neural network has never seen Japanese, Russian, or French during the training phase, it can generalize what it knows of the English language to also be effective at isolating speech in those languages.

**CAS: Once RX has utilized its neural net and determines what stays and what goes, then what?**

**AL:** The neural net determines the probability of each point in the spectrogram being speech or rustle. This can be viewed as a Spectral Mask. Once we have the Spectral Mask, we can apply it to attenuate the spectrogram according to those probabilities. If we know that some spectrogram points are speech, then we keep them. If we know that some spectrogram points are noise, then those points are attenuated.

**CAS: When you have a Spectral Mask comprised of points to be attenuated or boosted, how many points are we talking about?**

**AL:** Usually one second of input speech has around 100,000 points. This is about as many pixels as you see in RX’s spectrogram.

**CAS: That’s a lot of computations!**

**AL:** Luckily for RX users, the majority of computations have taken place during the training of the neural net. It trains for hundreds of hours, examining millions of examples of noise and clean speech. But once the neural net is trained, the processing stage runs faster because it doesn’t have to train further.
CAS: RX has changed the face of noise reduction, and each version brings with it huge leaps in capabilities. Your team is constantly pushing the technology to do things we’ve never been able to do. Can you talk about iZotope’s plans for RX in the future?

Mike Rozett: Source separation: separating signals like speech from noise, or separating musical instruments in a mix.

One of the things we’re trying to do with the software is make it more usable to people who have music applications. We’re looking to take Machine Learning and isolation/separation technology and apply it to things beyond dialogue, like vocals and other musical applications. Usages can range from production sound to restoration applications to cleaning up things that have been mixed where you don’t have the ability to go back to the original stems or tracks.

CAS: A lot of folks are looking for the ability to work with multitrack audio. What are your thoughts on that?

MR: That is definitely something that we’re looking to include in a future release.

CAS: Where do you see this all going? (I know that’s an impossible question!)

MR: There are some general themes that keep coming up for us. People continue to ask for more and more help with dialogue. People are constantly saying that with tighter production schedules, smaller budgets, and more to do, how can we salvage, improve, and use our existing dialogue. So we’re always going to be looking at trying to help people save their dialogue and get it to where it needs to be faster.

As a company, we’ve put a stake in the ground with assistive technology. Things that we’ve put into Ozone and Neutron help people make decisions when one sound is being masked by another. Assistive tech is something that we’re always looking at for all of our products. For RX, we’re looking to build in features that help people get through audio problems faster. We’re also looking into other markets (like podcasting) to introduce technology that can help them get their sound cleaned up faster.

When we talk about assistive tech, it’s really to help people get better results more quickly and maybe identify some things they hadn’t seen. These tools are meant to be supplemental to the person using them, not a replacement for the person using them. We’d like to eliminate some of the easier, more common problems and then provide tools that allow people to dig into the harder stuff that seems unsalvageable. This way, users of our software will have more time to focus on the things that will make the track shine. I don’t think I’ve ever heard anyone say, “Well, we had extra time on this project so…” You never hear that! Developing ways to do things that were impossible in audio improvement and recovery—those are things that the entire company is looking at putting into all of our products.

CAS: Anything else people don’t know about RX? Hidden tips/tricks or Easter eggs?

AL: Oh, the Easter egg? It exists in RX, too, but I don’t think anyone has discovered it yet. Hint: try searching in the About screen. Seriously, there are a lot of subtle things in RX. You can change the duration of crossfades that RX applies while editing via Preferences > Misc menu.

The last, but not the least—our user manual is pretty good, it explains many advanced features with sufficient detail.
The Cinema Audio Society is now accepting submissions for its 2018 Student Recognition Award. This award is intended to encourage student interest in production and post-production sound mixing, and to recognize individuals with exceptional and demonstrated passion for the field. The selection criteria will focus on the student's short essays in response to application questions and a professor's recommendation letter.

Five finalists will be selected and invited to attend the 55th Annual CAS Awards as guests of the CAS, where the Student Recognition Award winner will be announced (travel expenses not included). The Award recipient will receive a $2,500 cash award. All 5 finalists will take home a gift bag filled with many outstanding tools of the trade contributed by top audio manufacturers.

Eligibility for this award is open to any student enrolled in a bachelor's or master's degree program at an accredited college or university. Students may be pursuing any major but should have a demonstrated interest and some experience in production and/or post-production sound mixing for Film, Television, Gaming and VR. Please encourage all students who fit the criteria to apply.

Sincerely,

Mark Ulano, CAS President
CAS STUDENT RECOGNITION AWARD

The CAS will begin accepting applications April 15, 2018. All applications must be completed and submitted online no later than October 23, 2018. The CAS Student Recognition Award recipient will be announced at the 55th Annual CAS Awards in Los Angeles, CA on February 16, 2019.

ELIGIBILITY

Students must be enrolled in good standing at an accredited degree-granting college or university during any school term between January 1, 2018 and December 31, 2018. Students at US or International institutions are eligible provided the school is accredited. All application materials must be submitted in English. Student applications must be accompanied by a recommendation from a professor or instructor.

SELECTION CRITERIA

The CAS Student Recognition Award is given to an individual based on the recommendation of an instructor or professor at the student’s college or university and on the student’s accomplishments, enthusiasm and demonstrated potential in the field of sound mixing and/or sound recording for film, television, gaming and/or VR. It is not an award of excellence based on a specific student project.

APPLICATION REQUIREMENTS

1. Students must submit the following materials online:
   A. Unofficial transcript (please highlight and explain relevant coursework).
   B. List of projects in which you were the primary person responsible for production and/or post-production sound mixing.

2. Once you have completed your portion of the application, a link will then be auto-generated and sent to the professor’s email address you’ve provided. We strongly suggest that you follow up with your professor.

3. Shortly after submitting your application and documents, we will send you an email confirmation that it has been received.

4. Finalists will be asked to submit a 2-minute example of their work and an informal introductory video, 3 minutes or under.

Applications and all accompanying documents must be submitted no later than October 23, 2018 at 5:00 pm PST. Incomplete or late applications will not be considered.

Please check the CAS website for student nominations November 16th.

ADDITIONAL INFORMATION

• The CAS Student Recognition Award will be announced and presented at the 55th Annual CAS Awards in Los Angeles, CA on February 16, 2019. Five finalists will be invited to attend the Awards as the guests of CAS. Any related travel expenses are the responsibility of the student nominees.

• $2,500 will be awarded to the selected student.

Please visit our webpage for the online application.

CinemaAudioSociety.org

*Any related tax liability is the responsibility of the individual.
always find it beneficial to attend trade shows and conventions, as it allows me to see what is going on in our field. Here are a couple I went to over the past couple of months.

CES
The Consumer Electronics Show (CES) is the first of the year, held in early January in Las Vegas. It is not a film or video show, but it does deal with home electronics, which are becoming increasingly relevant to us, as so much content is being delivered by streaming methods, and sales trends in home usage drive deliverables for us. Certain trends are not applicable to us (such as home automation), but other areas of home audio and video can be a bellwether of what is coming. However, sometimes companies miss the mark on what consumers want. For several years, the big push of the show was to get people to upgrade their TVs to 3D. Consumers made it clear that they did not want to upgrade their sets, as many people had just bought their first HDTV. 3D was officially placed on life support when ESPN discontinued broadcast of their 3D network, ESPN3.

For the last couple of years, the push seems to be on UHD (4K monitors). Last year, companies were still dipping their toes in the water, but this year, everyone was showing 4K. In fact, several companies were showing prototypes of 8K monitors, with LG’s 88-inch model looking the sharpest. There is no timeline for release of 8K though, and I suspect that if 4K is successful in market penetration, then we will not see 8K anytime soon. (Many would argue that on normal-size screens, the difference between 4K and 8K is not visible from a normal viewing distance.) However, the 2020 Tokyo Olympics are expected to have an 8K broadcast, and the Samsung Q9S 85-inch 8K TV is expected to be released later this year.
CILECT North America “Sound & Storytelling” Conference

Not a trade show, CILECT North America (Centre International de Liaison des Ecoles de Cinéma et de Télévision) had its first academic conference dedicated specifically to sound. The CAS was a sponsor for this event, held at Chapman University in Orange, CA, in March. CAS President Mark Ulano gave a great plenary lecture about his experiences as a production sound mixer, and yours truly moderated a panel of sound mixers for the audience on closing night. The panel included Larry Blake, Erik Aadahl, Tony Lamberti, Julian Slater, and Will Files. I have to say that this was by far the best academic conference that I have been to. Not only was it dedicated to sound but the organizer Michael Kowalski of Chapman University made sure to fill the events with working practitioners in the field rather than exclusively academics. This led to a well-balanced conference that was not only educational but entertaining and thought-provoking. Some of the events were videotaped and are expected to be viewable online by the time this article is in print.

JWSound/RAMPS Party at NAB

The party, hosted by Jeff Wexler CAS, is always one of the best parties at NAB. Eric Toline was present to hand out the raffle prizes, and CAS President Mark Ulano opened the evening with a few comments, including the announcement that one lucky raffle winner would get two tickets to the 2019 CAS Awards, valued at $450! The party was moved to a new venue (Firefly Restaurant) this year as it had outgrown the previous year’s.

NAMM

The National Associate of Music Merchants’ (NAMM) annual convention is, of course, primarily for people who work in music sales. However, for people in post production, there is a lot to see. This year, the Pro Audio section was expanded significantly, covering two floors of the new ACC North Hall building that was recently added to the Anaheim Convention Center at an additional 100,000 square feet. The show grew more than 20 percent with this addition! More than 115,000 attendees saw 2,000 exhibitors.

Zoom won a Best in Show Award for its H1n portable recorder, the smallest of its H-series recorders. Although it is only a two-channel recorder, it is self-contained and of good use for quickly recording stereo sound effects.

Rupert Neve introduced its 8-Channel Remote Control Dante Mic Pre RMP-D8 with Dante control available. I believe this is the first product Neve has introduced for live sound, and it might be quite useful for live broadcasts.

Antares introduced a pro version of their Autotune, with a completely new interface. There is also an “Auto Key” plugin, which will automatically adapt to the key a piece is in.

Zynaptiq introduced Unfilter, what they call “Adaptive Tonal Contour Linearization.” The name describes it; the plugin allows you to correct for unwanted filtering on audio. In addition to being useful for restoration work, this also has many uses for re-recording mixers, such as correcting for muddy dialogue from a poorly mounted lavaliere.

PreSonus introduced the FaderPort 16 Control surface. For those mixing in a home studio or on a budget, this gives you 16 automatable faders for $1,000. Unfortunately, it does not include rotary knobs, making automation of other parameters more difficult and the faders are quite close together, closer than most mixers would be used to. Also, it uses HUI and Mackie Control as protocols.
Audinate, the company that gives us Dante, has introduced a new AVIO series of Dante adapters, which may be the smallest connectors on the market.

In addition to a new version of Sibelius, Avid introduced Pro Tools 2018. Other than the name change, there does not appear to be much of an upgrade from v12. There are long-overdue MIDI enhancements, track presets, new playlist workflows (which use less screen space). It also allows you to see a combined EQ graph for each track.

There are three versions of the new software. Pro Tools First is free and is for beginners, with limitations. You cannot store your session locally, you must get an Avid Cloud Collaboration account, which has a monthly fee. In addition, you cannot open a PT First session in other versions of Pro Tools and vice versa. These two limitations are enough to turn off any professional, but for someone just learning the software, it’s probably fine. Although it ships with 20 plugins, you can only use other plugins that were purchased through Avid Marketplace, which is not only limiting, but if you bought a plugin from a different site, you will have to buy it again from Avid. Track limit is 16 stereo tracks, with recording limited to four tracks. It does not allow sync to picture. Sample rate is limited to 96 kHz and below.

The other two versions are Pro Tools and Pro Tools Ultimate. Pro Tools is the software-only version that does not require Avid hardware. It has a track limit of 128 stereo tracks. Recording is up to 32 tracks. Pro Tools Ultimate is the version previously known as Pro Tools HD. It allows up to 192 inputs depending on your hardware setup. These two versions can be purchased via subscription, or bought for a one-time fee that excludes upgrades.

For the first time, the Audio Engineering Society (AES) had a presence at NAMM. Badges had to be obtained separately, and the AES functions were happening at the Anaheim Hilton, adjacent to the Convention Center. This added many presentations by professionals, including one by Scott Martin Gershin, who gave an excellent talk about the use of spatial audio.
TEC Awards
Every year at NAMM, Saturday night is reserved for the TEC Awards. These awards are for both products and for creative work. It’s a fun evening, and this year they had a full buffet. (Some previous years, there was not a meal included.)

Here are the winners in the Creative categories:

**Film Sound Production** Rogue One: A Star Wars Story

**Interactive Entertainment Sound Production** Call of Duty: Infinite Warfare

**Record Production/Album** 24K Magic - Bruno Mars

**Record Production/Single or Track** “24K Magic” - Bruno Mars

**Remote Production/Recording or Broadcast** 59th Annual Grammy Awards

**Television Sound Production** Game of Thrones

Here are the product award winners:

**Headphone/Earpiece Technology** Sennheiser HD 200 PRO

**Large Format Console Technology** Solid State Logic AWS Delta V2

**Microphone Preamplifiers** Rupert Neve Designs Sheldor Channel

**Microphones - Recording** Audio-Technica AT5047

**Microphones - Sound Reinforcement** AKG C636

**Production Essentials** PreSonus FaderPort 8

**Signal Processing Software (Utilities)** Universal Audio SSL 4000 E Channel Strip

**Signal Processing Software (Effects)** Soundtoys EchoBoy Jr.

**Small Format Console Technology** Solid State Logic Nucleus 2

**Studio Monitors** Genelec 8331 | 8341 The Ones

**Wireless Technology** Shure Axient Digital Wireless System

**Workstation Technology/Recording Devices** Avid Pro Tools 12.8

**Jackson Browne** received the Les Paul Innovation Award, which is presented to distinguished and accomplished individuals from the music industry. Jackson stated, “Thank you for this incredible honor. It means so much to be honored by you because I’ve relied on the kindness of engineers and their knowledge in the studio and equipment my whole life. I am indebted to them and I’m indebted to you all who make the gear.”
The International Telecommunications Union decided in this period to test meters for broadcast loudness. A grand round robin test was conducted, involving five international test sites, 97 listeners, and coincidentally, 97 items of program content. Ten meters were submitted for comparison testing between what they read and what the listeners heard in a level-matching experiment. As it turns out, the most sophisticated meters didn’t do as well as a pretty simple one, which today we call LKFS. L for loudness averaged over a time interval, K for a new weighting curve that rolls off the bass and shelves up higher frequencies to make the metering more like perceived loudness, and FS for relative to Full Scale.

When the US came to writing ATSC standards, committee members felt that it would be necessary to repeat this experiment, to be sure it represented American interests as to program material and methods. One test site was enough—the Control Room of the USC Spielberg Scoring Stage (since that time, rededicated to John Williams), six listeners, and 41 items of program material representing a wide range of television audio. You could see this as a confirmation test of the larger one done by the ITU. Only six mixers you ask? Yes, but—among them, they had four Oscars® and three nominations, 20 Prime Time Emmys® and five nominations, six CAS Awards and five nominations—and this for only six mixers! “If you build it, they will come” applies.
The experiment had all the console metering and all the fader scales obscured. The mixers were asked to set their most preferred listening level for each of the 41 items of content until they most liked its loudness, then move onto the next item. Now, there’s a lot of jiggery pokery in getting from the fader number they used (recorded by the automation) to average across the mixers correctly, compare among the clips, etc., etc. It was Mark Twain who popularized the expression, “There’s lies, damned lies, and statistics,” but it’s the sharpest arrow in our quiver.

The result that is most interesting to us here is the degree of agreement among the mixers. This is the standard deviation from the average of the mixers for each one individually. It is irrespective of their preferred playback overall loudness, which varied more greatly.

Here’s the bottom line: the average standard deviation from the average of the mixers among them is … drumroll please, 1.2 dB! They match each other that well.

I find that to be an astonishing number, but maybe it doesn’t surprise CASers. I’ve felt for a long time that there’s a “slot” for dialogue loudness to fit into, and I think this proves it. By the way, later on the idea that some content can’t even be based on dialogue because there isn’t any dialogue in the content came up of course, but the same loudness metering applies.

In a way, I tested something similar years earlier. At Lucasfilm, we were very careful with monitor levels. I had a readout on the console for the monitor level with 0.1 dB steps of precision. This, so if you reset it higher for mixing Foley pre-dubs for instance, you could return to the exactly correct level. 0.0 dB was reference. Over lunch hour one day during the mix for *Return of the Jedi*, I set the levels –0.5 dB, but made the readout lie to say 0.0. Ben Burtt and Gary Summers came back from lunch and started mixing. In a couple of minutes, they slowed down, went back over material they’d already done. Several minutes later, they called me, and said, “We don’t know what it is, but it’s different than before lunch.” I wasted six minutes of mix time, but I found out for sure that “Mixers Can Hear.” •
We thought maybe we were crazy, or didn’t understand the word “mandated,” so we looked into it, initially to prove (mostly to ourselves) that we weren’t nuts.

Here’s a little background:
The Commercial Advertisement Loudness Mitigation Act was passed on September 29, 2010. The bill was proposed in the House of Representatives by Congresswoman Anna Eshoo, a Democrat from California. Legend has it she was inspired to write the bill after disproportionately loud television commercials interrupted a holiday dinner she was hosting. Conceived as a solution to the loud commercial problem, the CALM Act references something called the Advanced Television Systems Committee’s Recommended Practice ATSC A/85. The full document is available at atsc.org, but we’ll attempt to convey the highlights.

As ATSC A/85 gets updated, the CALM Act is automatically updated to reflect any new recommendations. So, in essence, the CALM Act is bound directly to A/85.

From the FCC website: “Specifically, the CALM Act directs the Commission to establish rules that require TV stations, cable operators, satellite TV providers, or other multichannel video program distributors to apply the ATSC A/85 Recommended Practice to commercial advertisements they transmit to viewers.”

While the scope of this bill is directly focused on commercials, if you mix episodic television, be it long-form or half-hour, by association you must mix within the guidelines of this act. The intent is that, when watching TV, viewers can go from program to commercial and back to program without any apparent change in loudness and, as you change channels, you can go from one to the next with the same experience.

It’s worth mentioning that prior to the creation of this legislation, the number one complaint to the FCC with regards to broadcast television was the unpleasant loudness of commercials. Since the time the act took effect on December 13, 2012, it’s worth noting that the number one complaint to the FCC in regards to broadcast television is ... still the loudness of commercials! OK, so apparently the passage of the act didn’t work out exactly as planned. This begs the question: “Why are we adhering to a regulation that affects how we mix and potentially limits our creative choices for a set of rules that seems to be having limited effect on the overall problem of disproportionately loud commercials? And what does this tell us?”

First, it tells us if you want anything to happen in Washington, you should start by interrupting a congressperson during their dinner. We also learned that these rules and regulations are not succeeding exactly the way they were meant to. So we decided to dig in and find out why.

by Jon Greasley and Greg King

AS RE-RECORDING MIXERS, there is nothing like starting a new mix; the feel of faders under your fingers, the warm glow of the computer monitor on your face and the wonderful prospect of a creative day ahead of you. Then someone spoils the mood by handing you the delivery requirements. “Wait, what? Why is this different from the last show, the other network, the other streaming service?” We were under the impression there were agreed upon guidelines, a paper called ATSC A/85 (Advanced Television Systems Committee) that documents firm loudness recommendations. Its practices are even mandated in an act of Congress called the Commercial Advertisement Loudness Mitigation (CALM) Act. So how is it every delivery sheet we get asks for different loudness specifications?
What we found out is that the CALM Act could, and indeed should, very well do what it was designed to do. The problem is that each network and content provider has interpreted A/85 in a different way, resulting in differing criteria for delivery that is directly undermining the effectiveness of this regulation. So, we decided to have a discussion about this, and reach out and see what the other re-recording mixers, layback engineers, and audio professionals in town are experiencing. It’s our opinion that if you’re going to have a standard, you might want to make sure that the standard is ... well, standard.

We spoke with re-recording mixers Andy D’Addario, Joe DeAngelis CAS, Keith Rogers CAS, and Karol Urban CAS MPSE; Jim Starzynski, Chairman, ATSC S6-3 Group on Loudness for Digital Television (and the group that created A/85); Scott Norcross from Dolby Labs; Rick Hart, Layback Engineer at BluWave; and Scott Kramer, Sound Technology Manager for Netflix. It’s worth noting that Jim Starzynski and Scott Norcross were both authors involved in writing the A/85 spec that the CALM Act references, so they can be considered authorities on this topic.

Let’s look at the recommendations for commercials (short-form content) vs. the TV shows we are mixing and watching (long-form content).

The A/85 document focuses on commercials in no uncertain terms:
“For short-form content, A/85 recommends that the average loudness of the full mix be measured over the entire length of the item.”

By contrast:
“For long-form content, A/85 recommends identifying and measuring the anchor element during audio mixing and ingest. The anchor element is usually dialogue, which the listener would tend to focus on when setting the volume control. The loudness of the anchor element would be reported as the loudness value of the program for a properly mixed program.”

The intended implementation of this spec for programming is to sample a representative portion of the show and measure it to make sure the dialogue is within a specific range of “loudness,” as defined by the BS.1770 LKFS measurement. It’s not necessary to measure the entire show. It’s not even necessary to measure one representative segment per act, but that would also be a reasonable way to do it. What it categorically does not require is the measuring of the entire program, from start to finish, of all content across all channels of the full program mix.

Please read that last sentence again because this is the core of what this discussion is all about.

It’s also not necessary to limit True Peak to -6 dBFS, which is what a number of cable content providers have also chosen, but that’s almost another conversation. Lowering True Peak to -6 dBFS does further restrict our dynamic range and can have the effect of making mixes sound louder, harsher and more squashed. This could also lead to yet another connected issue; that of the inclusion of loudness control devices in the broadcast chain (such as the Evertz IntelliGain® box)—but that is another discussion entirely.

It’s also worth noting that people around town colloquially use “dash three” as an interchangeable term for “full program loudness.” This isn’t strictly accurate, since 1770-3 can measure dialogue as the anchor, but the user has to specifically isolate the dialogue in order for this measurement to be taken correctly. Whereas in 1770-1, Dolby Media Meter (the most commonly used tool for measuring LKFS) had separate readings for dialogue loudness and full program or “Infinite All” loudness. The reasons for the exclusion of this are technical and have to do with the inclusion of a gate in 1770-2 and 1770-3, and the phrase “don’t gate the gate,” but all of this just goes to further show that we don’t, as a community, fully understand what it is we’re measuring and how.

Let’s listen to some people who know what they’re talking about...

Jim Starzynski, Chairman, ATSC S6-3 Group on Loudness for Digital Television: “There are two significant misconceptions that plague the delivery of quality DTV audio content:”

“The first is, ‘The measured loudness value should not deviate during the program!’ This would yield content with no dynamic range. When content is mixed correctly, the measured loudness value will change with the intended dynamics of the show. However, if the dialogue of the show is mixed correctly as an anchor, isolated as described above and then measured, the desired loudness value should report correctly and consistently. The second misconception is that BS.1770-2 and BS.1770-3 full program mix (Infinite All) measurements...
are substitutes for a dialogue-based anchor measurement for long-form content, either in a single act or across acts. This practice will not yield the intended results of the rules.”

For our own emphasis: full program mix measurements, when substituted for a dialogue anchor-based measurement, will not yield the intended results.

So here is an example of what happens when we run two different style shows through the Dolby Media Meter and look at the LKFS measurements:

First, let’s measure a dialogue-driven, single-camera comedy show (The CW’s *Jane the Virgin*), with no big action sequences or music. If we measure the representative dialogue as per the A/85 spec, we will get a figure reliably close to -24 LKFS for any given section of the episode.

The overall average of an episode of the show with sections sampled at random is -23.2 LKFS, measured using 1770-1 (Fig. 1). If we then measure the entire episode across the whole mix, we’ll end up with a similar reading of -22.5 LKFS Full Program 1770-3 (Fig. 2) because the content is consistent and doesn’t have a very wide dynamic range, being a dialogue-driven comedy and all.

Going in and out of commercials with this measurement will sound fairly even because the commercials are measured across their entire length and content, and so the dialogue level of the show will be very close to that of the ads and transitions will be smooth.

Contrast this, then, with an action-packed, dynamic show with explosions and gunfire (National Geographic’s *The Long Road Home*, a shameless plug for one of our mixes). Episode 7 of that show came in at -22.6 LKFS at 1770-3 (Fig. 3), when measured full program mix, yielding an isolated dialogue measurement of -29.8 LKFS (Fig. 4)! So if the dialogue were moved to the correct pocket of -24, the Infinite All (full program mix) value is actually -15.6, and completely out of spec!

All of this means that the comparative level of the dialogue between our action-packed show vs. the comedy and the commercials is much lower—keeping in mind that people will set their volume controls to the storyline’s dialogue anchor element, and with good reason.

The concept falls apart further when we are asked to deliver -24 LKFS for the whole mix “act by act.” This means that in an instance where an episode starts off with...
the first couple of acts being dialogue-driven and without any action sequences, and then progressing the story into the last couple of acts with intense action, the explosions and gunfire in the crescendo of the story will not seem any louder than the spoken dialogue in the first acts, and then the commercials will come barreling in seemingly twice as loud as the action.

Additionally, using an Infinite All, full program mix measurement skews the levels between episodes of the same show, so if one were to binge-watch *The Long Road Home*, they’re going to have to adjust the level between episodes.

As a sidenote, another development that is bound to affect this issue somewhat is that Dolby is about to cease support for Media Meter, which means the industry will be looking to switch to a new standard tool for these measurements. The frontrunner for a software-based solution appears, at this point, to be Nugen Audio’s VisLM 2.

**When measuring full program with 1770-3, this ...**

*Jim Starzynski*: “When the dialogue storyline of the program is recorded at -24 LKFS, the audience will set their volume control to this value for comfortable listening and want to leave it untouched. Music and effects loudness is blended in by the mix engineer (by ear in the ~78SPL room). With dialogue, the focus of the mix and loudness measurement, loud or soft music and effects will not impact the average measured loudness value of the show. Dynamic range for the program is maintained because music and effects are not part of the reported dialogue-based average loudness measurement.”

*Joe DeAngelis CAS (The Punisher, This Is Us, Bosch)* on 1770-3: “You’re playing a loudness game: ‘We have a bunch of loud scenes in the episode, so we’re gonna have to mix a bunch of quiet scenes elsewhere in the show to make up for it.’ So it’s defeating the whole purpose of that 1770-3 spec. The network demands an even measurement but they’re actually shooting themselves in the foot. We need to turn the room monitor level up to 82 dB SPL or 85 dB SPL, depending on how loud the show is, in order to hear the dialogue because, to hit spec, the dialogue is now down at -29 LKFS or -30 LKFS. The result is that in order to hit the 1770-3 Infinite All spec our show is now playing quieter than a dialogue driven show, and certainly quieter than the commercials.”

Indeed, a 1770-3 spec act by act has the effect of either removing dynamic range from a mix or making each act wildly different in apparent dialogue loudness.

**Andy D’Addario (Transparent, Mozart in the Jungle, The X-Files):** “When they’re measuring act by act, it’s been a real challenge to get a mix that is dynamic. We might have a big opening that goes straight into main title and then from that straight into commercial, so we have three minutes of chaos, and what basically ends up happening is that the teaser act plays low, then the commercial blasts in, which is not what out filmmakers want. It’s a real challenge to get the filmmakers’ intent to the viewers.

I do miss dialogue-as-the-anchor-based mixing (BS.1770-1)—that spec played the best. But what I hear currently is that commercials are louder than ever, and the shows are quieter due in large part to the “act by act” measurement. It’s unfortunate. It’s making the issue worse in that you’re chasing the remote at home and that’s exactly what the networks don’t want either. It’s actually the opposite of the intent of the CALM Act when we are measured this way.”
Karol Urban CAS MPSE (Station 19, Grey’s Anatomy, New Girl): “I try everything I can to retain my dynamic range because it’s emotionally more evocative. But if I have a really tight spec, like one that requires short-term LKFS minimums and maximums and requires a +/-2 reading per act, those can’t be as dynamic as might be most effective. It’s almost becoming the same thing that happened to pop music mastering, where there is just no dynamic range in anything.

“People sometimes look at our job as a technical job, which I don’t think is fair: you have to be technical, but our job is a creative one; we facilitate the narrative through sound. But overly tight specs often disarm us of many of our creative tools, and it doesn’t serve anyone. It doesn’t serve the filmmakers, it doesn’t serve the producers, it doesn’t serve the content and it doesn’t serve the providers. Additionally with strict act by act level requirements, loudness short-term max and minimums and various length act running times, at the end of the mix day when we’re done and everyone is happy with the mix, we have to go back through the acts, run the meters and then maybe lower or raise the over level of an act in order to hit spec and address creative notes.”

The problem we are all faced with is that the intention of this spec is to normalize and create consistency, but often the implementations of it are doing the exact opposite.

Keith Rogers CAS (Westworld, The Exorcist, Altered Carbon): “One of the first things I do when I start a new series is to look at the specs of that particular network or streaming service because they all interpret the CALM Act a little differently. How the specification is interpreted will change the way I approach the show. If the network or provider is measuring at 1770–3 Infinite All, and I have a quiet show that is primarily dialogue, then I will mix the dialogue upfront and loud in order to hit that -24 LKFS spec. If the show contains a lot of action and loud sections, loudness short-term max and minimums and various length act running times, at the end of the mix day when we’re done and everyone is happy with the mix, we have to go back through the acts, run the meters and then maybe lower or raise the over level of an act in order to hit spec and address creative notes.”

The problem we are all faced with is that the intention of this spec is to normalize and create consistency, but often the implementations of it are doing the exact opposite.

Scott Norcross, Dolby Labs: “I will say there’s still some misunderstanding about loudness and what A/85 states. As an example, I have a show with some dynamics and the dialogue is at -24, but then the relative level gate (full program mix loudness) might be 6 dB louder, so -18. So to align the full program mix loudness, I would actually have to drop the whole thing by 6 dB, which would mean that your dialogue is now at -30 LKFS. So if you’re broadcasting that content with the dialogue at -30, somebody who’s watching is going to say, ‘Oh, I can’t hear the dialogue’ and they’re going to turn it up. So when you go into the commercial or another program that’s less dynamic and normalized to -24 LKFS, you could get blasted. So, this actually makes it worse. This is the reason we always say, ‘use the dialogue as the anchor’ to ensure dialogue is aligned program-to-program across all stations for all content. And if that has wide dynamic range content, let the dynamic range control that’s built into the set-top box deal with that. So the misconception is that A/85 specifies 1770-3 for everything,
but it’s only for short-form (commercials). For long-form content, you use the anchor element—and the anchor element is the dialogue. It is still a 1770-based measurement, but only measures the loudness of the dialogue/speech of the program.”

Scott Kramer from Netflix is in the unique position of being privy to almost immediate end-user feedback about the content they provide. Their platform allows consumers to submit their options and experiences at any time, directly to the service.

**Scott Kramer, Netflix:** “As far as how we arrived at our current spec, we would seek to determine what the industry standard is and then conform to that. When we didn’t feel bold enough to look at our needs and possibly forge a new path, we wanted to do something that was in line with what the larger industry was doing, and that’s where the 1770-3 full program measurement came from. I’ve heard from a lot of mixers, and I know it myself from having been a mixer, but mixers generally prefer a dialogue-weighted measurement. So we’re rethinking whether the full program measurement works for us, and we’re finding that it doesn’t: full program just doesn’t work as well as a dialogue-weighted measurement.

We’ve found that our main customer complaint, just like they are from every broadcaster, is around dialogue intelligibility. Therefore, the goal has to be consistent dialogue across the service. You’ve got to go from one show to another, including features, and have the dialogue be consistent. So that’s why we’re planning on moving to dialogue measurement and correcting and normalizing to dialogue.

“I do understand the intention behind 1770-3 and the difficulty of working with commercial breaks but, in my talks with engineers at other studios and broadcasters, it doesn’t work for long-form.”

**Closing Thoughts:**

There is a definite thread to the responses we’ve gotten to our questions here. The 1770-3 (full program mix) loudness measurement **does not work for long-form** in general, and the reason may be because it was not fully tested using content with wider dynamics. Very dynamic content, such as premium episodic, does not measure appropriately with 1770-3, and this is the reason why dialogue/anchor-based loudness measurements are recommended.

One of the main additions to 1770-3 is that a gate was added to remove the ability to “trick” the measurement by inserting small sections of silence in the spot, in order to skew down the LKFS measurement. Dolby’s Scott Norcross recalls, “I remember back in 2013 when we updated A/85 to -3, it was for commercials explicitly.” A/85 recommends that long-form content still be measured with a dialogue anchor to ensure consistency amongst all types of long-form content.

To be absolutely clear, long-form programs are **supposed to be mixed and measured with a dialogue anchor, not a full program measurement.** 1770-1 works well because dialogue is the focus; 1770-2 and 1770-3 will work but are not necessary once dialogue is established as the anchor and focus of the measurement. (A/85 2013 has a footnote grandfathering -1 in this application.) Long-form content is not to be measured full program, or even the entire length of the show, and certainly not act-by-act.

The end result of this misapplication is that we have content on any given television or cable channel, streaming service provider, or even a box set of DVDs or Blu-rays that can have up to a 10 dB swing in apparent loudness. That’s between channels, between services, or even between episodes of the same show on a single service. Given that the stated goal was to unify and normalize the user experience, it seems quite apparent that missteps have been made.

But it’s not too late! If we can all agree on the best implementation of the standard, which from our discussions here it truly seems that we can, then we should be able to stop, re-calibrate, listen, and then move forward with a delivery spec across all platforms that allows the shows to be presented in a consistent, dynamic, sonically rewarding fashion that satisfies the creative intent of the filmmakers while simultaneously meeting the legal requirements of the CALM Act and the recommendations laid out in A/85. As crazy as we might be, that doesn’t seem crazy to us—and we encourage the discussion, participation, and engagement of our collective sound community in order to make this a reality.

Please feel free to contact us at jon@kingsoundworks.com and/or greg@kingsoundworks.com with any thoughts on this matter, alongside Scott Kramer (skramer@netflix.com) at Netflix, as we endeavor to arrive at a unified spec. Additionally, we’re striving to put together an event with the ATSC, Dolby and as many content creators and providers as we can rally in order to discuss the current situation, enlighten stakeholders, and strive to achieve the intended outcome as intended. •
Mathew Price CAS here in NYC where it seems that spring may have finally sprung. After Season 1 of The Marvelous Mrs. Maisel last year, my brilliant team of boom op Seth Tallman and sound utility Carmine Picarello and I went onto the stalker thriller You for Lifetime and then two back-to-back pilots (Compliance for FX and God Friended Me for CBS). Now we’re back on Amazon’s hilarious and brilliant The Marvelous Mrs. Maisel for a second season with and ready for a challenging and fun-filled journey of many “oners” back to a gorgeously conceived NYC circa 1958.

David Barr-Yaffe CAS is mixing Season 1 of Showtime’s Jim Carrey dramedy series Kidding, along with Aaron Grice on the sticks and Kelly Ambrow making cable spaghetti. Upon completion, the team will be returning to Crazy Ex Girlfriend Season 4.

Devendra Cleary CAS is grateful to be having a busy spring. After wrapping Season 4 of The Last Man on Earth with Scott LaRue boom operating and Tanya Peel doing utility, Tanya jumped up to the first boom spot on the Fox pilot known as Daddy Issues with Michelle Guasto joining us on second boom. Then onto a pilot for Sony tentatively titled 25 with Chris “Catfish” Walmer on boom and Chantilly Hensley doing utility. The next day, Tanya Peel and I camera tested and loaded the truck for Season 1 of Mayans MC for FX Network. Josh Bower on the boom for this one, with Abel Schiro helping out as well. In the meantime, Devendra has been putting his latest mini-cart design through the paces. Lucky to be working with such talented crew right here in Los Angeles.

It’s been a great start of the year for Devin Golub CAS. A hearty shout-out thank you to Jon Ailetcher CAS, Steve Bowerman CAS, and Jay Paterson CAS for all the opportunities to work on some great shows this season. Now onto see what’s next.

Danny Michael CAS worked on Season 6 of Homeland in NY, had some minor knee surgery, then onto the new Netflix show Maniac, directed by Cary Fukunaga. I just finished the film Motherless Brooklyn, written, directed, and starring Edward Norton, which shot 142 pages in 46 days (who says TV has a hectic schedule!?!)! Two days ago, I was pleased to be part of a CAS get-together in New York, hosted by CAS President Mark Ulano. It was a pleasurable and motivating discussion about how to involve more NY members and events into the overall CAS umbrella.

Gavin Fernandes CAS has been practicing his juggling lately, alternating between Sharp Objects for HBO, The Harry Quebert Affair for MGM in Montreal, finishing the film An Audience of Chairs at NIFCO in Newfoundland and Little Italy at Technicolor Toronto.

After finishing up destroying cities in Rampage, Michael Koff CAS went onto collaborate with Tom Hardy...
Global leader in immersive audio

Dolby Atmos has firmly established its position as the industry-leading immersive audio format.

4,000+ Screens installed or committed

1,000+ Features released or announced

40+ All Dolby Atmos complexes

75+ Countries

www.dolby.com/atmos
Geoffrey Patterson CAS completed Season 2 of *Westworld* and is in the Ozarks doing *True Detective* for HBO.

Karol Urban CAS MPSE and Ross Davis finished up *New Girl* Season 7 and a pilot, *Daddy Issues*, for Technicolor as well as *Grey’s Anatomy* Season 14 and *Station 19* for Westwind.

It’s been a year of superheroes for Aron Siegel CAS. With the help of his crew of boom op Robert Vardaros and utility Nik Waddell, Aron mixed Season 1 of DC Comics’ *Black Lightning* for The CW network (part of the *Flash/Arrow* verse) which shot from September 2017 until March 2018. Splinter days were mixed by CAS associate Aaron ‘Cujo’ Cooley, Charles German, and Bud Raymond. Prior to *Black Lightning*, Aron mixed the principal unit additional photography/reshoots for *Marvel Studios Thor: Ragnarok* with boom Freddy Chancellor and utility Emma O’Reardon. Finally, Aron recently wrapped the BET miniseries *The Bobby Brown Story* biopic with boom op Robert Vardaros, sound utility Nik Waddell, and amazing playback by John Maskew. It’s slated to air in September.

**Dick Hansen** CAS is mixing Strange Angel for Ridley Scott’s company, the story of Jack Parsons, who started the Jet Propulsion Laboratory. It is a period piece set in the late 1930s. Jeff Williams is booming and Raam Brousard is rounding out the team.

John Pritchett CAS just finished working on the biggest movie ever made … *The Avengers: Infinity War* … mostly in Atlanta with a month in Scotland and England. Boom operator Dave Roberts, as always, was there and my greatest ally. That said, I had the amazing utility Tyler Blythe who Dave and I decided we couldn’t have done this beast without. The Russo Brothers are truly great and easy to work for and the always inimitable Michael Grillo really made this thing happen! He made the 190-day (crazy!) shoot go so very well by hiring the best crew I’ve ever had the pleasure to work with. With no time off, John and Dave went straight to NOLA to work on John Lee Hancock’s *The Highwaymen*, the story of the two Texas Rangers who hunted down and finished Bonnie and Clyde’s infamous reign of crime.

**Frank Morello** CAS and Colette Dahanne are mixing *Cagney & Lacey* and *Sacred Lies* at Technicolor.

**Steve Weiss** CAS wrapped series *Major Crimes*, then moved to Netflix’ *Best Worst Weekend Ever* and The Untitled April Blair Pilot with Vince Schelley on boom and Dennis Carlin on utility. **Philip Perkins** CAS completed mixes for *Futbolistas 4 Life* (PBS), mixed production sound for *Groomed* (PBS), and mixed the music for a new ballet *Sutra* (Alonzo King Lines Ballet) and for the video of same.
From Universal Studios:
Mix team Jon Taylor CAS and Frank Montaño just headed into the Hitchcock to start pre-mixing Skyscraper for director Rawson Marshall Thurber and Legendary Entertainment. Up next for the team is First Man for director Damien Chazelle and Universal Pictures.

The mix team of John Cook CAS and Bill Freesh CAS is staying busy with Lodge 49 and gearing up for pilots. Our friend Bill Lawrence has two pilots for Warner Bros.: Dead Inside and Whiskey Cavalier. Then the team moves onto a small indie feature The Last Champion to round out the summer before the return of Mr. Robot and The Gifted.

Rusty Smith and Bob Edmondson CAS will be working exclusively for Dick Wolf this pilot season. The Wolf Pack have a pilot +12 for CBS. It’s titled The FBI. This pilot/series looks to be BIG even by Wolf standards. Even James Comey is interested in this one. If past history repeats itself, we will be seeing you at the 100-episode party.

Mix C in our Bluwave facility is fully engulfed with Chicago Fire and Chicago P.D. The mix team of Peter Reale and Todd Morrissey CAS even found time to squeeze in Season 7 of USA’s Suits. Rumor has it that there will be a Suits spinoff coming soon. Maybe even another British princess?

Our special victims mix team of Greg Watkins CAS and Derek Marcil CAS are keeping busy with Season 19 of Law & Order: SVU and are doing some amazing trauma work in the ER on Chicago Medical.

Our agents of P.O.S.T., Mark Fleming CAS and Myron Nettinga, are finishing up Season 5 of ABC’s Agents of S.H.I.E.L.D. and they are still monkeying around with Syfy’s 12 Monkeys and found time to do three NBC pilots … Nice job boys!

This spring, we were happy to welcome the mix team of Keith Rogers CAS and Andy King into Mix 2. They saddled up and moved west to HBO’s Westworld. Only this season in full Dolby Atmos. It sounds terrific and premieered April 22, exclusively on HBO … Can’t wait!

Coming off another successful season of Blackish and Grownish. The mix team of Peter Nusbaum CAS and Whitney Purple are still giggling with the success of Will & Grace. They are continuing the laughter with AP Bio, Marlon, and Just Add Magic. Not to mention the six pilots that they will be mixing in their spare time … Whew!

Steve Pederson and Dan Lahey just finished Counterparts and Jack Ryan in full Dolby Atmos. It was such a success that both series are back for Season 2. Again … Nice job boys!

And all this entertainment is supported by our terrific ADR mix team of Jeff Gomillion, Jesse Dodd CAS, and Paul Drenning CAS.

…And not to mention our fantastic Foley crews of Mike Marino, Pam Kahn, and Dominique Decaudain-Tabach (days), Matt Modrick, Alex Ullrich, and Gregg Barbanell (evenings). They keep us all in good step!

---

**TRXLA3**
100 MHz Wide-Band Digital Recording Wireless Transmitter

- ZHD Modulation
- Internal Backup Recording
- The Ultimate in Receiver Flexibility

**QRX200**
200 MHz Wide-Band Receiver with Enhanced Range and Automatic Tracking Front End Filter

- Encrypted Audio
- Digital Modulation
- Zaxcom/QRX200 - Wide Band "HD-Link" Receiver with EEC Receiver

zaxcom.com | 973-835-5000
Video assist Jesse Olivaes, utility Tyler Blythe, production mixer John Pritchett CAS, and boom Dave Roberts pose on the set of *The Avengers: Infinity War*.

A graduate in 1997, **Fernando Delgado CAS** was inducted in to the Full Sail Hall of Fame!!!

Wrapping up *Venom* in SF, from left: John Harton (utility), Ian Bender (boom operator), Tom Hardy (sound PA), **Michael Koff CAS** (mixer), Patrick Anderson (playback operator).

**Aron Siegel CAS** (left) with Cress Williams as Black Lightning, and stunt double Eric Mbanda.

**Gary Rydstrom CAS** is flanked by CAS Associate members Vanessa Ament and Stan Sollars in Ball State University’s Department of Telecommunications Studio 2B, located in the school’s David Letterman Communication and Media Building. The trio worked on a segment for a joint Turner Classic Movies and Ball State online class about movie musicals. Rydstrom also had a number of discussions with Ball State students about the industry and the creative processes involved in cinema sound design.

**Gary Rydstrom CAS**, visited CAS Associate member Stan Sollars’ cinema sound design class in Ball State University’s David Letterman Communication and Media Building Studio 2A on April 3. Rydstrom had a conversation with the BSU Department of Telecommunications students about film sound design, sound effects creation, and re-recording mixes.

Brendan Beebe CAS, Peter Olsted, Rebecca Chan, and Jonathan Lallouz on the set of *GLOW*.

Gary Rydstrom CAS, visited CAS Associate member Stan Sollars’ cinema sound design class in Ball State University’s David Letterman Communication and Media Building Studio 2A on April 3. Rydstrom had a conversation with the BSU Department of Telecommunications students about film sound design, sound effects creation, and re-recording mixes.

Devendra Cleary CAS with some of the Grip and Camera Department rolling out for some motorcycle running shots. Photo by Abel Schiro.

Soundscape recording at Cottonwood Spring, Joshua Tree National Park. **Dan Dugan CAS** adds a height mic for Atmos to a Jecklin array.

“Here is **Fernando Delgado CAS** with the other recent Full Sail Hall of Fame inductees!”

**Brendan Beebe CAS**, Peter Olsted, Rebecca Chan, and Jonathan Lallouz on the set of *GLOW*.

Gary Rydstrom CAS is flanked by CAS Associate members Vanessa Ament and Stan Sollars in Ball State University’s Department of Telecommunications Studio 2B, located in the school’s David Letterman Communication and Media Building. The trio worked on a segment for a joint Turner Classic Movies and Ball State online class about movie musicals. Rydstrom also had a number of discussions with Ball State students about the industry and the creative processes involved in cinema sound design.
SMART POST SOUND

PROVIDING COMPLETE POST PRODUCTION SERVICES

SOUND AND PICTURE POST

DUB STAGES | ADR/FOLEY | EDITORIAL
VFX | COLOR CORRECTION | DELIVERABLES

LOS ANGELES | NEW YORK CITY | VANCOUVER

Post smart.

SMARTPOSTSOUND.COM | 818.845.8050 | @SMARTPOSTSOUND
The Perfect Wireless Boom Solution.

The **A10 Digital Wireless Microphone System** is designed for the technical demands and requirements of today’s RF-hostile, multi-channel productions. The A10 system features:

- Studio-grade mic preamp
- 48V phantom with analog limiter
- Full line level input with 60 dB of gain
- Full 20 kHz bandwidth, wideband tuning, <2 ms latency