

Why Should I Go Digital On Set? • Music Rebalancing Plugins in Post The Case for a Four-Person Production Sound Team

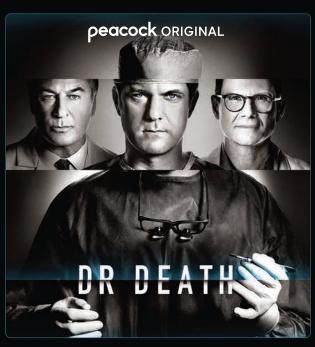
OUTSTANDING



Limited or Anthology Series



Comedy or Drama Series (One Hour)



Limited or Anthology Series



Limited or Anthology Series

SOUND MIXING



Comedy or Drama Series (Half-Hour) and Animation



Comedy or Drama Series (Half-Hour) and Animation



Comedy or Drama Series (Half-Hour) and Animation



Comedy or Drama Series (Half-Hour) and Animation



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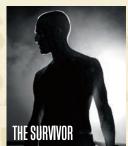
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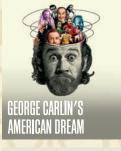
































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CAS-QUARTERLY











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Cover: Winning projects from this year's CAS Awards

THE PRESIDENT'S LETTER

Dear Members,

Our 58th Annual CAS Awards was a very special night. I found myself overcome at times with joy as I looked out into the crowd and saw so many of the faces I had missed over the past two years. The smiles and laughter observed reaffirm the importance of our



work at Cinema Audio Society to foster solidarity and fellowship.

Enjoy our 2nd Annual "Meet the Winners" on our YouTube channel, as well as this annual special "Meet the Winners" edition of the CAS Quarterly. Our industry is booming with content, and your peers are doing exciting work. Learn about this year's 58th CAS Award winners and how they created the sound of this year's most compelling narratives.

We are pleased to announce that we have launched a merchandising site! CAS Mixer Merch is open now and contains CAS-branded merchandise and branded lifestyle products. CAS members enjoy 15 percent off their cart as part of our grand opening. Check your emails for your special code. This can only be used once per customer and cannot be combined with other coupons. Visit CAS Mixer Merch at https://shop.CinemaAudioSociety.org/

We are expanding our partnerships and participation with other industry organizations, such as L.A. Post Production Group, Digital Cinema Society, Cine Gear, Filmmaker Academy, PGA, and others, in order to promote sound for picture and unify the crafts. Keep your eyes open for many co-events and announcements of CAS participation in the coming months.

Recently, Cinema Audio Society donated to and became a partner with "Safe and and Sound Ukraine," a fundraising project aiming to purchase robust walkietalkies and satellite phones for Ukrainian medics, volunteers, and evacuation coordinators. All donations go to United Help Ukraine, a 501c3 charity. To learn more or donate, visit https://www.SafeAndSoundUkraine.org/

Finally, please keep your eyes on your email for forthcoming invitations. We will be beginning our Summer Event Series soon and plan to offer physical events, as well as continuing our virtual programming.

Serving the sound community through the CAS continues to be one of the most precious and rewarding experiences of my professional career. If you have any suggestions or ideas you would like to share or wish to become more involved in the Cinema Audio Society, please reach out to CASpresident@CinemaAudioSociety.org.

Sincerely,

Karol Urban CAS MPSE



To educate and inform the general public and the motion picture and television industry that effective sound is achieved by a creative, artistic, and technical blending of diverse sound elements. To provide the motion picture and television industry with a progressive society of master craftsmen specialized in the art of creative cinematic sound recording. To advance the specialized field of cinematic sound recording by exchange of ideas, methods, and information. To advance the art of auditory appreciation, and to philanthropically support those causes dedicated to the sense of hearing. To institute and maintain high standards of conduct and craftsmanship among our members. To aid the motion picture and television industry in the selection and training of qualified personnel in the unique field of cinematic sound recording. To achieve for our members deserved recognition as major contributors to the field of motion picture and television entertainment.

SUMMER 2022 CAS NEW MEMBERS

Active

Adam Sanchez CAS Benjamin Cook CAS Jason Coleman CAS Javier Quesada CAS Jeffrey Roy CAS Kurtis Ewing CAS Schavaria Reeves CAS Serge Perron CAS Shaughnessy Hare CAS

Associate

Christopher Manza Jon Tatooles Kelly Lewis Ryan Wall Sandra Portman

Academic

Darby Christensen Parker Obregon



After an extremely successful—and in-person!—58th Annual CAS Awards,

we are proud to present coverage and interviews in this, our annual "Meet the Winners" issue. Hear from the winners of our seven Outstanding Achievement in Sound Mixing categories, our Outstanding Product category winners, and our Student Recognition Award winner.



In addition to our awards coverage, production sound mixer Aaron "Cujo" Cooley CAS put together two pieces for us this issue. Cujo shares his thoughts on going digital in his article, "Why Should I Go Digital on Set?" And, as many productions are having increased demands, Cujo's timely article, "The Case for a Four-Person Sound Team" makes just that. On the post side, I spent some time with a couple music rebalancing plugins and present my thoughts on using them in our world of sound for picture in the aptly titled article, "Music Rebalancing Plugins in Post." As always, be sure to read about the happenings of your fellow members in the "Been There Done That" and "The Lighter Side" sections.

Thanks goes to all of our contributors for volunteering their time especially for this thick issue. I'd like to thank you for taking the time to peruse the contents. If an article makes you think of a friend or colleague, send a link to the online version of the Quarterly, available on the CAS website. Please remember that our sponsors are professionals like you who understand the business and the needs of our industry; we encourage your commitment to them. And if you have the urge, feel free to reach out to us at CASQuarterly@CinemaAudioSociety.org.

Matt Foglia CAS



Karol Urban CAS MPSE - President Steve Venezia CAS - Vice President Lee Orloff CAS - Treasurer Frank Morrone CAS - Secretary

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FOR YOUR EMMY' CONSIDERATION IN ALL CATEGORIES INCLUDING

OUTSTANDING COMEDY SERIES

OUTSTANDING SOUND MIXING FOR A COMEDY OR DRAMA SERIES (HALF-HOUR) AND ANIMATION

LEWIS GOLDSTEIN, THOMAS RYAN, CHARLES HUNT

OUTSTANDING SOUND EDITING FOR A COMEDY OR DRAMA SERIES (HALF-HOUR) AND ANIMATION

LEWIS GOLDSTEIN, ALFRED DEGRAND, ALEX SOTO, WEN-HSUAN TSENG, GEORGIE RAMSLAND



"AN EXQUISITELY TRIPPY ODYSSEY.

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A.V. CLUB









Kirk Lynds, CAS Re-Recording Mixer



COLLABORATORS



Bondelevitch CAS MPSE is a re-recording mixer and educator who has won two



Emmy Awards and two MPSE Golden Reel Awards (and has been nominated 22 times). He is Past President and Board member of the Motion Picture Sound Editors. David was the Secretary of the Cinema Audio Society 2012-2019, Vice President 2007 -2011, and has been on the Board of Directors since 2006. He has been writing for the CAS Quarterly magazine since 2006 and was co-editor in 2007. David is an associate professor at CU Denver, where he teaches recording arts.

CAS Associate member Sam Casas has been working as a re-recording mixer and sound designer at Lime Studios in Santa Monica since 2003. He has found a successful niche mixing television



commercials for Global and National brands such as Adidas, Visa, QuickBooks, and Postmates, to name a few. In addition to his commercial work at Lime Studios, he finds time to mix the occasional independent feature such as LUPE for HBO Max, various shorts, and music videos for artist such as H.E.R. and French Montana. Connecting with other CAS members while writing articles for the CAS Quarterly has been especially educational and rewarding.

Devendra Cleary CAS is a Los Angeles-based production sound mixer who who just completed the Starz limited series Gaslit. He is the Vice President of I.A.T.S.E. Local 695 and a frequent



contributor to the CAS Quarterly. He joined as an Associate member in 1999 and became a full member in 2008.

Aaron "Cujo" Cooley CAS is an Atlantabased mixer who worked in FOH mixing for nearly 20 years, entering the film world in 2010. There, he

quickly landed in the

sound department.



Good fortune, good work ethics, and good relationships with local leaders helped advance his career, and Cujo now enjoys life and work as a full-time PSM. Cujo's specialties include large-format shows

with high cast/track counts, music and performance-based shows, and staying on top of the leading audio and RF technology. Cujo is an active member of IATSE Local 695 in Los Angeles, IATSE Local 479 in Atlanta, and the CAS. He is the CEO of RF Systems Consultants, specializing in RF management and system analysis for film and TV, and was the former Head of Audio Department at Tyler Perry Studios. Pastimes include beekeeping, woodworking, small farming, good cigars, Belgian Malinois, and spending time with family.

G. John Garrett CAS is a production sound mixer living in Boston, MA. He began mixing live music around 1970 and learned acoustics, signal flow, and recording technology along the way. He began



in the industry booming for Boulder mixer Garrett Collenberger and moved into mixing documentaries, commercials, and feature films after moving to Boston in 1984. He then expanded his RF training by working with broadcast engineers and now also consults with a broadcast tech company in the area.

Adam Howell CAS





into post-production audio before finding his passion in the field as a production sound mixer. He has mixed and supervised over 100 unscripted shows and feels fortunate to have worked on so many diverse projects with creative and talented individuals. When not pressing record, Adam enjoys playing the guitar, Beatles trivia, documentaries, hiking, and spending time with his wife and son.

Peter Kelsey CAS started his career in sound at the illustrious independent recording studio, Trident Studios, where all the early Elton John and David Bowie albums were



recorded and was part of the mixing team for Elton John's album Goodbye Yellow Brick Road. After moving to the U.S., he did a lot of work as a scoring mixer before moving into postproduction sound. Peter won sound mixing Emmys for *Ally McBeal* and *Boston Legal*. He is currently working on Speechless, The Chi, Arrested Development, and Dead to Me. Peter has a degree in mathematics, a black belt in tae kwon do and loves to do public speaking.

Millar Montgomery

CAS is a Vancouver, BC-based production sound mixer who is currently mixing Season 2 of the Netflix show Firefly Lane. Millar's experience goes back to 2002, when he



enrolled in a post-production audio course at the Vancouver Film School. He then began working on sets in the sound department in the spring of 2003. Since that time, he has done sound on productions of all shapes and sizes from documentary to reality to features and has logged a lot of days with either a sound bag over his shoulder, boom pole in hand, or fingers on the faders. Mixing scripted television drama is where Millar spends his working time these days when he is not with his wife and three kids.

Patrick Spain CAS

began his career in the scoring world at Signet Sound in 2001 working on varied films like Cars and Eternal Sunshine of the Spotless *Mind*. In 2006, he was hired at the venerable Ocean Way Recording



(now renamed United Recording), this time working on everything from Dr. Dre productions, to John Mayer records, to the score for Avatar. In 2011, Patrick was hired as a mix tech at Todd-AO Lantana stages in Santa Monica. He worked on shows as different as the run-and-gun feature Lone Survivor to HBO's Girls to the music-centric hit Nashville. Since working as a freelance re-recording mixer, Patrick has mixed for clients such as Netflix, Disney, WB, ABC, and DreamWorks.

Daniel Vasquez Velez CAS is a re-recording mixer, sound editor, and sound designer from Colombia. He studied recording arts and earned a master's degree in audio post-production in London, UK, where

he started his career in



sound. He is the co-founder of Clap Studios, a sound post-production facility in Medellin, Colombia, and SoundNode in Éngland. Daniel has one nomination at the Venezuelan Film Awards for Being Impossible. He has been a member of the Colombian Film Academy since 2015; Audio Engineering Society (as part of the section committee); Colombian Cinema Sound Association (ADSC); and is part of his Regional Film Council. Daniel shares his passion for sound with aviation, as he's also a private pilot.

OUTSTANDING DRAMA SERIES

AND ALL OTHER CATEGORIES INCLUDING

OUTSTANDING SOUND MIXING (ONE HOUR)





ANNOUNCEMENTS



CAS ANNOUNCES NEW BOARD

Following the triumphant return of the 58th CAS Awards as an in-person event, the Cinema Audio Society announced the results of their March election for the CAS Board of Directors. "We were fortunate as an organization to have volunteer Board members who respond to challenge with a renewed sense of service and a commitment to the community," says CAS President Karol Urban. "With tremendous gratitude, I thank the dedicated individuals of the Cinema Audio Society's Board of Directors."

Re-elected to their executive positions were Vice President Steve Venezia and Secretary Frank Morrone. They will continue to serve with President Karol Urban and Treasurer Lee Orloff.

Two incumbent production directors, Willie D. Burton and Stephen Tibbo, were re-elected to serve with Amanda Beggs, Peter Kurland, Phillip W. Palmer, Mark Ulano (former CAS President), and Jeff Wexler.

In post-production, CAS welcomes a new Board member, Christian Minkler. Christian fills the seat vacated by Marti Humphrey. Additionally, incumbents David Bondelevitch, Tom Fleischman, and Sherry Klein were re-elected. These directors will serve with the remaining sitting members: Onnalee Blank, Bob Bronow, Mike Minkler (former CAS President), and Tara Paul.

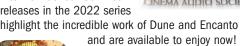


CAS YouTube Channel



YouTube

Like or subscribe to our Cinema Audio Society YouTube Channel and enjoy this year's Meet the Winners Interview Series! Our first releases in the 2022 series







www.YouTube.com /CinemaAudioSociety

Cinema Audio Society Announces Date and Timeline for 59th Annual CAS Awards

We have set our timeline for the 59th Annual CAS Awards, which will take place on **Saturday**, March 4, 2023. For up-to-date information, please visit: https://cinemaaudiosociety.org/cas-awards/







Entertainment Industry Professionals Mentoring Alliance has some great events planned for the fall. Please visit our website to read more: eipma.org

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SUSPENSE" prime video | FYC

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CINEMA AUDIO SOCIETY

58TH ANNUAL CAS AWARDS

BY KAROL URBAN CAS MPSE

n March 24, members of the Cinema Audio Society, the sound mixing community, and supporting filmmakers came home to the 58th Annual CAS Awards. Enjoying camaraderie and celebration at the InterContinental Los Angeles Downtown in the Wilshire Grand Ballroom, the event was buzzing with fellowship.

Attendees started the evening off with a lavish happy hour and dinner. The show opened with the talented, hilarious comedian-author-podcaster Kirsten Vangsness (*Criminal Minds*' Penelope Garcia), complete with song and laughter. Shortly after, the newly elected Board was installed and the previous year reviewed. Finally, silence was taken in honor of our recently departed community members.

The awards ceremony proceeded with announcing winners in outstanding sound mixing and our outstanding product awards. Legendary director and producer Sir Ridley Scott was honored with the Filmmaker Award, presented by Ron Bartlett CAS and Melissa Hofmann CAS.

Paul Massey CAS received the society's most esteemed honor of Career Achievement. Presenters David Giammarco CAS and Andy Nelson CAS





THE 58TH CAS AWARD WINNERS

OUTSTANDING ACHIEVEMENT IN SOUND MIXING FOR 2021

MOTION PICTURE - LIVE ACTION DUNE

Production Mixer – Mac Ruth CAS
Re-recording Mixer – Ron Bartlett CAS
Re-recording Mixer – Douglas Hemphill CAS
Scoring Mixer – Alan Meyerson CAS
ADR Mixer – Tommy O'Connell
Foley Mixer – Don White

MOTION PICTURE - ANIMATED ENCANTO

Original Dialogue Mixer - Paul McGrath CAS
Re-recording Mixer - David E. Fluhr CAS
Re-recording Mixer - Gabriel Guy CAS
Song Mixer - David Boucher CAS
Scoring Mixer - Alvin Wee
ADR Mixer - Doc Kane CAS
Foley Mixer - Scott Curtis

MOTION PICTURE - DOCUMENTARY SUMMER OF SOUL

(...OR, WHEN THE REVOLUTION
COULD NOT BE TELEVISED)
Production Mixer – Emily Strong
Re-recording Mixer – Paul Hsu
Re-recording Mixer – Roberto Fernandez CAS
Re-recording Mixer – Paul Massey CAS
Music Mixer – Jimmy Douglass

NON-THEATRICAL MOTION PICTURE OR LIMITED SERIES MARE OF EASTTOWN:

MARE OF EASITOWN:

EP. 6 "SORE MUST BE THE STORM"

Production Mixer – Richard Bullock Re-recording Mixer – Joseph DeAngelis CAS Re-recording Mixer – Chris Carpenter

TELEVISION SERIES - ONE HOUR YELLOWSTONE: S4 EP. 1 "HALF THE MONEY"

Production Mixer – Andrejs Prokopenko Re-recording Mixer – Diego Gat CAS Re-recording Mixer – Samuel Ejnes CAS ADR Mixer – Michael Miller CAS ADR Mixer – Chris Navarro CAS

TELEVISION SERIES - HALF-HOUR TED LASSO: S2 EP. 5 "RAINBOW"

Production Mixer – David Lascelles AMPS
Re-recording Mixer – Ryan Kennedy
Re-recording Mixer – Sean Byrne CAS
ADR Mixer – Brent Findley CAS MPSE
ADR Mixer – Jamison Rabbe
Foley Mixer – Arno Stephanian CAS MPSE

TELEVISION NON-FICTION, VARIETY OR MUSIC - SERIES OR SPECIALS

THE BEATLES: GET BACK PART 3
Production Mixer – Peter Sutton (dec.)
Re-recording Mixer – Michael Hedges CAS

Re-recording Mixer: Brent Burge Re-recording Mixer: Alexis Feodoroff Music Mixer: Giles Martin Music Mixer: Sam Okell

Foley Mixer: Michael Donaldson

OUTSTANDING PRODUCT AWARDS 2021

PRODUCTION

AXIENT DIGITAL ADX5D
DUAL-CHANNEL WIRELESS RECEIVER
Manufacturer: SHURE INCORPORATED

POST-PRODUCTION
DOLBY ATMOS RENDERER 3.7
Manufacturer: DOLBY LABORATORIES

CAS STUDENT RECOGNITION AWARD

LILY ADAMS Savannah College of Art and Design Savannah, Georgia

CAREER ACHIEVEMENT AWARD

PAUL MASSEY CAS

FILMMAKER AWARD

SIR RIDLEY SCOTT

Photos by Alex J. Berliner/ABImages







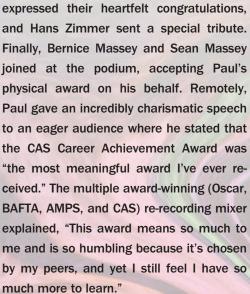








CINEN



The Student Recognition Award was presented by Sherry Klein CAS and Mark Lanza MPSE to Lily Adams from Savannah, College of Art and Design, Savannah, Georgia. Lily was presented with a check for \$5,000. The other four finalists each received \$1,000. Co-sponsors of the Student Recognition Award were Blackmagic Design









SOCIET











and DTS. All student finalists also received gift bags with a variety of production and post-production products with an equivalent value of \$9,000 to help launch their careers in sound. This was made possible thanks to the generous support of the following companies: Acon Digital, AKG Professional by Harman, Avid, Deity Microphones, DTS, Filmmakers Academy, Halter Technical, iZotope Inc., K-Tek, Krotos Audio, Lectrosonics Inc., McDSP, SoundDogs, Sound Particles, Todd-AO, and Zaxcom.

After two years apart, the joy from the room was palatable as friends and colleagues regaled of their challenges and successes. Attendees closed out the night with an afterparty sponsored by Smart Post Sound.

The Cinema Audio Society could not be more delighted to celebrate this year's winners, honorees, and the community at the 58th CAS Awards. We are grateful to our guests who complied with our COVID protocols, helping to ensure a safe and unforgettable evening.













MEET THE WINNERS

MOTION PICTURE – LIVE ACTION DUNE

by CAS ASSOCIATE SAM CASAS

Unless you were living under Arrakis this last year (sorry, my sad attempt at an "under a rock" pun), it would be hard to ignore all the accolades the sound team from the movie Dune won this last year. Among many are the Oscar, the BAFTA, the AMPS Award, the Golden Reel Award, and of course, the CAS Award for Outstanding Achievement in Sound Mixing for Motion Picture – Live Action. This year's CAS winners include production mixer Mac Ruth CAS, dialogue and music re-recording mixer Ron Bartlett CAS, sound effects re-recording mixer Doug Hemphill CAS, scoring mixer Alan Meyerson CAS, ADR mixer Tommy O'Connell, and Foley mixer Don White. I had the privilege of discussing the film with four of the six winners (Tommy and Don were unavailable due to scheduling conflicts and turnaround time demands). They all had high praise for director Denis Villeneuve's strong vision, but also for fostering a communal environment that allowed each team member to be creative and contribute to the film at their highest level. I spoke first with Mac, and then Ron, Doug, and Alan. Here are some highlights from our conversations.

Mac, I imagine situations arise on large productions when sound is not the number one priority and there must be some give and take. How did you and your team manage to get the job done in a collaborative manner?

Mac Ruth CAS: Everything comes from Denis Villeneuve in this film, and he knows how to focus on the performance at hand. One of the things that was unique was our ability to stick to a fundamentalism in audio capture that resulted from this being a one-camera movie. This is an old way of

doing things where all departments are working to the same frame lines. We were able to allow the boom to operate properly, and that creates such an intuitive, natural acoustic reproduction of



Production mixer Mac Ruth CAS

the space that plays to the listener and the viewer. I don't think he compromises his vision in any way; I think he enhances it. It's really that focus that makes it happen.

A lot of credit goes to the crew and the collaborative environment we were in. I've got a great team that has stuck together over the years. My main boom operator is George (György) Mihályi. Being best friends with camera, he couldn't have more street cred with the grips, electric, and everybody. Áron Havasi is my second boom. He's super smart, super cool, and really good with the communications and equipment. Eliza Zolnai, she's a sound mixer in her own right, and she's so good with the cast. That's always been a wonderful part of our workflow; creating an environment that's welcoming and creating a trust relationship where we can have access. You have to earn it and be there and participate in what an actor goes through to prepare for a scene. We work hard to foster a conducive environment for them to do what they have to do.

It seems the collaboration had a big part in helping you to capture rich full dialogue, but I feel like you were also able to capture the space the actors inhabit. What about these locations helped you to capture great audio, and what were the challenges?

Mac: Interior scenes like the living quarters in Atreides were shot on these big analog sets, built in Budapest with really good acoustics. These big spaces allowed us to capture that raw perspective by allowing us to keep the boom so workable, even on long corridor shots, so that you get the

transparent experience of that space. This goes back to that non-compromised frame line.

Getting out in the desert, it's hot and it's cold, but these places were amazing. The Jordan Wadi Rum Desert is where I had some deep experience working on the Martian. First you land at basecamp, which is a series of plastic runners and large containers. Then you make preparations to move over the sand. We traveled in small off-road vehicles that move at semi-high speed, which turns into a series of ruts and vibrations that is insanely hard on the equipment. You'd like to think you can just build stuff into bags and go small, but there's some cart work to be done and dust to be kept out of the faders. It requires a build that might be different than what you use out in the studios. You have to make sure your equipment is reliable, and that you have backups of everything. That means going big and small at the same time and always being ready to move through caverns and over sand. The desert is a great acoustic environment that invites intimate performances. And once you are out there, sometimes it's just about not making footprints.

Did you have any instances where you focused on recording sound effects?

Mac: Outside of normal dialogue, my favorite effect we captured together for the spice crawler was on a scout with Denis, and Denis picked it up first. We were in this resortslash-gateway to the endless desert in Abu Dhabi. The desert and resort are both building in opposite directions as fast as they can, with heavy machinery always working in the sand. I know that [supervising sound editors] Mark Mangini and Theo Green worked hard to create soundscapes that aren't electronic but have to work with some concept of reality. So, we got some equipment to capture these machines sliding down sand dunes and then crawling back up making tennis courts or whatever. They were controlled slides, but it was dangerous.

Ron, the use of perspective and reverb on the dialogue really helped to put me into the space in this film. Is that something that just comes instinctually as part of the process when you are mixing, or is that something that required a lot of experimentation?

Doug Hemphill CAS: I remember Ron and Denis and Joe [Walker] discussing the reverb.

Ron Bartlett CAS: Yeah, they definitely have an aesthetic they like, and I try to follow that, of course. It's natural for me to put perspective into a track, but I never try to cross the line to where I'm losing intelligibility, which is pretty easy to do. As soon as you put a little perspective in, it's so easy to lose intelligibility if you're not careful. Now, there are certain moments in the film where you're not exactly supposed to hear every word. A good example is the "Gom Jabbar" [pain box] scene. It starts it off where you can hear the dialogue very clearly, but then it gets lost a bit in the music and the emotion. That's all on purpose, and truly what

Denis wanted. It's all about the story and you need to follow that emotional ride, that's the main thing.

What are your thoughts on compression regarding intelligibility?

Ron: While mixing, I tend to use clip gain and EQ automation a lot. If you look at my clip gain line you're like, "What the hell is that?" People always comment when they're mixing with me, "Your EQ is like a wave, it's constantly moving." That's because I mix dialogue minutely; I'm constantly going after syllables. It's what makes sense to me and how I hear it. If I'm turning down a "T" or an "S," I'm doing it with clip gain and EQ, and they're both constantly shifting and moving. [As a result], I end up using less compression because I'm doing it manually.

Doug: I will say at this point that Ron is the best person I've ever worked with at getting dialogue through—and I've worked with everybody. Ron has immense respect for the audience and making sure they can hear the dialogue.

Ron: Thanks, man. I pay Doug a lot of money to say stuff like that. (Both laugh)

Alan Meyerson CAS: It's the same with music; clip gain's been a huge upswing in terms of how we manage level. A lot of times, I just have a little bit of general compression on just to make the whole thing just punch a little louder. It's hard with any compressor for you to really nail the releases and the attacks perfectly, avoiding the front-end transient clipping. While working on Gemini Man with Ron and Doug, I would come to the dub often. It was fun watching these guys in their native domain and how they manage audio, and look at what the similarities and differences are in how I manage music. We use a lot of similar tools, so I have a little bit of envy sometimes. But then I'm like, "Oh sh*t, that's cool, I like what he's doing there!"



Scoring mixer Alan Meyerson CAS



Music re-recording mixer Ron Bartlett CAS

Ron: Alan and I trade tips all the time. We'll say, "Hey, I found this cool plugin," or "Check out this trick I found." which is a very healthy relationship. A lot of people say, "No, no, no! This is my secret stuff," I disagree. I want to share it and learn from other people,

Doug: What these guys did with

music was extraordinary. We had an idea of what we were going to do with the dub, and then the music came in and we had to re-think the mix. Ron definitely had his hands full. Of course, we're all happy with the results, but that was a lot of work.

Ron: We added three or four days of music premixing, which I never get. So we ended up going back to my house where I'd done all the dialogue pre-dubs. It was such a fun time and very special to me. It was me, Denis, and Joe. They're all sitting on my couch in my studio. Clint Bennet (music editor) and Ryan Rubin (music editor) were [also] there, and we're talking to Hans Zimmer on FaceTime, and we're just mixing the movie in my house, hanging out. We were away from everybody, having a good time, my wife made us lunch. I mean, that's the way to do it. Hans was so funny, he said, "Ahh Denis, this is so fantastic, this is 'the boudoir mix."

Alan, the score, especially the vocals, had this other worldly and unique sound. I'm curious how much of that was coming inherently from Zimmer's score and how much tweaking and experimentation you had to do?

Alan: The answer to both is yes. It came from Hans's score, and it was a massive amount of tweaking and examining. Every stem came to me in some version of stereo, and I had to figure out how to fill my space with it.

Loire Cotler's voice had so much power and density. Figuring out how to get that across with the massiveness of the score was challenging. The rough mix was perfectly good, but kind of flat up against the screen. So, when you expand everything out to do what I did, and then what Ron took to the next level, nothing can stay exactly the way it is. It all has to sort of grow accordingly with everything else.

The way it works for me is, when you get a sound that has [similar] parts in other cues, you can create settings, and then save the track data and go from there. There was quite a bit of time spent at the beginning coming up with all of the colors, all of the sounds, and then painstakingly going

through and saving track presets to be able to bring in when it's the appropriate time on different cues. Otherwise, I'd still be mixing it!

When you're mixing the music, Alan, are you mixing against picture as well, or are you purely just listening to the music?

Alan: I am absolutely mixing against picture, and I'm mixing against dialogue and whatever the state of the effects are at; trying to be respectful and thinking about Doug's stuff. The concern is mostly low end and how can I get my low end to peacefully co-exist and have a good choreography with the sound effects' low end. I put a tremendous amount of time into thinking about that. Having said that, every single piece of music [in this film] was a set piece. I knew that Ron was gonna have to, at some point, get in there and do what he had to do, because I did need to mix it from front to back as a piece of music. Even though I'm taking dialogue and effects into account, the dialogue and sound effects are still being shaped. I do the best job I can, and then trust the guys who are going to put it all together to do the rest.

Ron: Alan touches on a point that is very important; he turns the dialogue on while mixing. A lot of people have everything off, and they mix the score by itself, and it sounds beautiful. Then they give it to me, and I have to duck the music hits to clear lines of dialogue.

Alan: I don't turn dialogue off. My saying is, "Dialogue is my lead vocal."

Doug: I'll say this, because Alan did this, it made our job a lot easier. Period.

Some of the dialogue scenes are incredibly quiet and clean. How did you achieve those results?

Ron: I use iZotope for many things, but it has to be done right, you can't just stamp it with a preset and call it good. You have to use it gingerly and use certain plugins at certain

times. You never use one plugin all the way; it's always three or four plugins a little bit. Dave Bach, our dialogue editor, is one of the best. He went after alternate takes, putting T's and D's and S's on things; to have that support means a lot. In the mix, Doug is a master at clearing lines or giving me a nice center fill when I need it. I never even have to ask him. I don't always get that, but the good ones know.





Doug: Well, if we haven't figured it out by now, we never will (laughs). It all comes down to taste. You know Alan has it, Ron has it...

Ron: Doug has it. It's not a "technical craft" when you look at what we do. It's a very intangible artform.

Doug: I think the difference between being a craftsman and an artist is what you bring to the table. Are you willing to put your emotion and your personal self into this project? Michael Mann once said to me [that] he judges filmmakers on how much of themselves they put up there on the screen, and that changed the way I think about what we do. You gotta have the courage to put yourself out there.

Ron: Look at what Alan was talking about and how much passion he put into all those tracks. Yeah, it's his job, but he does it because he really cares.

Alan: I always find that I'm my worst judge. No one gets to this point in their careers by just grazing along and not putting their heart into it. I think that this film, probably more than anything I've worked on, when I went to see it in the theater, I couldn't hear the mixing at all, but I could hear the power of the thought that went into the sound. It was a no-brainer that it was going to win the Academy Award.

Doug, when you get the sound design from Mark Mangini and Theo Green, where do you start?

Doug: Without a doubt, on this film, I got some of the best sound design I've ever received in my life. Like these other guys here, I'm a creative person. As soon as I hear a sound or music or dialogue, I start thinking creatively, and that's what they expect of me. If it doesn't sound better after I mix it, then you've got the wrong guy. The Dune people are a family. We speak to each other with respect, and we all have ideas and that's how it works. It's amazing.

Ron: A lot of people just grab their faders and do their thing, but Doug always stretches out of that box. He's talking to the editor and saying, "Hey, what if you did this?" or "Oh, can you give me something like this?" He stretches them, pushes them, and comes up with some of the coolest stuff.

Doug: In a creative endeavor, your failures define your successes. If you do something that's terrible, then, OK, that's terrible, what's the opposite of that?

Ron: Yeah, if you want to touch on "the voice," the same thing happened with that. Way early on, we did tests on the voice, like six or seven each, and never listened to each other's concepts. Presented them all to Denis, and he said, "Yeah ... no." So, we started listening to each other's and talking about what we did, so we didn't do the same thing again. That speaks to what Doug said about failures. When we present something to Denis to see how it works, if it fails, so what? What else you got? Now you gotta really scratch your brain to do something cool. It really ups your game. And that's the beauty of working with that guy, he very politely and subtly pushes you to those levels that you might not have discovered.

Alan: When we were working on Black Hawk Down, Hans had this eight-minute suite. I had spent a day and half mixing it. Hans comes in, he listens to six bars, hits stop and says, "You're mixing the wrong movie." But it's learning. As long as you can get your ego out of the way, that's a valid comment. You're still doing your job. That is your job, to define what you want. And part of that is eliminating what you don't want.

You know one of the things I love about being involved in filmmaking as opposed to when I was in the record business is filmmaking is very tribal. You get in there with your village. And you do this thing together. I like to have feedback, and I like to feel like I'm part of something larger than just me in a room pushing faders.



MEET THE WINNERS

MOTION PICTURE – ANIMATED ENCANTO

by DANIEL VASQUEZ VELEZ CAS

Encanto was inspired by Colombian culture and traditions. Directed by Jared Bush, Byron Howard, and Charise Castro Smith, it tells the story of the Madrigal family, who, after suffering forced displacement from their town, find themselves living in Encanto, a magical place surrounded by mountains and harmony among the community. Each member of the family has a magical gift, except Mirabel, who has to face her own family to save the blessing. The film resembles the "Magical Realism" of Colombian writer Gabriel Garcia Marquez, with the blend of reality and surreal situations with personal struggles as key points in the story.

Encanto features diverse but unique music that conveys culture and emotion, presented along with great dialogue, effects, and Foley, resulting in a dynamic and powerful mix for a thrilling experience that has captivated the ears and hearts of millions around the world. Re-recording mixers David E. Fluhr CAS and Gabriel Guy CAS; original dialogue mixer Paul McGrath CAS; ADR mixer Doc Kane CAS; Song mixer David Boucher CAS; scoring mixer Alvin Wee; and Foley mixer Scott Curtis form the team of exceptional mixers that received the recognition. At the CAS Awards, there was a special moment when Mauro Castillo, a member of the cast (playing Felix), announced the winners through a pre-recorded video and sent a warm message to the recipients. I had the opportunity to talk to them about their trajectory and their process of making the sound of Encanto.

David E. Fluhr CAS and Gabriel Guy CAS: Re-recording Mixers

The re-recording mixers on this film were David E. Fluhr

CAS and Gabriel Guy CAS. David supervised the process and was in charge of mixing the dialogue and music, while Gabriel was in charge of mixing SFX, ambience, and Foley. According to them, their team works so well that it is to a point where non-verbal communication is possible for a creative collaboration, as they have the same idea of mixing, putting ego aside, and focusing on what is best for the movie. It's something that they both love. What drives them to do this? The storytelling and helping filmmakers tell stories through sound.

Encanto was a milestone in their career. It's a musical with a lot of action that allowed them to work again with composers Lin-Manuel Miranda and Germaine Franco. They have seen the influence of the film on families. "The movies have grown up and they are now for everybody," they feel.

David Fluhr CAS thought he was going to be a composer when he was a teenager, as he composed music since sixth grade, and grew up in Long Island taking music lessons, performing, writing, and conducting in high school. He went into college for Electronic Music Composition in Upstate New York while he was getting involved in recording studios. It was fascinating for him being able to record his music, record his friends, and make records. Right out of college, he was offered the opportunity to move to California in 1981 to work in a studio called Compact Video, which was a premier independent post-production facility at the time. He was serving coffee for a couple of years while learning from others and on his own. Then he realized that the mixing console was his instrument to help tell stories and transmit emotions with. After mixing a lot of TV material, he moved to Todd-AO and began working on films, leaving the TV background behind. Four years ago, David joined Disney Animation full time as supervising re-recording mixer.

David considers that being part of organizations like the CAS is a way of getting involved with the community and giving back. He was CAS President for two terms, in which

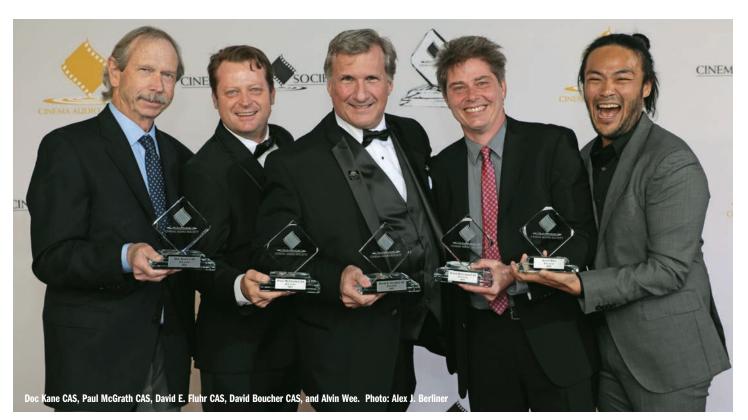
he worked to broaden the scope of mixers that were part of the organization and opened it to more members. Throughout his career, he has seen the evolution of technology and has been lucky to be at the edge of innovation.

On the other hand, Gabriel Guy CAS went to college for a degree in Anthropology, and he thought his future would be around this field of study. He started playing trumpet and guitar in fourth grade. However, doing radio in high school and college allowed him to explore sound. It was his first mixing experience; mixing radio from CD players, turntables, and cartridges for the promos. He was excited by the sound of things and loved radio shows. He started in the industry 23 years ago at Skywalker Sound and met David 20 years ago when David, while working for Todd-AO, went to Skywalker to mix a film. Gabriel was the mix tech for Gabriel, then moved to Todd-AO and later both moved—to Disney to work on live-action and animation projects.

Gabriel began working on dialogue recording at Disney and then moved to mixing shorts, temps, promos, and then feature films. The first film they mixed together was Frozen (2013). Since then, eight feature films plus a lot of shorts and other projects have brought them as partners on the mixing stage.

For *Encanto*, Gabriel had around 21 days of SFX premix. David had around 10 days for dialogue and around seven days for songs. For the final mix, they had around three days per reel. However, it is a lot more work than just the days at the dubbing stage. It goes back to the early stages of the film as every aspect of sound quality has to be considered throughout the process and kept consistent, so it is a long process. They are involved in the film several months before the final mix, therefore, constant communication with picture editors, directors, and the rest of the team allowed them to discuss ideas and try new concepts to make the film work in the best way. They enter the process early on from storyboards and animatics so the whole team can identify what works on the film and what doesn't. They keep building from that, having narrative, visual, musical, and sound elements in mind as storytelling tools, tested through constant screenings and always evolving as an ongoing process. Being in the same facilities contributed to the success of the process, they add.

During the pre-dubs and final mix, which they did at Skywalker, David usually did a dialogue pass first. He mentions that one advantage of having Gabriel on the dubbing stage as a re-recording mixer is that he knows all the details of the dialogue because he was involved in the recording process, so they could help each other out. Then David made a music pass, and Gabriel jumped in with the FX pass. However, in some scenes with a lot of action, they would change the order. It is an organizational event working on these films with such a large number of tracks. They handled hundreds of music tracks with appropriate splits that enabled David to create an image of the orchestra that is immersive without being distractive, while having the overall screen-oriented perspective. To keep track of this, David usually has the written score with him at the mixing stage. Given his musical background, his collaboration with composers is transparent as they can communicate in the same language, and that helps with the tension and emotions that sometimes occur at the dub stage. "It is important to gain the trust of the composers," he adds.







Re-recording mixer Gabriel Guy CAS

Gabriel and David said they had a great degree of freedom while working on *Encanto*. Listening to the director's sensibilities and being involved throughout the process allowed them to contribute to the film. The sensememory that directors had from their trip to

Colombia was conveyed by the entire team of sound design, sound editing, music, and Foley. For example, the shoes or sandals used by many characters, which are not conventional shoes as they don't have rubber soles, are called alpargatas and are made from fique—a natural fiber used for rope—so sound had to be truthful to these elements for authenticity.

They work to make movies robust, to fulfill the expectation that the audience has for Disney movies; making them interesting, dynamic, and with emotion within the envelope of the Disney brand, and at the same time, making each film unique. It was all about the right amount of each sound. Sometimes during the fantasy and flashback moments, they approached it with subtle presentation of the sonic elements in a more surrealistic style. For instance, in the scene after the house collapses and Mirabel runs away, the environment is very rich, but when she gets to the river and the "Two Oruguitas" song begins, it starts as an intimate moment. The performance of the music then kicks in to drive the emotion and, subsequently with the butterflies, the atmosphere blossoms again. It was a constant process of removing elements and bringing them back that gives sound and story a place to go within the scenes. "Sometimes mixing is about taking stuff out, not just piling sound elements," they add.

Dialogue is a key element in audiovisual storytelling, and having the dialogue consistent with the singing vocals in *Encanto* was a challenge for them. They had 12 main characters who had to transition smoothly from dialogue to singing and vice versa. Tools like different microphone options, transitioning reverbs, and starting the songs with

the treatment for the dialogues and then bringing them into the songs helped to craft the mix, according to David.

David used reverb to fit all dialogue in the space, but was careful not to make it evident. Thus, sometimes he would use a mono reverb following the characters around, each character with its own object. Wider reverbs would be used for larger and specific places like Isabella's room, with front and back reverbs with some elevation to give sonic interest and depth to those spaces.

Gabriel Guy CAS was involved in the dialogue recordings for the domestic versions, in house and remotely (in Los Angeles, New York, London, Atlanta, Bogota, Boston, Orlando, Nashville, Santa Barbara, and Vancouver). He supervised the process with remote studios, from choosing equipment, studio layout, running tests, and setting standardized workflows. Every aspect, like microphones, preamps, and acoustics are critical to meet the high standard of quality control. It is about protecting the kind of quality that goes into the Disney brand. Working closely with Gabriel, the original dialogue mixer on *Encanto* was Paul McGrath CAS.

Paul McGrath CAS: Original Dialogue Mixer

When Paul got out of school, he started working at one of the premier voice studios in town (L.A. Studios). He worked on a lot of different projects and films. Disney, one of their clients, was looking for somebody to work with them internally, and Paul seemed to be the perfect candidate to take the job. Although he wasn't planning to leave, the opportunity arose and he took it. He began working mainly on franchise animated films for Disneytoon Studios, specializing in recording dialogue and music vocals and having the opportunity to work with Disney's affiliated companies like Disney Animation Studios and Pixar. His stage is at Disney's Sonora Studios and his specialty is character voice recording for animation and ADR.

Paul shares, "Disney is my 'casita,' it's my home. Working with this incredible team, cast, production management, and crew is a great experience. We care about sound quality, the story, equipment, and performance." For this film, home recordings were avoided and talent eventually came into the studio for all sessions, which was a challenge they faced after the COVID outbreak a year earlier. In terms of equipment at the studio, Paul used a Brauner VM1 tube microphone with Avalon preamps. As for the studio layout, there were two booths, so the talent, the director, and the dialogue mixer could each have independent rooms; following all the health protocols in a comfortable environment for all involved to get the best takes in performance and sound. "Everything has to be recorded as best as possible, so then the character can be placed anywhere and it can be processed as needed [such as underwater, off-screen, etc.], which becomes important for animation due to the nature of the process."

Paul worked on Encanto from the ground up. He uses a

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Doc's Stage B on the Disney Lot with Paul's stage at the Disney Sonora Campus; both with reduced capacity due to the health protocols and restrictions. They could get nine people separated with baffles across the two studios. Each actor was individually miked. Synchronized timecode and reference allowed them to lock the stages for the creative process and also gave them the

proprietary software tool that allows takes and playlists to be organized using time of day as reference. This lets them track and catalog dialogue and music for the editorial department. "It's the behind-the-scenes team that goes above and beyond to push the limits and bring tools that allow the stories to be told," he adds.

There is a natural process for Paul to work with other sound team members like Gabriel, with whom he has an established working relationship on several films. This allows them to work seamlessly with a good understanding of each other's techniques and workflows. Paul considers Doc Kane CAS, the ADR mixer for the film, "The benchmark that all dialogue mixers aspire to. His work is so impressive that it becomes a goal and an aspiration for us to achieve that level of excellence. He is not only the best at Disney, but to me, the best in the entire industry. He is a great mentor and friend and is super inclusive and generous with his knowledge and guidance, as well as open to ideas and techniques."

Paul feels that consistency is key, because actors can be recorded several times throughout a period of two or three years and the recordings must match each other regardless of where and when they are recorded. "Something that I record today has to match what I recorded two years ago; not only as ADR but also original dialogue." That's why it's very important that the whole team has a common philosophy that matches each other so they can collaborate together.

In animation films, there is original dialogue which is used for animation process and lip sync. However, similar to live action, there is also ADR. It is recorded when a take has to be replaced for technical reasons like noise, the non-ideal conditions of home recordings, performance improvements, or for creative reasons. When timing has to prevail, ADR is also the choice. This process was led and supervised by Doc Kane CAS.

Doc Kane CAS: ADR Mixer

During the ADR process and loop group, they connected

opportunity to deliver the group tracks separately. Individual microphones gave David Fluhr CAS better control during the final mix.

Paul and Gabriel handled the original dialogue recordings that were done in L.A. and were also involved in the recording of the vocals of the music with David Boucher CAS, the song mixer for *Encanto*. Paul mentions, "He is incredible, he is fantastic, one of the best in the world at what he does."

David Boucher CAS: Song Mixer

David Boucher CAS has been a musician since his teenage years in Atlanta. He studied jazz and recording at the University of Miami and later moved to Los Angeles where he has been working on recording and mixing music for motion pictures for several years now. When David was finishing *Soul*, he was approached to work on *Encanto* with Lin-Manuel Miranda, the original songs composer. They worked together on *Moana*, so Lin was happy to have David continue with another Disney project.

David is usually involved very closely with the composer and the music department from a very early stage, and Encanto was no exception. He worked on the film for around two and a half years, initially taking Lin's demos and mixing them to a point where the director could judge them within the context of the film. They first began working on the track "Family Madrigal," sketching it out with an accordion player and a percussionist in a basement studio in the animation building. They replaced virtual instruments with live players to elevate Lin's demo. These accordion recordings even made the final mix, which is why, according to David, it's better to have professional recordings from the beginning because performances from early stages can be great for the film, but they need to be up to technical standards. "In some ways, it might be cheaper in the end because, once I record something properly with the right performer and the right performance, it's there, it can be used in the film, we're ready. Even if we end up recording a lot of stuff that doesn't make the final mix, enough stays

from early recordings to justify the extra effort," he adds.

They had a lot of musical elements recorded in different places. There were instruments recorded in Nashville and New York, a lot of percussion and orchestra for the songs in Los Angeles, and vocals in several cities, including Bogota, Colombia. David supervised most of the remote recordings as well. For this, he would first get a list of equipment available in each studio. He would then choose microphones and preamplifiers and distribute session templates that studios would use.

Due to COVID restrictions, they found a way of working together for the recording of vocals. David Boucher CAS and Paul McGrath CAS were in the same room. They took extreme precautions required by the studios due to health protocols. "Imagine you are in a control room in a studio. There's someone at the mixing console, then there's a credenza desk behind, and then there is a plexiglass wall and then there was me!" says David. For this process, he used Zoom to control the recording computer, Audiomovers software to feed the directors, and monitored the signals through headphones while communication went through the studio speakers. Paul was the main operator, he was the one actually touching the hardware. "One problem is that to speak on the talkback mics with the facemasks on, you have to be more conscious of your enunciation and volume to make it clear, so you also end up with a sore throat," recalls David. He adds, "In the end, what I really care about is that I am getting a great-sounding singing vocal or instrument performance, and that requires good communication and good monitoring."

One of the things that David struggled with the most was the loneliness of sometimes being the only person in the studio. It is also more exhausting because of the extra tasks

to be performed like opening and closing communication feeds, different talkbacks, etc. He believes in collaboration as a path to success, but adaptation is also key—and he adapted well to the circumstances. However, there were positive things from this isolation. He had more time talking to the directors who could drop into a session virtually and contribute to the creative process. He is looking forward to going back to having collaborative sessions in the studio with other team members present.

The second booth at the Sonora Studio was used to place the pianist and vocal coach, Sam Kriger, so he could be safe and comfortable. Everyone adapted very well to the situation and were very proactive and collaborative in the creative process, which had to happen in a part-remote, part in-person session. Lin-Manuel Miranda, original songs composer, was remotely supervising and contributing to the vocal recording sessions from New York.

"We Don't Talk About Bruno" is one of the flagship songs of the film. It became a hit, charting at the highest ranks worldwide. David recalls that, "When I was mixing 'Bruno,' even in the early stages, I looked at my wife and told her 'this is the hit,' though she felt the hit would be 'Surface Pressure.' It shows how each song talks to people differently according to their experiences and to what each person can relate them to. Most importantly, the film talks to a wide audience."

Another highly acclaimed and award nominee song, "Dos Oruguitas," performed by Colombian artist Sebastian Yatra, was recorded by David Boucher CAS at Capitol Studios in California. He was amazed by Sebastian's singing and his endurance. "I got the intimacy I needed for that song, and in two languages!" This song was in Spanish for the domestic and foreign versions within the scenes of the film, with



localized versions for the end credits.

David relied on the performers, especially Edmar Castaneda. They had these music styles in their DNA to give him advice on the differences between the music styles and their characteristics. Although it doesn't necessarily need to be Colombian, it has to marry with the Colombian-inspired music throughout the film, with a wider Latin American perspective. It has to be authentic, but it also has to flow naturally from the composer's idea to the story as a whole. As David mentions, "It wasn't a music documentary, but it was a film that embraced Colombian culture."

Due to circumstances, instrumental parts were recorded by sections and not as a block. Although it gives more flexibility for the final mix, David considers the ensemble and the interaction of all instruments and the room very important, and that usually makes decision-making easier. For this film, he delivered a very wide stems layout with 12 LCR lead vocal stems, four 5.0 group vocal stems, more than 20 instrumental stems where drums and bass were 3.1, orchestra was 5.1 by sections, some elements were Quad when center channel wasn't needed, and electronic stuff was mostly stereo. The track count got very high, and this was just for the songs.

The plan for working on the music worked very well because both David Boucher CAS and Alvin Wee, the score mixer, were working in the same building at Fox, so the collaboration, file transfer, decision-making, and answering questions was easy. "David Boucher is a mentor, he has a lot of experience. Without his faith, it would've been really hard. When he believes in you, he will support you," shares Alvin.

Alvin Wee: Scoring Mixer

Alvin Wee is from Kuching on the island of Borneo in Malaysia, where he grew up playing music in a band and learning to do arrangements for other bands. After school, he moved to Boston, Massachusetts, to study contemporary music writing and music production and engineering, which provided his first encounter with Pro Tools and pro audio equipment and technology.

In the meantime, he was still working with the Malaysian music and film industry. He began working with a music producer after he moved to Los Angeles in 2013, and started to expand the scope of composers that he was working with. This is how he met Germaine Franco, the score composer. Alvin worked with her a few years ago while he was assisting other people and was offered to mix the score for a film Germaine was working on. They have collaborated on projects since then and she trusted him for *Encanto*. She promised Alvin "something cool," and as soon as Alvin watched a sequence from early on in the process, he immediately jumped into the film. "I'm very grateful for these people because they are accepting, embracing, they believe I can do it. I'm very grateful for Germaine, she gave me the first opportunity and now we've been working together on different projects." Working in different places and with different people led Alvin to improve his craft and art to be part of *Encanto*. The connection of people through the films, through the music, is one of the most rewarding things for him.

Before he started working on the film, Alvin did a lot of research in Colombian music. He watched a documentary about Cumbia and other traditional music types to be able to identify the differences between various styles and instrumentation. Alvin wanted to understand the essence, the source, and authenticity of the music with enough flexibility to make it universal at the same time. "I understand how important it is to the people to get the music right. If you grew up in a certain region, you know and you feel the music and you feel identified by it," says Alvin.

Alvin tried to have as much input as he could in the recording process of the score, but couldn't attend all the remote sessions because he was already mixing what was recorded. However, Germaine produced all the sessions and "the process worked because everyone was professional, everyone was incredible," he adds.

Similar to the process that David Boucher CAS had with the songs, the full orchestra was recorded by sections. Strings one day, woodwinds another day, brass another day, and so on. Almost all the original recordings made the final mix except a few pickups like guitars and baby bass, but most original recordings. The choir and background voices were recorded in Bogota, the arpa [harp-type of instrument] player and other musicians were recorded in New York. There is also a lot of accordion in the score, recorded by Alvin at Village Studios in L.A., that Germaine wanted to make sure was properly captured and honored in the film.

Other very important elements for storytelling through sound are SFX and Foley. They really add that level of realism to the films, especially for animation with all the subtleties. It's a blank canvas ready to be painted with sounds. There is a lot of Foley in *Encanto*, carefully planned so SFX and Foley wouldn't clash. They would cover different aspects or work together to achieve the desired sound for a particular element in the film. For instance, the tiles and cracks were recorded and created for the film by Shannon Mills, the supervising sound editor, while the sand was a mix between Foley and SFX. Many musical elements covered SFX and many SFX and Foley covered musical elements. The sound design team tried to match as close as possible to the music. In Encanto, it was favorable to sync the Foley to the music rather than to picture because of the nature of it being a musical film. For that, Scott Curtis, the Foley mixer, would send the music cues to Foley artists John Roesch and Shelley Roden so they could have a sync reference for the performance that was based on the music rather than just the visuals. They presented Foley elements to give options and, unlike some musicals, Encanto used more of the Foley during the songs than traditionally it would.

Scott Curtis: Foley Mixer

Scott Curtis began playing music in bands in high school, which led him to pursue a career in the recording industry, eventually shifting to sound for motion pictures. He realized that Foley was something that could provide a balanced schedule while applying all the concepts he had acquired

from recording music. Since then, he has been working in Foley for more than 25 years in different studios as an editor and as a mixer. The latter being his current role at Skywalker since 2016. His experience as a former editor helps him understand the possibilities within the Foley stage. One particularity is that Scott tends not to watch how the Foley is performed. He believes that if he is convinced of the sound, it probably works for the film. He prefers not to be biased by knowing the prop or element used to make specific sounds that could otherwise be clouding the judgment.

Before they began recording Foley for Encanto, Scott watched the film to get a sense of what they wanted and how it would be approached, receiving guidance from supervising sound editor Shannon Mills and Foley editor Alyssa Nevarez, who would cue the Foley session. Then, Scott and the Foley artists, John and Shelley, had around three weeks to record it.

There is a sequence in the film inside Bruno's room when Mirabel discovered the vision in which sand became a prominent sound. According to Gabriel, a combination of Foley and SFX was required to create this element. Scott recalls that it was a challenging sound to record to avoid phase artifacts, to have the right perspective, and the right signal to noise, as minor movements in mic position made a huge difference. He also helped with pitch shifting to allow for layers to work together. Part of it was covered in the Foley process to help with the movement and nuances by recording hands, knees, and touches first, and then overall movements in order to layer and cover the sand thoroughly.

Another sound that had a particular request was Luisa's walking. Her footsteps needed to feel heavy, so in order to achieve this, Scott took a copy of the footstep signal, pitchshifted it, sent it to the sub-synth filtered at specific low frequencies, and then mixed it with the original sound into a single signal.

A sound that Scott recalls spending a good amount of time while recording and layering was the glass of Bruno's vision, the broken pieces. He usually performs a rough edit while recording to make sure the sound works and to identify if anything needs additional recordings. Since sounds in isolation behave differently than sounds mixed in context, he then checks that the selected takes fit in the film and that everything is covered appropriately by playing

back against the temp FX, ambiences, music, and dialogue. He even records some elements such as jewelry or keys against temp reference tracks for better judgment.

Another important element for authenticity is the cast. Because the cast was international, they could use some voices internationally as well. David Fluhr CAS mixed the domestic version and also supervised the international releases. After finishing the mix at Skywalker, he flew to Shepperton Studios in England to supervise the international versions. He would have a workflow where all the vocals, dialogue automation, and track layout had to be consistent with the domestic session. All the treatments for vocals were shared so all processing matched the domestic version, allowing all territories the ability to see and listen to the film as close as possible as the filmmakers originally intended. In order to achieve this, David takes constant notes. He writes notes on performance elements and takes changes, sending editors and the foreign versions department updates so they can be as consistent as possible with the domestic version that David and Gabriel mixed. Directors in every territory take a great amount of care to adapt the dialogues and keep performance and sound consistent. David's presence in the process allows other mixers to be on the same page in terms of concept, goals, and processes. While he was in Shepperton supervising foreign versions on more than eight stages running simultaneously with identical setups, Gabriel worked on the near-field mix.

Congratulations to the sound team for their work on the film. Thank you David E. Fluhr CAS, Gabriel Guy CAS, Paul McGrath CAS, Doc Kane CAS, David Boucher CAS, Alvin Wee, and Scott Curtis for taking us through the journey and magic of Encanto with its alluring experience and captivating sound.



MEET THE WINNERS

MOTION PICTURE - DOCUMENTARY SUMMER OF SOUL

by G. JOHN GARRETT CAS

Summer of Soul is a fantastic telling of six weekend concerts that took place in Harlem during the summer of 1969. Billed by some as "The Black Woodstock," due to the concurrent rock festival in Bethel, NY, it never got off the ground as a film. Footage sitting in the vault for 50 years on one-inch video was found by Ahmir "Questlove" Thompson and company, who retold the story of an inflection point in history through the music and interviews with prominent contributors. From the first sound of the film, I was blown away by the quality of what I heard. There must have been a 24-track truck there to supplement the live-switched video production. But no, what you hear is a stereo mix off the one-inch videotape, preserved, polished, and finished by Jimmy Douglass (music), Paul Hsu (re-recording mixer),



Rob Fernandez CAS (additional re-recording), Paul Massey CAS (re-recording mixer), and Emily Strong (production sound mixer). I reached out to the team to share their experiences working on the project. [Unfortunately, Jimmy Douglass was unable to participate due to scheduling conflicts and turnaround time.]

Re-recording mixer Paul Hsu

shared this when asked about his thoughts on the project. "Jimmy Douglass, the music mixer, did an incredible job, but most of the credit goes to the unnamed people [who mixed the two-track] board mix that we got. Jimmy did a pass with some EQ and stuff and passed it to me. Then, it was the usual documentary process where it's about weaving it all together. But that board mix is just priceless. For us, it was about putting the stuff in surround, adding some reverb, you know, making it feel more 'cinematic.'"

I asked Paul about the production audio he received. "Because it comes back to the production sound mixers, and I can't stress enough, production mixers are so unsung in this process. There's nothing we can do [on the post side] unless the material is solid. And this is a textbook example of that at a time when that stuff was actually more valued. They really recorded some incredible footage and some incredible audio tracks."

Paul Hsu did the final stereo mix and a 5.1 mix. With 35 producers in total, they realized they had something special and wanted to do more tweaking, which is where Rob Fernandez CAS came in, as Paul was already on another project.

Rob shared this about his experience. "I spent about a week on it. Paul did a great job, [but] he ran out of time and they brought it to me. I never got a chance to speak to him directly. So, I was doing some transitions and worked on the 5.1 mix. Once creatives were in the mixing environment, they realized what they had. So, they were [thinking] it's going to be seen by a lot of people, it's going to be very well-received, so we need Atmos versions, we need 5.1, we need stereo. [Because of this], they probably decided to spend more money on it."

I was curious about working with all the great music from the film. "As for the music, working with those tracks, and listening to those tracks, I couldn't help but wonder, like,





someone mixed this thing live. Not the way we do it [where you] go back and fix this thing, and the second bar, no, no, no. This is done one time, and the brilliance of that, it's amazing."

When Searchlight bought the movie, they went to Fox, and Paul Massey CAS came along to do the Atmos mix. Paul was up to his ears in faders when I reached out, but did tell me that the Atmos mix was done at the John Ford Theatre at the Fox Studio Lot and "was challenging with the limited amount of tracks available." Having built an Atmos studio, I can certainly understand that!

Emily Strong, a relatively new mixer originally from Chicago, was the main production sound

mixer and shared her perspective. "I wasn't sure how they were going to contextualize some of the interviews, [but] they did a great job! Musa Jackson, the guy who started the film, was an attendee, and it was great hearing about his experience. I was interested in knowing how they were going to, poetically, cut it in, and they did! That was cool."

I asked Emily about her gear choices. "My kit was a Sennheiser 416 shotgun, Lectro wireless, and a Zoom F8n. That was about it; one boom and one wire. I worked with Ahmir and [producer] Joseph Patel, who tag-teamed a bit, which I really enjoyed watching. It was Ahmir's first film and it was so cool watching someone who is so notable in their field transition into another field and stay open. Joseph



has experience in the film world, so I feel like they made a good team, and Ahmir stayed open to learning from Joseph, and that was really cool to see."

Emily attended the CAS Awards and shared this. "[I've never] been to an awards ceremony before, and it was a really cool group of people. I got to meet Jimmy (Douglass). It was cool to hear all these stories firsthand; the history, the culture of 1960s Harlem in general. To be part of the preservation process is the thing that I love most about documentaries."

If you haven't seen this film, you're missing out on some great music—and American history!







MEET THE WINNERS

TELEVISION – ONE HOUR YELLOWSTONE S4 EP.1 "HALF THE MONEY"

by PATRICK SPAIN CAS

Yellowstone is a family drama that focuses on the trials and tribulations of the far away Montana town, Darby. The town's leading family, the Duttons, led by patriarch John Dutton (Kevin Costner), just happen to own and operate the largest cattle ranch in the United States. This comes, as one might imagine, with a great deal of long-term struggle, intrigue, and action!

Case in point; this Season 4 premiere opens with a gunshot Costner belly-crawling across a highway in a pool of his own blood. What happens next can't be properly relayed with the word "shootout." You'll understand when you hear it!

It was so remarkably put together that the show's audio mix team, production mixer Andrejs Prokopenko; re-recording mixers Diego Gat CAS and Sam Ejnes CAS; and ADR mixers Michael Miller CAS and Chris Navarro CAS, won this year's CAS Award for an hour-long television series.

To get a sense of how it was done, I spoke with the show's re-recording mixers. [Andrejs, Michael, and Chris were unable to participate due to scheduling conflicts and turnaround time.]

Honestly, I was shocked by the amount of gunplay at the top of this episode. Has that been par for the course on this show?

Sam Ejnes CAS: Not that level. What's interesting about the way the episode starts is, it's an extension of how we ended

the previous season. So, in the season finale, we see men breaking into Kayce's (the Dutton heir-apparent's) office and shooting up the desk. We see what happens to John Dutton to get him into that position on the road. And we pick up moments after that.

Diego Gat CAS: The aftermath.

Sam: Normally, we don't have a 15-minute run as the cold open, because, as picture editor Chad Galster put it, "I want to grab the audience by the head and just throttle them for 15 minutes until the main title starts and everyone realizes they haven't been breathing."

Right! I counted; it was something like a minute and a half before a single word was uttered, and even then it was very cursory. It wasn't a conversation. Which was surprising to me because I was expecting a Lonesome Dove-slash-soap-opera-type situation. Which it sort of is, I guess, except for this particular scene.

Diego: It's kind of the general structure of the show with a sprinkling of big action moments with either trucks, horses, or guns. Happening sometimes in pairs.

Ha! Yes, when I was watching the show, I wrote down some quick impressions, which were: guns, trucks, a woman in shock. Sam, that's really heavy for you for this first 15. Did it take you longer than normal, or did they allot you extra time?

Sam: We got a little bit more time because the episode was a little longer than usual, and it was the big return! The filmmakers all knew that it was important to get those first 15 really tight. A lot of work went into it before it even got to me, which made it much easier to work with. Our supervising sound editor, Jason King, took a pass through the guns. He's very "on" the gun stuff. He knows how to make that stuff punch, and he did a lot of good work that he was able to hand off to me.

On top of that, our FX editor, Mark Glassman, goes through everything that he's sent and helps dial things in so that when we get it, I can just start playing it against music and dialogue and spend our time making it sound punchy and creative.

There were a lot of modern gun sounds and rhythms that came through that reminded me of Lone Survivor; it was pretty intense.

Sam: Yeah, keeping it going, keeping the intensity, but also handing off. Because there are a lot of moments where FX are very quickly handed off to music, and then music comes back into FX. We really tried to keep the energy up and that intensity going without turning everything into a mess of noise. That was the big dance and why we spent so much time on the sequence. Because the rest of the show, there's not that much going on in terms of complex sound-driven moments.

Yeah, it seems to get back into trucks and talking after that.

Sam: And sort of setting up, you know, where are we going with the story.

There were also some very nice surreal bits, such as the point of view stuff with sound design and orchestral bits working really nicely together to give you that "inside the head" POV. Does that get delivered or is that somewhere where you say to yourselves, "Here is an opportunity to push this?"

Diego: Yeah, the guide had some of that.



Sam: And this is a show where the guide is a very good reference for what the filmmakers are looking for. They do spend a lot of time, even before the sound spot. For those sorts of moments, the guide is very good at letting us know here's the idea and then we push it farther and see what more we can get out of it.

Diego: Even in other episodes, we have these dreamy flashback moments where we montage different layers of what is or was happening in different places, or different perspective and points of view from certain characters. So, we have that with Monica coming upon a scene where there had been some shooting and seeing a vision of what happened in her imagination that's not presented as real, but as her subjective interpretation of what she sees.

Also in this episode, there is the flashback to the 1890's. Do you guys treat that differently when you do those family history flashbacks?

Diego: I don't think we did.

Sam: I think these are a way for us to establish the preindustrial landscape. So there wasn't much difference.

So, you're sort of just removing radios and trucks...

Diego: Yeah, and no electronics or buzzes or generators. So, a lot more cleaning of production sound. There's very little ADR and a lot or RXing!

Are they doing that before it gets to you?

Diego: Some of it, and I take another pass when it becomes necessary. Chris Gomez, who cut this dialogue, cleans a lot, but is very cognizant of not going too far. So, whenever I feel I can go a little bit further without damage in the integrity of the lines, I do.

Because it is easier when you have some FX to sink the dialogue into.

Diego: Yeah! Even on my dialogue pass, I try not to de-noise too much. I try not to get it super clean. I wait until we do a pass together before I proceed with more.

It looks like a lot of this is shot near an active highway.

Diego: And we have been encountering some winds that when you hear them by themselves, they are perfectly fine, but in the mix, they too sound like a distant highway!

Yeesh!

Sam: You know, the producer on the show that we



deal with most is Michael Friedman, and he has made it clear that what they strive for on the show is realism. Authenticity is the word, the top line operative note, and Michael is very good at knowing the spaces because his is always on set. He, for instance, knows details like the placement of a rug that is out of frame. He relates that info

to us and we make the adjustments, in that case to the Foley.

Diego: We also deal with a lot of horses and, specifically, Mustangs. [But] Mustangs cannot have horseshoes, so our horses can't sound like ... horses!

So it's less ... hard?

Sam: It's less of a snap! It's a bit more of a thud or a rumble. You know, the horses are one of the more challenging parts of the show. What gets delivered to me is very big and there is a lot to get through. Finding a way to shape that into the show in a way that doesn't feel like we are adding; that's our big challenge, and we do often make usage of production sound in these instances.

Well, that leads me to my next question. I'm told you don't do much ADR. That means there must be horse sounds of all kinds, and accoutermentbridles and such; things must be making noise constantly.

Sam: Ha! Yes, horses, cows, saddles, and the costuming! The costuming is incredible and very authentic. This caused the production sound guys to bury their mics deep under multiple layers of leather and cloth. And, for the most part, we get a lot out of the stuff that comes from set, and we have to!

I bet! I assume it's a one or two boom sort of setup, and then everyone is

Diego: It's just one boom ... that not always works.

Because the shots are so wide!

Diego: There are also multiple cameras often, so you can't really place the boom anywhere. Even indoors! We can't use the boom, most of the time.

That seems to be more and more standard anyhow, I suppose.

Diego: That is, yeah. But, once you get nice booms, it's such a nice difference. They sound so much better!

So, in all this gunplay in the big opening, with all the noises and stuff, did that create problems for you specifically, Diego?

Diego: No, I just left the room...

Sam: [Laughter]

Diego: Yeah, I spent a lot of time outside of the stage during Sam's premix to preserve ... my source of income...

Sam: [Laughter]

Diego: No, no. We kind of work in layers. Going from big picture, setting the big volumes, to getting more and more detailed, sometimes down to the frame. Our main concern was not to leave any dead space, to have a consistent sound pressure. So, if we had gunshots, they needed to poke through the music. Or, if we needed to preserve a dialogue line, we needed to be very exact. Maybe we would skip a single gunshot to clear that line, but as soon as that word ends, we are back to the races. So, in that case, it's not like we were going to fade one thing down [as] that's too slow.

So, essentially, there was a lot of editing around certain moments.

Diego: Yes, there was a lot of automation editing to construct a very precise frame-by-frame mix! You know, we couldn't be competing with each other because then we would be blasting the limiters and losing all dynamics, losing all impact! So, it was a very detailed, frame by frame, for 15 minutes!

That's a lot of frames! I mean, that's a reel of a film, a significant amount of time! To that end, what is your spec? What did you have to keep those

gunshots and car crashed under?

Sam: -24 LKFS overall with minus 2 true peak.

Diego: In a long episode, [-24 overall] really helps.

Sure!

Sam: If I recall looking at the meter, the first 15 was like a -12.

Whoa! That's a pop song!





Sam: Yeah, it was up there! And then as the episode went on, it's like 50 minutes or so, it slowly, slowly settled in around a -24. [Laughing] And we were just like "Wonderful!"

Diego: Probably a -22, I would bet!

The reason I bring that up is, I was mix tech-ing a show 10 years ago that was somewhat similar to this and there was a gunshot at the end of the show. And the mixers were complaining about the spec the entire time because they could not get the gunshot to sound like anything other than someone hitting a piece of leather with their hand because they were so constrained by the spec. There was no place to go. I think their peak limit was something like -6, or even -10.

Diego: Well, that would be a problem!

Yeah, it was really hard for them to let that gunshot breath in any way. You guys didn't seem to have that problem!

Diego: Well, our true peak is -2.

Sam: Which does help!

Diego: Yeah, compared to what you're talking about, it's a big difference.

Sam: But, it is just finding that balance between all the different elements that lets things breathe! But, the biggest advantage was the length of the show.

Diego: Yeah, in a half-hour show, we would not have...

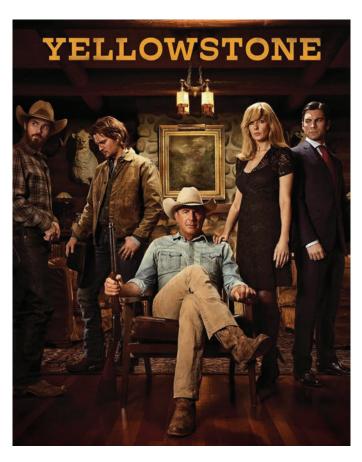
Sam: We would not have made it sound like that, no.

Diego: Or a show checked act-by-act. It would have been a

boring mix. [Laughter] Everything would have been very quiet!

Sam: Yeah, it was great to be afforded that level of dynamics for a show like this. It was one hell of a way to kick off the season!

Well, I couldn't have said it better than that! Thanks guys and congrats again on your CAS Award win!





MEET THE WINNERS

TELEVISION – HALF-HOUR TED LASSO S2 EP. 5 "RAINBOW"

by DEVENDRA CLEARY CAS

Sometimes a scheduling miracle happens and you get the absolute pleasure of hosting a lively interview with all six of our winners for Outstanding Achievement in Sound Mixing: Television Half Hour. The *Ted Lasso* sound team consists of production mixer David Lascelles AMPS, re-recording mixers Ryan Kennedy and Sean Byrne CAS, ADR mixers Brent Findley CAS MPSE and Jamison Rabbe, and Foley mixer Arno Stephanian CAS MPSE. We all logged onto Zoom and here are some excerpts of what transpired as they introduced themselves.

I'm so excited we were able to pull off this group interview! Let's start with everyone introducing themselves.

David Lascelles AMPS: I'm a production sound mixer. I've been in the industry for 32 years now. I've done one and a half seasons of *Ted Lasso* and am currently working on *Ted Lasso* Season 3.

Ryan Kennedy: I work here at Warner Bros. We'll be going into our third season of *Ted Lasso* here soon. I've been working in sound for a little more than 20 years. I've been in television post-production now for about 10 years.

Sean Byrne CAS: I've been working at Warner Bros. for about 10 years. I've been in post since 1999. Ryan and I share an Emmy for sound mixing. We pass it back-and-forth. He's got two Emmy nominations for mixing. I have one for

mixing and two for sound editing and two Golden Reels from MPSE for sound editing.

Brent Findley CAS MPSE: In addition to being supervising sound editor, with the COVID scenarios, I was also ADR mixer for this series. I've been on for the entire series and have been in sound for picture for about 17 years. I originally hail from Michigan.

Jamison Rabbe: I shot ADR for this season only. I mostly shot the loop group ADR in this crazy kind of COVID world. So, I'd love to talk about that. That's kind of my contribution; keeping everyone separate. I'm originally from about 20 minutes outside of Philly and have been in the industry for eight years.

Arno Stephanian CAS MPSE: I've been in this industry for about 10 years now. I've been mixing Foley since 2012. I started at a Foley stage and fell in love with it, and here I am! I've been doing it every day for 10 years. I had a music background and initially wanted to get into that, but then kind of steered my way into doing Foley.

David, how does *Ted Lasso* differ from other half-hour comedies that you've worked on?

David: I've done some comedy recently for Apple. The show is called *Trying*. There's a mess of difference. With *Ted Lasso*, I would say the biggest thing is the scripts, the sides. The dialogue gets rewritten in between rehearsals and shooting constantly. So, you'll rehearse something, [actors] Jason [Sudeikis] and Brendan [Hunt] will go off to makeup, costume, come back 15 minutes later, and you'll have a new scene to shoot, which is quite unique for me.

What about Sean and Ryan? Have you found the schedule for mixing to be on the shorter side or pretty common versus other half-hour shows?

Sean: No. What's been nice is that we get quite an ample amount of time to mix these episodes compared to our other 30-minute shows. So, for us, it's been comfortable, but it speaks to the amount of detail that goes into postproduction that I really think the time is warranted for what we do. With Brent's help and [supervising producer] Kip Kroeger's help, we're able to fine-tooth comb it and, all of those tiny, little bumps and ticks that just flick your ear but you don't quite notice them because they go by, we're able to clean all of that stuff out. Just the fine details. It's a lot about what you remove, you know? It's not throwing 100,000 sounds at it and making a cacophony. It's what you're not playing.

Ryan: What's really nice is that the material we receive, whether it comes through David or through Arno or Jamison or Brent, it really comes over clean. There's not a ton to do, really. It's mainly just about balances and smoothing things out. David and his team do an excellent job under the circumstances in capturing the sound that we end up mixing. It's been a pleasure, really, to be able to get all this material, the amount of time that we get to spend on it, and I think the evidence is in the product that comes out at the end.

What was the reason you chose this episode, "Rainbow," to submit?

Ryan: What I like about this episode is it has a lot of heart in it. This awesome sound dynamic quality that's going on throughout the entirety of the show. But this particular episode has a lot of heart to it, and I think that was really important to us.

Sean: The soundscape. From the moment Roy makes a decision to where he ends up at the end of the episode is really a sound journey. There's not much dialogue, but there's music driving things. There are effects that poke through the music and then disappear. So, I'd say it's one of the episodes we're by far the most proud



Production mixer David Lascelles AMPS

Arno: I was going to say that

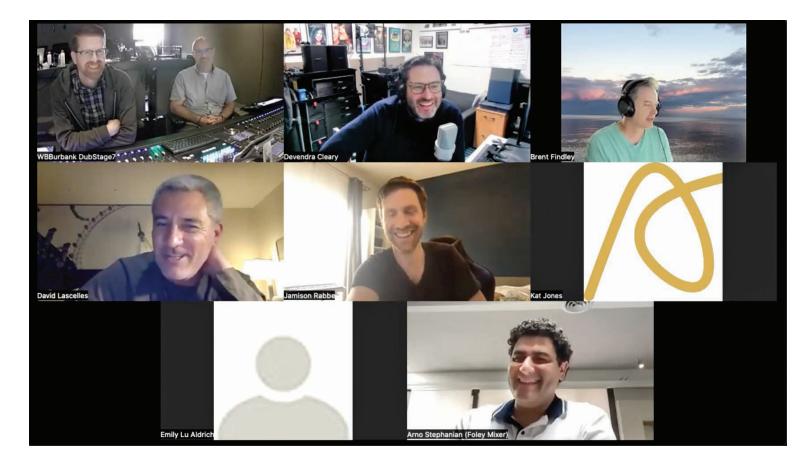
Roy's walk, that entire scene. It was really cool and also somehow challenging for us too because he started—he got a foot cramp, and then he started limping, and then the whole moment of him walking with the pain, the scuffy footsteps and all that. It was a cool part for us to try to reflect that emotion into the footsteps that we were recording. It was fun.

Brent: That was actually you dropping the F-bomb, right, in Foley?

Arno: Yes. Exactly. In the form of footsteps. Yes!

Brent: One part that is great that sets off that whole scene is when Roy is at the sports desk and he takes off his lavaliere microphone. I love something that David did, which was





actually rolling on that. Normally, you would try to strip out and make sure this mic rustling isn't part of it. That's part of setting Roy off on that journey. And so, a little bit of embellishment, but we were able to crank that up, and I thought it was so great to be rolling on that.

Ryan: You're absolutely right. We pushed the production recording of that—and what was great is that it sat in the mix, like, perfectly once we pushed it up. It's always one of those pleasurable things that, when you're given something from production, that it just works without having to lean on a fake effect or anything like that. And, in those little moments, it really just adds to the story, and it just really helps it shine.

Yeah! David, in another world, you could've let Props [dept.] just use a fake prop lavaliere mic, and you stay far away from it. Tell me how you decided to just let it be real in that scene.

David: You're going to love this because I didn't do that bit. That was a second unit that day. That was David Giles. So, all of that studio stuff was him. And I remember talking to him about it, and him mentioning that there was no interest in using the mics at all but he insisted that they put them on, and he used them and left it running so that you did get that fantastic sound of it coming off. So, I will pass on your thanks to him when I see him.

David, that brings me to my next topic. Can you talk about any of your equipment package choices?

David: For Season 2, I was recording on a Zaxcom Deva 5.8 and a Mix-12 mixing desk. Microphone-wise, we tend to use Sennheiser MKH 50's for all the interiors and Schoeps CMIT for all the exteriors. Radio mics are all Lectrosonics. And microphones are all DPA's, usually the 6060. We'll occasionally use Schoeps [MK]41's, as well if we have low ceilings. That's how we do it. And then just moving onto Season 3, I've just upgraded now so I'm working with a Sound Devices Scorpio and a CL-16. Everything else has stayed the same.

Excellent. What about at Warner Bros.? Ryan and Sean, what system do you have rocking and rolling there?

Ryan: I'm using Pro Tools on an Avid S6 console. I enjoy my EQ's. I like the FabFilter EQ's and, for noise reduction, I use a combination of Waves and the iZotope RX series.

Sean: Over on the effects side, my reverbs; I'm a big fan of the Stratus 3D reverbs. It helps to take a lot of the guesswork out of some of the Atmos spreading. They have a warm sound to them. They don't sound like a step ladder on the reverb tails. They just kind of roll, but I keep things pretty simple. I use Pro-Q 3 because it has a spectrum analyzer. So, it's like an RTA the entire time if you have a singing frequency somewhere. You can just go right to it, notch it out. It's a very helpful tool, and they sound good and don't seem to add much phasing.

Ryan: I tend to lean on the Altiverbs for the most part, except

for there's this old [Avid] Reverb One plugin that has a setting called "Schoolyard," and I tell everyone about it. It is in my opinion, the best-sounding exterior reverb slap combo out of everything I've ever used. It's very old [and] probably a legacy plugin. It's just so old but I use it all over Ted Lasso, especially in the soccer stadium. It's got just the right amount of echo, slap with verb, and it really just has things sit real good in the mix.

Brent, can you talk about your tools?

Brent: From a remote ADR mixing standpoint, we were looking for a solution that we could give to the actors to set up their own home vocal booth in their walk-in closet or bedroom, etc. So, actors are not necessarily engineers. Very creative people, but they don't necessarily pick up the details of hardware quickly like engineers do. We needed something that was easy to use but still could pull off the quality that we needed without having to be very complicated from a technical standpoint. The Apogee MiC Plus became really easy for the talent to understand. It is its own audio interface and it could plug into an iPhone. I mean the iPhone is a decent digital recorder. So, the Apogee has a great analog-to-digital converter built in, and now it's just ones and zeros into an iPhone.

So, you just ship one of those things to each actor that you want to do home ADR with, and they Zoom call you, and you walk them through it?

Brent: Yeah, we built a kit. A nice, solid tripod stand, a reflection filter included with that kit because we weren't sure what their environments were. The MiC Plus, the adapters fit on the stand, a set of headphones, pop filter and took a picture of that and kind of drew a little diagram around it so they could open up the kit in a Pelican case, set it up, and in pretty short order be good to go. [Actor] Hannah [Waddingham] was probably the only one that cursed me out for having too many cables and things—in a fun way. She said she opened the box and said, "What did you send me?" And then, "Oh, okay. It's not that bad!"

Did you record ADR remotely because of COVID or was it also because of the distance that you are from the actors?

Brent: Strictly because of COVID. I mean, everything was locked down. I feel like, even though stages are opening up, we've kind of established this and we were able to pull it off. It's not good for everything. I will defer to a mixing stage. I'll take people to Jamison's stage in a heartbeat over trying to do it in their closet.

Ryan: There was never a moment where we were in here saying, "Oh, this ADR is not great." The ADR we were getting was fantastic. Any re-recording dialogue mixer will tell you how

much of a struggle it can sometimes be to get ADR to sit in the mix, but the stuff we were getting, it was amazing that it was done under the circumstances that it was because it sounded like a lot of the ADR that I get from ADR stages. And I think that just having to reinvent the wheel, which is what Brent had to do, lent to a really great product in the

Next up is Jamison. Tell us about your facility.

Jamison: I've been very lucky over the past two years in that I haven't really had to do the remote thing. That's amazing what you guys have pulled off, and I know how hard it is. In the very beginning of COVID, I had to work on a production where I would screen share into the actor's computer and have to control their preamp from there. You still blow it out sometimes because you're also looking at a script and you have to figure out what's coming. I was lucky that it was a pretty standard-issue ADR stage. I believe for the principal stuff I shot, it was an MKH 50, unless there was another request, and a DPA lav. I was lucky to be able to do that on a stage with the COVID protocols and everything. Then, for the loop group stuff, MKH 50's in every room. My favorite mic, by the way. You're having to control what a room sounds like, particularly if you're trying to get exterior sound, which we do a lot of in this show and that MKH 50 just kind of blows my mind in how well it controls a room. And in the loop group stage, I was running those MKH 50's in these X2P boxes. Focusrite makes these Dante-enabled boxes so I have all the control of those 11 rooms, basically, from my control room. And that's kind of a preamp and a Dante interface. It's a ton of fun to do just because of the tech there.

Arno, what about your Foley kit?

Arno: We use Neumann microphones. Our main close mic is







a KMR 81. And we have a room mic that is the TLM 170. We also have them in conjunction with that. We also use Altiverb reverbs. If there's a larger environment or a parking lot or empty space that we need to emphasize more of the roominess of the feet or any prop, then we add the certain related Altiverb room effect to it. I have three faders basically: close mic, room mic, and a reverb mic ascending. That way, the combination of the three kind of helps us capture a better Foley, natural to what it is. Then, our preamp is a Millennia, and we have a compressor which is the Distressor. It's from the music [side], but we use it because it's subtle and doesn't process too much. I personally don't use compressors at all unless I have to. I like to record as natural as I can. And we have an S3, basically a console, right here. This is where I record Foley.

I want to ask you about your hobbies. What do you like to do outside of work?

Ryan: Outside of work? I—I don't understand the—what, what is that? [laughter] Since I made the joke, I guess I'll start. I like to go hiking. I like to spend time outside. I was an avid skateboarder as a younger person and, every now and then, I think that I'm still young enough to do that, but am quickly reminded that I shouldn't be. And spending time with my kids.

Sean: I spend as much free time as possible playing poker. I really enjoy a good poker tournament. I've been starting to get certified for scuba diving. We have a family boat, which is for sale, by the way, if anybody would like to buy it. We just try to spend as much time outside as possible, you know? Life's short.

Arno: Mine is also spending time with my family because I have an almost 1 year old and a 5½ year old, so my time is pretty full when I go back home. So, pretty much, whatever they want to do is what I want to do—that kind of a deal. But on my own time, I'm a musician, I like to play piano. I play jazz, so that's kind of my hobby on the side. Music and all that.

Brent: My wife Kelly is my best friend, and so when the little bit of time that I would call "discretionary," because I say yes to too many things work-related, I really try to make sure that we do as much stuff together as we can in that little bit of precious time. That could be working on the yard or working on the car or something because we're both kind of into cars. And if it's not football season, we'll be doing something like that. So, I try to focus on keeping the most important thing in my life, still in my life. I owe where I'm at so much to her for her support over the years.

Jamison: No small feat in this industry sometimes. You have those late nights, those weekends, those 60-hour weeks. I had a blast during COVID. I mean, I took on every hobby I could. There was a time when I thought, "What's 'going

back' even going to look like? And how much are we going to be working, especially as an ADR mixer? They're not even going to need us at the end of this thing, you know?" So, I took on a lot of things. I'm in my hobby room, so this is kind of a fun question. I took on printing. I have my little 3-D printer here. And the 3-D modeling, big time. I got my drone pilot license, the FAA license. I play basketball every week. COVID made the remote recording facility very busy. I had maybe eight days off last year in total. So, I don't get to them very often but, someday, I'll go back to it.

David: Like a lot of production sound mixers, I'm a musician, so I play the guitar, which I find is quite a common thing because that's what usually gets you into the industry in the first place. I used to be in a band a long time ago. I was interested in recording the music and so forth. Also, after my second midlife crisis, I learned to ride a motorbike. So, I'm currently three years into doing that and enjoying it. And football, really. I'm an avid football fan.

What was your reaction when you found out you won?

Arno: Before the win, I kept implementing the thought that, "When we go up on the stage, do we know what we're going to say?" I didn't say: "If we win and if we go." So, when we were waiting for it and they said, "Ted Lasso," we were like, "Oh!!!" Got me really excited. I couldn't believe it. It was a very funny, very cool moment and a very happy moment and it paid off. All the hard work and all the long hours and anything that we had to do through the season.

Brent: I feel like there's so much programming out there, and then in our category, the field is so strong that, while I feel like everybody knows what our story is, and we know what it takes to get the show mixed and to the audience as

fans, and we love the show, you know, every show is doing that same thing. Every show has their own story about what makes them worthy. To me, it's an amazing blessing to have been chosen out of a pack of very strong contenders; every one of them which is deserving.

Sean: Ryan and I just kept saying, "I don't think we're going to win. We're up against *Star Wars.*" So, I had to keep my expectations very low and enjoy a night out with my wife and my friends. It was really overwhelming when we won, and Ryan said, "It's your turn to speak." My heart was just racing. I was trembling like a leaf because it's overwhelming. It's one of those things that you see other people achieve that you don't think is possible. So, to be up there, it was just overwhelming. A lot of times, I feel we're overpaid, you know? Not with money, but with how lucky we are that we get to do what we love for a living.

Jamison: It was just such an honor to have my very small piece of this and with you guys. As Brent said, there's a ton of content out there. And to maintain quality with how much quantity, oftentimes, quality goes down in a show. It was not a victim to that. There are other shows that are, but this show was absolutely not a victim to that and it's really an honor to be a part of it.

Arno: What happened to David? You were not there!

David: I actually had COVID. I was going to come, and I looked at flights, and if I would've booked it, I wouldn't have made it anyway because I literally woke up that morning positive. I think everyone sort of thinks we're being magnanimous, but I've been nominated for a few Emmys as well and when you're there and you don't win, it is very disappointing. So, when you do win, it's very, very







exciting. And when I woke up on the Sunday and had the messages from people saying congratulations, I was just over the moon. It was a great way to wake up on a Sunday morning in the UK.

Well, a huge congratulations. It was a fun night. I'm still getting used to socializing again. So, I'm all out of questions. If there's anything you want to add that you feel like is missing, something you want said, please do!

David: I'd like to say something. Because I don't choose the episodes [to submit], when I knew that this one was nominated, I went back and watched it again. The thing that I noticed that is important, within five minutes of watching the episode, I'm completely ignoring the sound. I'm just in the episode. I'm not aware that there's any sound. It just flows. I think that's really important because I've watched shows that I work on, and sometimes I find them quite jarring because I'm just too aware of the sound, and I can hear the ADR and the effects don't seem to work, but on "Rainbow" in particular, I just watched it and within five, 10 minutes, I had totally forgotten I was watching it for the sound. I just got completely lost in the episode, which I think is why it does work. That everyone's done a fantastic job.

Ryan: That's a tremendous compliment, David. Thank you.

Brent: In tying what you just said, David, into something Arno and Ryan and Sean were saying earlier, and considering the amount of time that the producers grant us to work on the sound. It's not that we wouldn't love that on all shows, but this show gives us the chance to make those things work.

Arno: Having the right amount of time is crucial to creating a better result. Usually, we get hard shows that we don't have

enough time. And then we have to talk to the client and say, "Do you want us to give you more coverage or more detail work on more important props? What is important for you? Whatever you want, we'll cover it, but give us more time, and we'll do everything in a perfect way."

Brent: Yeah. So, I'd like to give props to the producers for acknowledging that we can [when] given a little extra time that they give us. It makes all the difference in the world of being able to finish the project correctly.

Sean: A lot of times, it's "You've got six hours for this one. You've got two days on this. Make it work." And then it becomes triage, you know? When we get the gift of time on something like *Ted Lasso*, it's amazing and we learn something new on every episode. We get to play and discover.

David: I have to give a shout-out to my team, Emma [Chilton], Andy [Mawson], and Michael [Fearon] because they work really hard on the set because we shoot two cameras all the time, as I'm sure you're aware, and they're really quite forceful on set. They're backing me up, trying to get the cameras to operate together in a sound-friendly way. So, they work really hard, but I think you'd be amazed if you came. If you come to the set in a couple of weeks, come to the training pitch where we film all the football. They're knocking down a building about 100 feet from the end of the football pitch at the moment!

I want to thank David Lascelles AMPS, Ryan Kennedy, Sean Byrne CAS, Brent Findley CAS MPSE, Jamison Rabbe, and Arno Stephanian CAS MPSE for such a fun conversation. It was truly a pleasure to learn more about this team and share it with the readers. Can't wait to hear your work on Season 3!



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MEET THE WINNERS

NON-THEATRICAL MOTION PICTURE OR LIMITED SERIES MARE OF EASTTOWN EP. 6 "SORE MUST BE THE STORM"

by MATT FOGLIA CAS

Mare of Easttown follows Detective Mare Sheehan (Kate Winslet), as she investigates a brutal murder in a small Pennsylvania town where everyone is a potential suspect. Mare has her challenges as her own life is falling apart around her. The limited series was nominated for 16 Emmys (including Sound Mixing), winning four. Production mixer Richard Bullock, Jr. and re-recording mixers Joe DeAngelis CAS and Chris Carpenter created a compelling mix that augments the drama, tension, and action of the story. Richard and Joe took some time to answer some questions about themselves, Mare, and other projects. [Unfortunately, due to scheduling conflicts and turnaround deadlines, Chris Carpenter was unable to participate.]

Richard Bullock, Jr.: Production Mixer

Your bio states that you started your sound career after moving to Seattle from New York. What led you to Seattle?

In my early 20s, I moved to Seattle because it was a beautiful and vibrant place to live. I immediately started

working in film—commercials to start, but quickly transitioned to movies and television. Mostly, I was a video assist operator. As such, I spent a lot of time in close proximity to the sound



Production mixer Richard Bullock, Jr.

mixer. Before long, I met Bob Marts CAS and he invited me to be his cable man on a CBS reboot of *The Fugitive*, starring Tim Daly. That went well and we immediately followed it up with a three-month feature together. It was a year of immersive sound work and I loved it. Bob is an excellent teacher with many years of experience and a serious love and respect for film—and especially sound recording and editing. Everything I've done since then I can trace directly to that first year with Bob, it was a lucky break for me.

When you moved to L.A., was it because of a specific project or were you looking to expand on your opportunities?

I had a lot of good experiences and opportunities while working in Seattle and Portland. I was lucky a second time when Steve Morrow CAS came up to Portland to mix two back-to-back features and he hired me to be his utility sound person with Gail Carroll as the boom operator. That was a great experience and I wanted to continue to work with Steve, so I headed to L.A. and did just that! Steve has always been incredibly supportive my entire career, just the best. I very quickly met a lot of talented and generous sound mixers, and eventually started a very long run of booming features for Pud Cusack CAS. This was yet another lucky break, and led to an incredible friendship and working relationship. I went a lot of places with Pud and worked on some really incredible and meaningful shows.

How did you become involved with the Mare of Easttown project?

Steve Morrow CAS put me up for Mare of Easttown, and I think I just hit it off with several people there. Mare has the best group of producers anyone could ever hope to work for. Writer/showrunner Brad Ingelsby is fantastic. Being a part of stories like Mare are why I'm in this business.

This limited series has lots of characters and many locations.

The cast count on Mare was large, very large. If I'm not mistaken, there were around 150 numbered cast. It was cross-boarded so we shot the seven episodes like a feature; only returning to a few locations at a later date. Being outand-about in Delaware County, PA, was great as we had the opportunity to really get to know the place where the story took place and met lots of people everywhere we went. It was also often cold, very cold. Some nights in the single digits. There were scenes under noisy bridges, and in very tight quarters.

One of your more recent projects, 1883, is quite popular in, among other places, Nashville, where I live. How was your experience working on a period piece?

The DP from Mare, Ben Richardson, was also the DP on 1883. As a matter of fact, Ben directed several episodes of 1883 as well. 1883 was basically six months of day exteriors in Texas and Montana. With very few exceptions, I spent the entire time mixing from the back of a four-wheel drive Gator. I was incredibly lucky to have the same crew with me from Mare; Tanya Peel booming and Kelly Lewis as utility. It was very hard work, but extremely rewarding and I'm very proud of the sound we were able to capture. Working on a true period Western was a dream come true for me, a real bucket list item. Great cast, great crew, but boy was it hard!



What do you like to do when you're not on set?

When I'm not working, I love to cook at home. If it's been a short day at work, I'll cook dinner for my wife Jean when I get home. I always look forward to cooking on the weekend. About 10 years ago, we bought a place out in Marfa, TX. When we're not working, that's usually where you'll find us. It's a nice, small, high desert town with some really wonderful people. Giant was shot there in 1956—Elizabeth Taylor, James Dean, Rock Hudson. More recently, There Will Be Blood and No Country for Old Men. It's really special and beautiful, I wish we could spend more time there. Anyone interested in shooting out in Marfa? Need a sound mixer? (Laughs)

Any closing comments?

The only closing thoughts I have are what I wrote to the directors and officers of CAS when I won for Mare: I want you all to know how much it means to me to be part of an organization that supports and heralds the work and achievements of sound professionals in film and television. I truly am honored.

Joe DeAngelis CAS: Re-recording Mixer

Where did you grow up and what sparked your interest in audio?

I grew up in Lancaster, CA. My dad was an Aerospace Engineer at NASA Edwards Air Force Base and my mom was an elementary school teacher. I remember being interested in hi-fi stereo systems and music at a young age. I would earn money to buy the different components (receivers, turntables, speakers, etc.) and just listen to music for hours on end.

How did you get your foot in the audio door?

After I graduated from L.A. Recording Workshop, I worked in music studios as a second engineer, mixed live sound at many of the clubs around Los Angeles and Hollywood, as well as stage shows at Universal Studios Hollywood.

I was able to get my foot in the post-production door through a family friend, Rick Kline. Rick and my uncle were in a band together back in the '70s and have remained close friends to this day. Rick was working at Universal in the late '90s and introduced me to Bill Varney. When the era of MMR and MMP digital recorders and players came along, I was hired by George Borghi to work in the vault and manage all the hard drives for the facility. In those days, they were fourand nine-gig drives in removable sleds and we had around 700 drives being used at Universal.

Your consistent series work seems to have started around 2011. What was your position/duties prior to then? I see a number of "sound recordist" credits.

As I stated, I started as a Y-16 in the vault managing hard drives. I transitioned to recordist working on Dub 3 at Universal, where I worked with Bill Meadows, Andy

Koyama, and Chris Carpenter. That is where I really learned how post-production works. In those days, very few people were using Pro Tools for mixing, but Andy was one of them. I was responsible for prepping his dialogue sessions and then I would go out on the stage to watch and listen to what he was doing (Recordists were still in the backroom in those days). I learned a lot from him back then and still do when I get a chance to watch him work. He has always helped me by passing along his knowledge whenever I have questions, and for that, I'm very grateful.

Did you transition to the stage at that point?

When it became apparent that Pro Tools was going to become the dominant force in dubbing, the Tascam systems were falling by the wayside and the backroom recordists were going to be scaled back to one-man operation, I moved into the newly formed restoration department at Blu Wave Universal. I worked in restoration for a little over a year using Sonic Solutions to clean up and restore many old Universal titles.

In 2004, a position opened up in digital mastering and I transitioned to that department. I worked in mastering for six years where I would do client-supervised laybacks to D-5 and HD cam of TV shows, DVD mastering, and director commentary and foreign-language mixes of Universal titles.

How did mixing your first series come about?

In 2010, I was given the opportunity to mix the TV show House. I started midway through Season 6 when the producers wanted to start mixing in-house on the FOX Lot. I single-man-mixed *House* until the show ended in May of 2012.



You're a really busy series mixer. Can you give a quick daily rundown of a "typical" week since, I assume, you're working on multiple series at once?

It seems that scheduling has become the biggest challenge these days as schedules are always pushing later. Some weeks, we can be working on a single show (one that has a five or more day mix schedule) and sometimes we can be working on several episodes of different shows. For example, recently we did playbacks of Cobra Kai Episode 506 on Monday, Episode 507 on Tuesday, then on Wednesday, Day 3 of premixing on *Umbrella Academy* Episode 310, Thursday was playback of *Umbrella Academy* Episode 310, and Friday was Cobra Kai Episode 508 playback. It can make for a hectic week, but we really enjoy working with such a great group of people.

How did you become involved in Mare of Easttown?

Pam Fitzgerald, a co-producer who we worked with on American Gods and Watchmen, brought us Mare. We are so grateful to be able to work with her; she's one of the best! It was through her we met (director) Craig Zobel and (creator/ writer) Brad Ingelsby and the rest is history. I remember when we started mixing Mare I was thinking to myself, "This show is so good!"

This limited series has lots of characters and many locations. Can you share info on a challenging scene or location?

First off, I'd like to give a big shout-out to our sound editorial team; sound supervisor Brad North, dialogue editor Tiffany Griffith, and FX editor Jordan Wilby. We were working on this show during the height of COVID when logistics were a huge challenge and they delivered great tracks for us to work with.

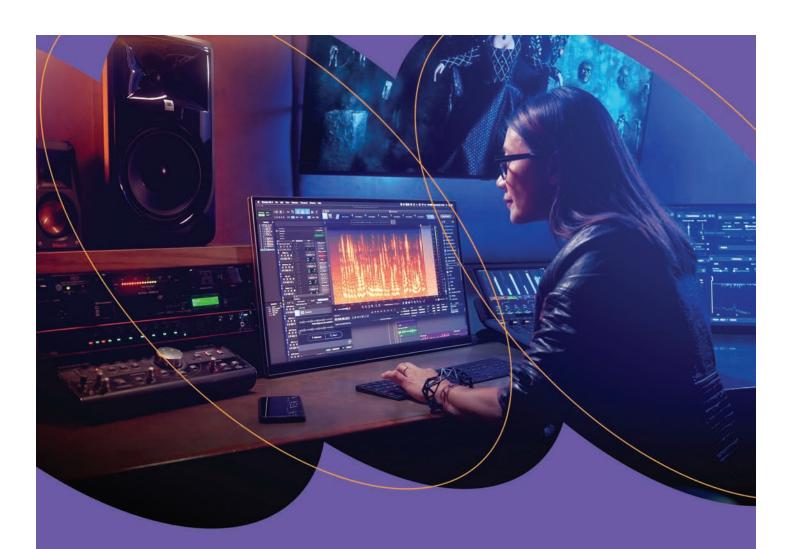
The two main challenges of this show were to get the dialogue in good shape and, secondly, get the sound of Easttown correct. There were several challenging scenes due to locations. One that comes to mind is the scene under the bridge where Mare and Zabel are planning out their next moves. There was a ton of traffic noise coming from the bridge, as well as low dialogue (due to performance). Richard Bullock, Jr. did a great job of just getting us something to work with and Tiffany did a great job of cutting it. I did my best with iZotope and EQ to try and keep the noise floor down and at a steady state. Then Chris filled it in with the BG's and helped mask the angle changes. Everyone was happy we were able to get to a good place without looping the whole scene.

When you're not in the studio, what do you like to do?

Since I spend so much time indoors on the stage, I like to spend my time off outside. I enjoy hiking with my wife Cindy and our four dogs the most. I also enjoy mountain biking and paddleboarding when I get a chance.

Any closing comments?

I would like to say "Thank You!" to everyone who voted for us. It's an honor to be recognized by your peers and colleagues.



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MEET THE WINNERS

TELEVISION NON-FICTION, VARIETY OR MUSIC – SERIES OR SPECIALS THE BEATLES: GET BACK PART 3

by ADAM HOWELL CAS

Thanksgiving weekend 2021. I'm finishing a delicious meal with my family, but my mind is starting to drift. I'm daydreaming about the adventure I'm about to embark on—a glorious three-part event called *The Beatles: Get Back.* As the hour approaches, I ask if I may be excused so I can settle into a quiet room. An iPad is the only viewing source with Disney+ at my in-laws, but that's okay. Beggars can't be choosers. So, I put on my headphones. With the first frame and the familiar sound of those voices, that indelible music begins to play and joyful tears well up in my eyes. I've waited for this moment for years and now I'm

completely present. Yet another thing to be thankful for on this special day.

While watching Part 3—for which this prestigious award is being given—I can't help but wonder what a ride this must have been for the sound team. The magnitude of a Beatles project brings with it the responsibility of expertly capturing a moment in time with the precision of fresh eyes and ears, all while being acutely aware ... this is gonna be a lot of fun. Respectfully portraying the (arguably) greatest band of all time must be both an incredible honor and a daunting task.

With that, let's congratulate the winners: re-recording mixers Michael Hedges CAS, Brent Burge, and Alexis Feodoroff; Foley mixer Michael Donaldson; music mixers Giles Martin and Sam Okell; and production mixer Peter Sutton (deceased). I was given the privilege of asking the team at WingNut Films, Park Road Post Production, Sam Okell at Abbey Road, and Giles Martin some questions. Here's an in-depth look at the challenges they faced and how rewarding it has been. (Some responses are from individuals and some are facility team answers.)

How did you get to this point in your career and when were you approached to work on this project?

Brent Burge: I first got into the industry via the National Film Library in New Zealand, moved to the National Film Unit in the late '80s, had a stint in Australia working on commercials, and moved into film during the '90s, then returned to New Zealand to work on Peter Jacksons' projects. I mixed Peter's first film Bad Taste. He's loyal! Steve Gallagher and I were invited into the cutting room to have a preliminary look at some Beatles footage in 2019. It was lucky we were sitting down! It was amazing!

Michael Hedges CAS: I started in television in the '80s as a young "soundie" learning fast the tricks of music and drama productions. I then also moved to the film unit, becoming the main re-recording mixer for a number of New Zealand features. With the arrival of Peter Jackson on the scene, the world changed in an instant! Brain Dead, Heavenly Creatures, King Kong, then, of course, The Lord of the Rings, and the rest is history. I came on board once we started seeing rough cuts and working on different segments to get an idea of what we were dealing with. Brent and Marty [Kwok, the supervising sound editor] had been working on it for a few months before I got to experience the complexities of what we were heading into.

Alex Feodoroff: I started as a studio assistant at a film post house in Paris, fresh out of film school in the late 2000's. After spending a few years cutting my teeth in the French film industry, I moved to New Zealand to join the mix crew on The Hobbit trilogy. I have been lucky enough to work on every Peter Jackson project since, and I'm particularly proud of what we achieved with Get Back. I came on board at the rough-cut stage where we were able to experiment with some of the material and get an idea of what was possible. We started working on the rooftop concert early in the process, which gave us a chance to conceptualize from the beginning and get an impression of things to come.

Michael Donaldson: I joined the Park Road team about four years ago. Prior to that, I was studying. It's been great to get the chance to work on such a unique project this early in my career.

Sam Okell: I spent 19 years working at Abbey Road Studios, so my association with the project came from a long-held relationship with The Beatles catalogue. Giles [Martin] and myself worked in the UK, mainly due to the pandemic, mixing tens of hours of rehearsals and recordings, including the full rooftop concert performance.

This being The Beatles plus Peter Jackson, were you intimidated? If so, what's it like dealing with that kind of pressure?

Brent: All projects are intimidating. No one ever begins a project (especially a Peter Jackson project) feeling confident—it's ALL nerves at the start. However, on this show, we had the trust of Peter to express how best to present The Beatles within the constraints of the material we had to work with. A single mono recording to be precise. So, it became a restoration project for the ages. How could we best present this mono audio track in an Atmos format!

Michael H.: It's funny, really. I find the greater the complexities, the more I like it! We are part of such a strong team and we know each other's strengths so well; it all becomes like clockwork to make it to the finish line. I do have to say, Peter is one to push the boundaries every time he hits the stage! I wouldn't have it any other way! One thing that I'm most proud of is that we were able to take The Beatles rooftop concert and present it with stunning realism, both with tremendous sound in the Atmos environment and stunning HDR visuals. You felt like you were there, a part of something life-changing. This is a piece of music history and I'm so proud to have played a part in this Peter Jackson masterpiece.

Alex: As Brent said, every project is intimidating, and the fact that we were dealing with The Beatles and one of their most iconic performances didn't make things easier. But, as we started putting the material together from what we were receiving from Sam Okell and Giles Martin, the nerves were quickly replaced by pure excitement and the opportunity to give our best to pay homage to giants of music history.

Michael D.: Yes, it was intimidating—especially considering the discerning ears of many Beatles fanatics. I was







Re-recording mixer Brent Burge

Production mixer Peter Sutton (dec.)

surrounded by a team of talented pros, though—it was inspiring to see them constantly adapting to new challenges. I knew the final mix was going to be in good hands.

How did you go about file searching and organizing with such a vast amount of material?

Sam: Most of this was from 8-track one-ich analog tapes [that were] transferred into Pro Tools. We sent stems to New Zealand for the WingNut team to work into their film mix.

Park Road Post Team: A great part of the construction of the show was done before we started. This entailed a number of people painstakingly piecing together the jigsaw that was the picture footage and the audio recordings. Where at all possible, the Nagra recordings were sync'd with the two 16mm cameras that were not crystal locked—so it all had to be done twice, effectively, with the Nagra tapes lined up to each camera independently. By the time we started, a great deal of this absolute essential work had been completed. Remember, there were no sync claps during the studio days, only when they got to the roof.

I think it's very difficult for engineers who have always worked with timecode to grasp what a tedious and technically difficult task that is. What type of mics and how many were used to record the original Let It Be doc?

Park Road Post Team: This is actually a question for Peter Sutton—the original recordist—alas, he passed away in 2008.

Peter S. had mics up at Twickenham for the Nagra recordings along with Glyn Johns' 8-track recordings at Savile Row. What mics they were, we can only speculate some with more knowledge than others!

Since Peter Sutton is no longer with us, would you like to share your thoughts regarding his work on Let It Be?

Park Road Post Team: The soundtrack would not have been possible without him. It would have been a totally different experience for us putting it all together. Peter S. was tasked with deciding what to record, when to record, when not to record, what to capture, and how to capture it—under the most trying conditions. This was the biggest band in history at a time when they already had legendary status. How's that for pressure?! No retakes, no ADR, no "can we have

> that conversation again please? My mic wasn't working" ... it was by the seat of his pants. No wonder he won the Oscar for The Empire Strikes Back.

> What input did Paul McCartney and Ringo Starr bring? Did the estates of George Harrison and John Lennon provide further insight?

Park Road Post Team: Paul, Ringo, Olivia, Yoko, and Sean [Lennon] were all incredibly supportive of the project from start to finish. Peter shared bits and pieces with them along the way so they were part of the process and saw its evolution. Their teams were fantastically generous with material. Whenever we put a call-out for additional footage, audio, or information, they always came through.





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Respectfully portraying the (arguably) greatest band of all time must be both an incredible honor and a daunting task.

Giles Martin: It was a privilege to collaborate with Peter Jackson on Get Back and to get the chance to share the extraordinary music of The Beatles with a new audience.

The new mixes are masterfully done, especially the rooftop performance featured in Part 3. How much of what we now hear was "treated" versus simply isolating or uncovering what was recorded on that chilly day in January 1969?

Park Road Post Team: We were utterly committed to presenting The Beatles as they were captured on the day. Any re-recording of music was forbidden, and if there was any repair work done on the basis of dropouts etc., this was done within the context of that recording of the track.

Peter Jackson has said that the "sound restoration is the most exciting thing" about the project. Please explain the software that he has called "a machine learning system" and how you were able to remix the original mono recordings?

Park Road Post Team: Sorry, Adam, details are on a need-to-know basis.

That's not the answer I was hoping for!

Park Road Post Team: No, seriously, it's not a secret anymore. Machine learning is becoming part of the post-production toolkit in sound these days although still in its infancy in how it is applied. We had the advantage of having the support of Peter and Clare Olssen (producer) to explore all the bleeding-edge approaches to enable Peter to reveal the story he could hear, but we could not present to the audience without almost total subtitle support. As it turned out, we enabled 80 percent of the subtitles first applied to be removed. TBH is a technology that cannot be explained in an audio framework. It truly is a dark art—one I often found "Unnatural"— not in the resulting quality or result, but just HOW it managed to find its way to revealing the elements we needed separated. We affectionally called our system "MAL" after Mal Evans, The Beatles' road manager. WingNut Films and Park Road Post Production are continuing to develop "MAL," so watch this space!

Can you tell us about the equipment—the mixing desk, monitors, software, plugins, etc.—that was utilized on this?

Brent: The mix was completed at Park Road Post Production here in Wellington, New Zealand. We worked across two mix theaters—one running an Avid S6, the other a Euphonix S5 running Eucon. Mastering was done in a purpose-built Nearfield Atmos mastering suite with an S6. Primary plugins were FabFilter EQ, Compression, and Limiters, along with Nugen Stereoizer and Halo for up-mixing.

Michael H.: We also utilized the Slapper delay plugin from The Cargo Cult, adding in multidelays for realism from various perspectives on the rooftop concert. [We also used] reverb plugins, East West, Indoor, as well as Phoenix verbs for rooms and spatial effect.

How did you seamlessly implement off-camera dialogue with footage that may or may not have been recorded at separate times?

Brent: The dialogue was separated, [then] music separation became successful later in the piece. We generally had vocals, guitars, bass, and drums separate as mono tracks as a minimum. Once we entered Savile Row, we had Giles Martin's 8-track mixes to work with when they were available.

Park Road Post Team: We didn't create conversations—they were all there. However, there's no doubt that there were times when the implementation was a challenge. Fortunately, we had Martin Kwok! A dialogue editor of the caliber that had the trust of Peter J., and who has worked with Peter for such a time that he had an instinct for the story Peter was looking to reveal. No matter how trying the original soundtrack was to hear, Martin, with the help of Emile Da Le Ray and "MAL," pushed through. Peter admits to being blown away by what was able to be revealed, and there were times when Peter and Jabez Olssen (editor) went back into the cut because more detail was revealed than they'd ever imagined possible.

What are the ramifications of such technological advances with MAL-like leaps forward? Do you have any predictions on how this might be applied in the future?

Park Road Post Team: We're well known for being on the bleeding edge of workflows and technology, and we see this as a fundamental change in how productions could approach the benefits of the separation of elements within a recording—be it location or studio









based. I do think you cannot ever replace the talent of a top sound recordist to capture the correct material at the outset. If that doesn't happen, you'll always be facing compromises.

What Foley was performed and how was it decided as to which scenes needed Foley?

Brent: Foley is always necessary in stations like this show where we are relying on a single recording of the production sound. This is not to present an embellished track or final mix that was how we felt the track should sound, it was purely to give the track a consistency, to fill in the gaps where it was appropriate. For some time, I was promoting none at all—in that we experienced purely what Peter Sutton captured on the day, but I think he would have been happy with the result.

Michael D.: As Brent mentioned, our job was to try to recreate the sounds you would have heard on the day—not



augment them or change them. Simon Riley (Foley artist) and I were lucky enough to have access to a very similar set of instruments and amps to the ones you see in Get Back. So, when the sound of equipment being handled was needed to fill in the soundtrack of the documentary, we were able to create sounds that could have been made by those instruments, right down to the flat wound strings on Paul's Hofner bass. Apart from that, we delved deep into the everyday sounds of the Get Back sessions: microphones, cameras, crew members, as well as cigarettes, cups of tea, and countless trays of half-stale toast!

Park Road Post Team: Ambiences and Foley were added as required to maintain the premise that the audience was a "fly on the wall." So, authentic '60s recordings of

London, plus as little Foley as we could get away with, mixing it to remain invisible.

What form of mixes have been delivered thus far, and are there plans to deliver any additional mixes?

Park Road Post Team: Effectively all the mixes have been delivered in the formats and specs determined by Disney Studios. Nearfield Dolby Atmos and the associated fold downs. An IMAX and Dolby Atmos theatrical version was also mastered for the rooftop concert that was presented with a Q&A with Peter.

What did you learn about The Beatles and the original Let It Be documentary that you didn't already know?

Brent: I learned more about The Beatles working on this show than I ever knew before. Ringo, the left-handed drummer, playing the right-handed kit; Paul McCartney

as the astonishing totally naturally talented bass player—who plays it like a guitar. The relationship with George and how amazingly frank and caring he was always helping others; and John the genius-who never lost his cool, his patience, determination, and collaboration. Amazing.

Michael H.: I really felt like I truly saw the real Beatles, their struggles to regain what drew them together in the first place. Their love of music and each other. They were amazingly talented musicians who could play a vast array of instruments, and truly enjoy working together. I feel like I got to know them as men. Before the project, I

had The Beatles on a pedestal—I was a huge fan, and they were god-like figures to me. The *Get Back* footage revealed the human beings. Human beings of immense talent, but with human frailties just like you and me. I watched George practice endlessly to perfect his craft; I watched Paul struggle to find balance between support and control. My love and respect for John, Paul, George, and Ringo is now on a whole new level.

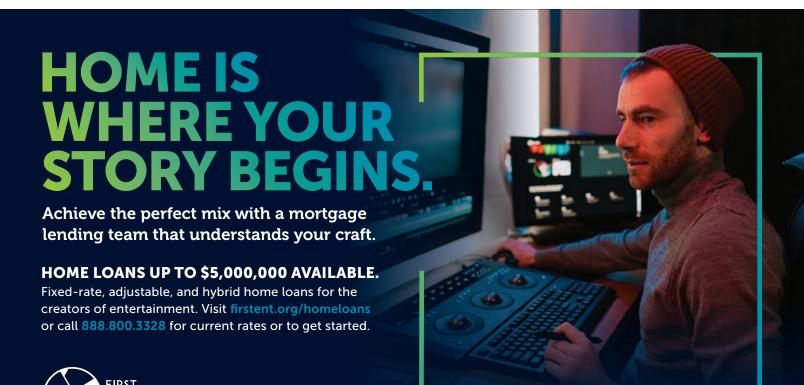
Is there anything else you'd like to say about your experience or how others contributed to this work?

Giles Martin: I'd like to thank the team at WingNut and Sam Okell for all their brilliant work.

Park Road Post Team: I think your questions have covered the spectrum of the experience we had brilliantly. I apologize for the areas we aren't able to further discuss. One thing I must say is this would be the closest to the most perfect crew that could have been assembled to tackle this project—and I mean that from the top in Peter Jackson and Clare Olssen, along with Apple Corps in Jonathan Clyde, through to Jabez Olssen the editor, Dan Best and Elliot Travers the 1st assistant picture editors. But most especially, the editorial crew of Marty Kwok, Emile de la Rey, Steve Gallagher, Matt Stutter, Andrew Moore, Tane Upjohn-Beatson, Alana Jansson, the Foley team of Simon Riley and Michael

Donaldson, of course, my cohorts in the mix—Michael Hedges CAS and Alexis Feodoroff. If ANY of this crack crew of people far more intelligent than I had dropped off the show, it would have been a disaster. Every single person was absolutely vital to the outcome of the soundtrack. We had fun! This project had endless challenges, but Peter inspired us to go further than we ever dreamed possible. With high risk comes high reward, and this was one of those projects. We pushed the boundaries and it paid off. To have the company of John, Paul, George, and Ringo for close to three years was a pleasure. And as our colleague Jabez Olssen said, "We're incredibly grateful to them for creating tracks that you don't get sick of, even if you listen to them over and over and over again!"

A special thank you to producer Clare Olssen and her team at WingNut for coordinating the majority of this interview with the exceptional sound team at Park Road Post Production. It has been a thrill for me to hear how the international crews assembled what is—in my humble opinion—the most exciting Beatles project since The Beatles Anthology series. Although there probably won't be another Beatles special this Thanksgiving, I look forward to that holiday because I know I'll be reflecting on when I—and the whole world—received such an unforgettable gift in 2021. And I'll watch the entire thing again.



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MEET THE WINNERS

OUTSTANDING PRODUCT – PRODUCTION SHURE'S ADX5D

by MILLAR MONTGOMERY CAS

This year's Outstanding Product in the Production category was awarded to Shure Incorporated for its Axient Digital ADX5D Dual-Channel Portable Wireless Receiver. Notably, the ADX5D is Shure's first portable Axient audio receiver and has been widely applauded for its wide and unique feature list, impeccable sound quality, and integration into Shure's line of Axient wireless equipment. I spoke with Adi Neves who is the Associate Product Manager at Shure responsible for the ADX5D.

To start off, congratulations on the award. The feedback from users on the sound quality of the Axient line of products is that of amazement! Fully digital architecture, low latency, and a host of top-tier features and connectivity make this a very attractive product. We can't go too in-depth into the long list of features that this receiver has, but it is worth mentioning how impressive it is that so much can be

SHURE

accomplished in such a small device. One of the most anxiety-inducing moments in a location audio professional's day is when you power up your equipment to see if the RF spectrum is going to be friendly that day or not. Shure's "Interference Avoidance" software within the receiver brings a very high level of sophistication to the table in difficult RF environments; something that was previously very challenging to attain in a portable situation, let alone a sound bag. Who did you have in mind when making the ADX5D receiver?

ENG crews, broadcast engineers, and location sound professionals are our main customers for this segment, and we have conducted extensive research with them during the whole process.

How long was the development process for this receiver? I imagine it took some work to re-conceive your larger rack-mounted receivers to fit the spec of a slot receiver.

The ADX5D is not "only" a small Axient Digital Receiver. It is the first receiver to be able to use our remote control feature we call ShowLink, without needing to be a part of a larger network and dedicated access point. We called this

feature "Direct Mode," which in certain configurations can allow the user direct control of synced transmitters right from the receiver front panel. It also has a very different user interface, designed for the location sound and broadcast user. Because it has fewer buttons, the user interface had to be designed to offer the best user experience for the application. From initial research to launch, a couple of years have passed.



The feature set of the ADX5D is very well thought out-even down to an ambient light sensor to automatically adjust the display brightness in the varying light conditions. Did your consultations with field audio professionals help to guide the development path of the ADX5D?

At Shure, we don't design anything without first developing an in-depth understanding of what our customers expect from the product. Location sound and broadcast engineers have different approaches and expectations about the product features, depending on where they are in the world. We have conducted research worldwide to make certain our roadmap aligns with our customers' expectations. Some features, like the ambient light sensor you mentioned, come from our rack mount receivers, while others are unique to portable applications.

How big was the development team that made the ADX5D?

As you can understand, a project like this demands advanced knowledge of different disciplines like mechanical, RF, DSP, analog audio, and software engineering. Our engineers are always involved in multiple projects at the same time. This is why it is very difficult to estimate the number of people involved in the project. After including compliance, production engineering, procurement, etc. ... many ... many people have contributed to the project

ShowLink adds bidirectional communication to the receiver that allows the user to change the settings on a transmitter remotely. Having this feature in a portable receiver seems like a highly valuable tool to a whole host of location mixers, live sports broadcasts, live music, Houses of Worship, and theatre productions. How did the idea of ShowLink come about and how critical was it that the ADX5D keep that function despite its small size?

ShowLink was part of the original Axient development and a crucial piece of the "Interference Avoidance" feature set, first introduced on this product line more than 10 years ago. Based on our research with customers who rely on our products every day, we have identified that ShowLink would be an important feature of this new portable receiver and the response we have had since the launch confirms our research.

Knowing that the usable RF spectrum is getting more crowded and location sound pros feel that pinch-even more so in large urban centers with high levels of RF traffic-how has Shure designed the Axient line to deal with tough RF locations? How does the interference management work inside the receiver and "talk" to the linked transmitters?

The Axient Digital line uses the same approach first introduced on the original Axient line, where a "Spectrum Manager" can be used to scan the environment, calculate main and backup frequencies, deploy the main frequencies, and constantly monitor the backup frequencies. When interference is identified by the receiver, the Spectrum Manager will pick the cleanest backup frequency and make it available for the affected channel. The deployment process can be manual or automatic, depending on the application and customer's workflow.

Shure has several networked pieces of software that link to the ADX5D, such as Wireless Workbench and the Shure Plus Channels app. How important was it for the ADX5D to fully integrate with the Shure Axient ecosystem and not have to drop these features that users have come to rely upon with your rack-mounted receivers?

Our customers rely on Wireless Workbench as their frequency coordination application for the most challenging tasks. In any frequency coordination, it is very important to know all the wireless being used in the location. For this reason, Wireless Workbench coordinates frequencies not only for Shure products but also for the most popular devices used in many applications. We have implemented "Network Mode" on ADX5D for users who want to have access to an existing network of Axient gear and use Wireless Workbench to get frequencies direct from the coordination deployment. Depending on the application, the frequencies are also updated on the ADX transmitters linked to the receiver channels.

Shure's reputation carries with it a legacy of quality and durability going back decades. Being a portable receiver that would be taken out and used in the rigors of the field, what design steps were taken to make sure that this receiver was capable of being used in harsh conditions?

At Shure, we are very proud of our reputation for quality

in every product we make. With ADX5D, it was not different. We have applied all the extensive mechanical, electronical, and environmental quality tests we used for the whole portfolio, and we have also designed specific tests, based on the environmental conditions and applications this product will be subjected to in its "real life" use.

Can we expect more products in the Axient line? Where does the Axient system go from here?

We are always in contact with our customers and actively seek feedback to improve existing products and develop ideas to implement in new ones. Our engineers are constantly testing new concepts and our wireless roadmap has a very solid future.

Shure is a large company. Who gets to disply the award on their desk?

(Laughs) We have a special place for our awards at our headquarters in Niles, Illinois.

Congratulations again and I look forward to more exciting products from Shure!

Thank you. The CAS Award is very important to us, especially because the votes come from the professionals who use the products every day and rely on us to get the amazing results we hear on our favorite productions.



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MEET THE WINNERS

OUTSTANDING PRODUCT -POST-PRODUCTION DOLBY ATMOS RENDERER v3.7

by MATT FOGLIA CAS

The Dolby Atmos Renderer v3.7 brought a number of feature updates that really helped streamline the implementation of the renderer into the DAW work environment; enough to earn this year's Outstanding Post-Production designation. The updated Dolby Audio Bridge making clocking easier and audio/video multiplexing options when exporting to MP4 are just two. I reached out to David Gould, Dolby's Senior Director, Content Creation Solutions, to discuss this renderer version.

In 2013, Dolby Atmos won what was then called the CAS "Technical Achievement in Post-Production" Award. At that time, Atmos was just starting to penetrate the theatrical market. Since then, Atmos delivery has reached video streaming services, broadcast, and, most recently, music streaming services. How has Dolby helped with expanding the format into these other areas?

We've been able to expand the adoption of Dolby Atmos by continuing to focus on the core set of beliefs that has helped us grow adoption in theatrical—that creatives have stories they want to deliver to their audiences. By focusing on

helping those creatives solve problems in delivering on that vision, we can naturally bring Atmos to more use cases and audiences.

In parallel, we worked to develop many new form factors for consumer playback, making access to Dolby Atmos experiences more accessible than ever. This can be seen in full discrete speaker systems, sound bars, built-in TV speakers, smart speakers, and even mobile phones, but always with a focus on ensuring we respect the art and intention of the creator.

With the expansion of the DAR's userbase, has the development team's size increased?

Yes, as the Atmos ecosystem has expanded, we have grown our development capabilities with a large development center in Barcelona, as well as a team in the Bay Area.

Given that the Renderer is able to integrate with multiple DAW's, do you have team members who focus on specific DAW's?

From a development point of view, it is a single codebase, but from a QA (Quality Assurance) point of view, we obviously have to test across a lot of different workflows. It's not that we have specific team members focused on specific DAW's (although there are, of course, different people who are experts in different DAW's), but more that throughout our development and QA process, we are sure to test across different workflows, and adjust our development to ensure we fit in correctly.

That has to be challenging given different manufacturers, different OS features, different processors, etc.

Yes, it is challenging. Lots of DAW's, lots of platforms, lots of different user types that we want to keep happy. We try and use automation where we can to help with that, but technology always marches on and we have to keep up.

Version 3.7 adds a great deal of ease relative to communication and I/O configuration between the DAR and the DAW. What

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Dolby Atmos Renderer v3.7

influences your decisions to update or develop features?

We are always listening to and monitoring what is going on with our users; where the pain points are and where we see the opportunities. Some of that is through good oldfashioned customer visits and interviews, some is through monitoring online forums and our support portals, and some is based on in-house experimentation and technology development. We balance all of those things, but always with an eye on reducing workflow friction and complexity for users and ensuring we are making it as seamless as possible to enable the creative community to work in Dolby Atmos.

As you say, 3.7 included some great examples of that with the support for the binaural settings plugin really helping ensure that mixers are able to access the controls they need from within their DAW, and the ability to mux the MP4 export with video is a massive timesaver for people needing to send out files for review.

Now that personalized HRTF's are in beta, are there additional upgrades slated for the binaural listening experience that you can share?

We're really excited about the Dolby Atmos Personalized Rendering solution. In terms of other upgrades, we are always working on what we can do to improve the experience for creatives. In fact, the 3.7.2 release that came out in April includes some further improvements to the binaural virtualizer based on mixer feedback we have been receiving related to a desire for more externalization, but with less timbral coloration. We think people are going to be pretty happy with the update.

I feel I know the answer, but I'll ask anyway! Since it is the manner most Atmos mixes are consumed, do you foresee an emulation being available for non-Logic users to hear how Apple's Spatial Audio Engine adjusts the Atmos mixes?

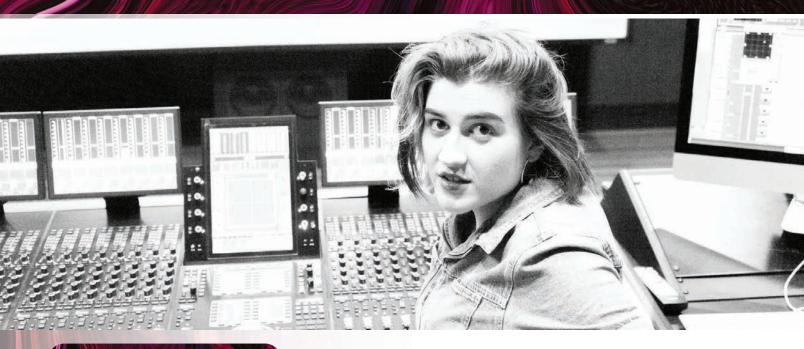
We can't comment on specific partner plans/products/ roadmaps. In general, we are focused on getting as many people excited about the Dolby Atmos headphone experience as possible, and part of that is working with all of our partners to try and ensure a spectacular, and consistent experience, both in creative workflows, as well as for consumers.

While I have your ear-and not to throw any ideas at your team-but a feature most mixers would love-and happily pay for!-would be the ability to have the DAR decode an incoming signal from a streaming service-video or music-so we could use our same monitoring setup while listening to Atmos-mixed music or watching Atmos-mixed shows. Can you pass that along?

We'll definitely pass that on...!

Any closing thoughts or comments?

We are just very honored to be recognized this way by the audio post-production community, and it means a lot that we are able to help, even in a small way, this amazing community work their magic! It truly is what drives us enabling amazing, creative people to be able to do their very best work in Dolby Atmos. And of course, we're far from done. We look forward to continuing to work with, collaborate with, and hopefully continue to push boundaries with the amazing post-production community.



MEET THE WINNERS

CAS STUDENT RECOGNITION AWARD WINNER LILY ADAMS

by PETER KELSEY CAS

In our eighth year of presenting the CAS Student Recognition Award, the honor went to Lily Adams from Savannah College of Art and Design (SCAD) in Savannah, Georgia. Blackmagic Design and DTS co-sponsored the SRA Award and prizes were awarded in the amounts of \$5,000 for the winner and \$1,000 for the other finalists. Both the winner and the other finalists also received a valuable collection of software and other gifts with a value of \$9,000! We thank Acon Digital, AKG Professional by Harman, Avid, Deity Microphones, DTS, Filmmakers Academy, Halter Technical, iZotope Inc., K-Tek, Krotos Audio, Lectrosonics Inc., McDSP, SoundDogs, Sound Particles, and Todd-AO for their generosity. Lily took some time to share her story.

What brought you into sound and, specifically, sound for film?

I remember always loving stories as a kid. Film and music have always been very personal to me, even when it was just watching my godfather play the guitar or the whole family tuning in for *Friends* when it was still airing. Books and movies were my happy place, and orchestra felt like the only class I had an instinct for. Those two obsessions eventually evolved and molded into this fascination I have with sound design and what makes a film or show sound good. Sound is invisible yet powerful to us in ways we are never really fully aware of—and I love that. For a while, I thought the closest I would get to "Hollywood" was watching the special feature documentaries on DVD's of my

favorite films. But then I heard about the Sound Design Program at SCAD and, once I got accepted, I made it my mission to learn as much as possible as fast as possible.

What's your favorite part of the sound for film process?

This is hard to answer because I love every STEM from concept, record, edit, to the mix. But nothing really beats the magic of the dub stage for me. The first time I saw an S6 in person, I felt like I was intruding on holy ground. I just love putting all the pieces of the soundtrack together. There's something beautiful to me about creating and molding the listening experience for the audience. When the mix starts coming together, I just feel so ... excited. There's always this moment of pure, I don't know, I guess "joy" would be the word? The mix is when I start to get goose bumps while working on a project.

What does the CAS Award mean to you and what will you do with the money?

For now, I'm putting that check in savings for my "moving to L.A." fund. The real prize was getting to finally come and network at the CAS Awards. Meeting and talking to all these people I had looked up to for years ... that was really special. But if I were to get ridiculously sentimental here in the CAS Quarterly, this award means more to me than I am capable of explaining. For so long, working in film and television was such a pipe dream to me. I have spent the last four years trying desperately to find some sort of reassurance that I will "make it." That I will, one day, get to play a part in telling stories on the big screen. After winning this award, for the first time, I finally feel like all these dreams I have had about sound might actually come true.

Having won this award, do you have any advice for someone who would like to apply for the Student Recognition Award?

Be yourself, be genuine, and engage with your mentors and professors. I wouldn't be here if I didn't engage with the SCAD sound department outside of class, I just wouldn't. As far as the application goes, don't be afraid to put yourself out

there. I don't think it would feel as rewarding if I hadn't fully put my work out on the chopping block like I did.

Do you have any advice for someone starting out in sound for film? Unless they have some sort of generational film dynasty lottery, no one makes it in this industry as a "lone wolf." Approach work as a way to find amazing people to be a part of your life. I love sound with all my heart, but it wouldn't mean anything if I didn't get to share it with people. Choose what you're interested in and do everything in your power to master that craft. Use your anxiety about the future to your benefit; channel that energy into your work. Experiment, set aside time to make art that's just for yourself!

Do you have any stories or challenges from your path that would be fun to share?

Uh, well, there's always the first film I ever supervised and mixed in multichannel. It was sophomore year, and I had hopped on this big capstone animation thesis called Monkey Thief. Originally, I thought I would have eight weeks to complete the post in the studios at SCAD. However, COVID-19 had other plans. Suddenly, I had four weeks for post, and I would be doing everything remotely in my parents' house. Cue the Wilhelm scream! Let's just say that anything is possible if you have a 30-foot HDMI cable, permission to use your dad's "man cave" home theater, and are willing to venture through a cable-infested crawl space akin to Rob Reiner's "Fire Swamp."

Who have been the people that have influenced you the most and what did you receive from them?

Bear with me please, this is gonna be a long answer! Number one on the list is definitely my upbringing. My family has always approached work as something you never do half-



heartedly. From the beginning, I always had examples of hard work and dedication. The older I get, the more thankful I am for that. The same goes for my friends. I have such kind, funny, and amazingly talented friends who have supported me and pushed me to be my absolute best self.

There are so many films and TV shows I could name that have influenced my sonic aesthetic. I am not going to try to list them because that would be impossible. I think more importantly, I should say that studying at SCAD has. given me the ability to fall in



love with sound a million times over. A lot of this is attributed to the fact that many of my professors have graciously sacrificed a lot of their free time to mentor me.

Professor Robin Beauchamp, who nominated me, has been very involved in my education in post-production audio. I've learned so much about signal flow because of him. He's an incredible educator who works very hard to help his students prepare for the workforce. David E. Stone, who retired from his professorship last year. He not only taught me so much about sound for film, but about how to make the best of your life. He also has given me the opportunity to speak with so many industry professionals for which I am forever indebted to him for. Professor Jamie Baker has always been incredibly supportive of my work. "Enthusiastic" would be an understatement in describing her reaction when I've asked for guidance in both Foley and mixing. She's wicked smart in the recording studio and I couldn't be more grateful I get to learn from her. Professor Matthew Akers has been supportive of me, even before I had a class with him. He's been instrumental in teaching me about sound design and "sound art for the soul." His classes are always inspiring me to push myself into, maybe sometimes challenging and uncomfortable, creative journeys that have led me to incredibly fulfilling end products. I also would be remiss if I didn't mention our department chair, Mitch Gettleman. I had him for my first class: "Intro to Sound Design for Film and Television." He is extremely dedicated to giving the students the support and resources they need to succeed. He is always fighting for us "sound kids" to get great opportunities.

What's your next step?

Moving to L.A. is my top priority after I get my diploma come June. I was already sold on the Valley, but the people I met at the CAS Awards really solidified this decision. After being in COVID lockdown for a while, I forgot just how nice it is to just meet new people in person who are as passionate as yourself! Everyone there was so welcoming and inspiring, I can't wait to be part of this community. My first goal is to get some sort of entry-level position at a studio such as training to be a mix tech or an assistant editor. But honestly, I will run errands and get coffee if it means I get to learn from people like the CAS folks I met that night.

Is there anything else you would like to add?

Thank you so much to the CAS as a whole (Karol Urban CAS MPSE rocks!) and to you for interviewing me!

The Case for a Four-Person Sound Team

by Aaron "Cujo" Cooley CAS

In sound teams the world over, our workload is ever-increasing. Multi-camera setups with non-complimentary coverage angles, condensed shooting schedules, larger and larger cast counts, and a constantly expanding scope of gear has completely decimated the two-person sound crew, and is rapidly overwhelming the three-person crew. Adding in the last couple of years of COVID compliance and protocol, and the situation is only getting more complex. With these challenges in mind, I set about researching among peers the case for a four-person crew, and how mixers are dealing with these new challenges.



Let's start with COVID. It is perhaps the biggest elephant in the room. And while it is true that, as of this writing in the spring of 2022 in the United States, COVID protocols seem to be relaxing quite a bit among the private and the public sectors, they're not changing much in the film industry. There are still stringent zone protocols with hard lines that can or cannot be crossed without proper clearance, certain personnel that may or may not interact with certain other persons on set, regular testing between one, three, or five times per week, and vaccine mandates for most, if not all, film workers.

If we as a production sound team are going to be expected to work within these parameters, then the additional workload must be considered. In my mind, and those of our contemporaries, it is beyond question that a "wiring only" tech be employed to handle the duties of wiring all the talent, keeping the associated gear and accessories clean and sanitary, and to coordinate the interactions with the talent and associated handlers. This technician is also going to be expected to remain relatively and reasonably isolated—to the extent that one can—from the rest of the shooting crew, the rest of the sound department, and from the outside world in general.

How to argue for this person on staff is really simple. The notes above are enough to qualify the need, and the financial side of it is quite simple as well. First, it is near impossible to calculate the loss to a production should

there be an outbreak on set. Second, the COVID compliance budgets have—to date—been as near to infinity as one can imagine. Productions are allocating no less than a 25 percent-40 percent increase in overall budget to handle COVID safety. The added payroll of one qualified technician is less than a drop in the proverbial bucket. This 4th position is nearly a slam dunk to all but the most obtuse of producers.

On the technical side of things, it is no less a need to have a 4th, but it is more delicate to negotiate. A side note, but particularly applicable and sorely needed solution is for IATSE and other guilds to mandate, by contract, the need for a UST on each job. Similar to the IATSE 600 Camera Local, each camera has a full complement of skilled techs to handle the job. It is time for the unions to do the same for the sound department. Once this is in place, the addition of a 4th should be even easier.

While I am not an old-timer in the world of sound, I do have many friends that are, and they have all described to me the past eras of location sound where there was a single mixer, usually running a Nagra, and a boom operator capturing the dialogue. Single-camera, plenty of coverage, wireless didn't exist, and production schedules that allowed the time to respect the process. As things became more complex, the "cableman" position was adopted to handle exactly that. Wrangling cables, tape reels, batteries, and other tasks that were needed in and about the sound department.



On *Monster* S1: Trainee Britney Darrett, UST Saif Parkar, mixer Amanda Beggs CAS, boom Zach Wrobel



On Tim Allen's *The Clauses*: Kevin Compayre, Misty Conn, Todd Overton, and trainee Koehler.

On Legacies S4: Mixer Shirley Libby CAS, boom Allen Lee Williams III (CAS Associate), UST's McKinney Lillian & Mike Sal

Bud Raymond's five-person team on S2 of *P-Valley*



As the bulk of us are aware, that type of shooting has long since gone extinct in all but the rarest of productions. Endless demand for mindless content, the advancement of the technology to make it possible to produce, and the current philosophy of production being led by teams of accountants, has completely redefined the process of moving from dream to screen.

On any given day, most of us deal with multi-camera setups, multiple booms for dialogue coverage, huge cast counts, and maddening numbers of wireless mics for iso tracks, Comteks, IFB's, digital video demands, and audio sends that never seem to be enough. And while the cableman position still exists, it has evolved into FAR more than just wrangling cables. And, it has been aptly renamed "utility sound technician." In all of this, we have barely touched on the continual need for a 2nd boom operator to keep up with the multi-camera coverage that is being done now. A UST on a busy shoot day is often stretched thin just to keep up with the daily tasks, let alone having time to grab a boom and sprint to set to capture half of a scene. This puts undue pressure on the entire sound team that only serves to keep everyone in catch-up mode.

The highly talented and very experienced Patrushkha Mierzwa has written a book detailing the bulk of what happens with the UST, and it is an astonishing realm of responsibility with an equally astonishing workload. So, the question begs, if the UST has been a one-person position for so long, why should we be arguing for a 4th? Can't we just get a qualified 3rd and be done with it?

The answer is yes and no. Sure, we can get a qualified

3rd if there are any available. I have been told that in many markets, these well-experienced and seasoned techs are in very high demand and the available pool is not as deep as one would like. In some markets, demand is such that there are less than one or two persons ever available at all. To fix this condition, it is imperative that new people be trained in the ways of the art and be brought onto crews in an education position. Different regions will have different titles, such as utility sound trainee, UST 2nd, or what have you, but regardless of the name, the job needs to be filled and the replacements for our future need to be trained.

The "no" side of the answer is that the workload is still expanding. In many situations, the sound team is working at a frenetic pace just to keep up with production, let alone getting ahead on the day. It is untenable and unreasonable to expect any person or team to work at this pace and under these loads without severely compromising the final product, which are clean audio tracks.

In addition to the common tasks that we are all familiar with; wiring, pushing carts, getting power, coordinating with other departments and whatnot, the everexpanding need for radio frequency coordination and deployment, the growing need for remote audio sends that have to be managed and maintained, the multitude of video feeds that need to be acquired, the waterfall of digital paperwork like timecards, and endless email chains are all tasks that the UST is assigned. THEN there is the continual need for second boom, carpets, foot foam, and chasing down offending noises around a location and the job seems more like the tale of Sisyphus than it does a desired career path.

With a three-person sound team, the mixer is very often not able to set focus on just that task. Talking with friend and colleague Chris Howland CAS, the central core of the conversation showed that there are three general components to the sound department. Says Chris, "There is the tech side of the job, the diplomatic part of the job, and the artistic side of the job. I'm all for letting the utility be the tech so I can focus on the diplomacy and the artistic contribution of mixing."

Chris is spot on here, and with a three-person team in a busy shooting day, the mixer will not be able to fully accomplish this goal. Because of the additional workload, the mixer will rarely be able to have time to converse with a director or a DP on how a shot will be set up or evolve, or even get any idea of what is coming in the next day of work. More likely, he or she will be doing vital tech work, pushing carts, or anxiously working in reaction-only mode just to get through the next shot.

None of this contributes to a happy or productive workday, none of this contributes to a happy life, and none of this contributes to anything resembling skilled craft work.

Ultimately, in order to close the deal in negotiating with a producer on the need for a 4th, it is going to be critical that the mixer understands the true cost of filmmaking. In dollars, productivity, mental and physical health, and in the corporate politics of accounting-led film production. With top-tier episodic running nearly \$10 million per episode, the math works out to somewhere around \$1.5 million per shooting day on a 6.5 day schedule. \$125k per hour, almost \$21k per minute, nearly \$350 per second. Hiring a 4th for a week is paid for in roughly 4-6 seconds of gained productivity. The net result is a more productive sound team, a healthier sound team, a better sound product, and a better work environment.

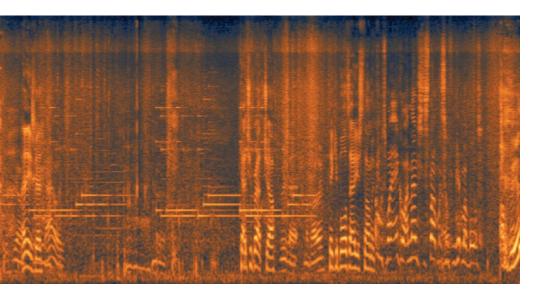
I urge all professionals to look hard at their upcoming projects and take an honest look at how a 4th would improve the team. While it won't be practical on every shoot or at every budget level, there are far more opportunities to have a 4th than not.



Music Rebalancing Plugins in Post

by Matt Foglia CAS

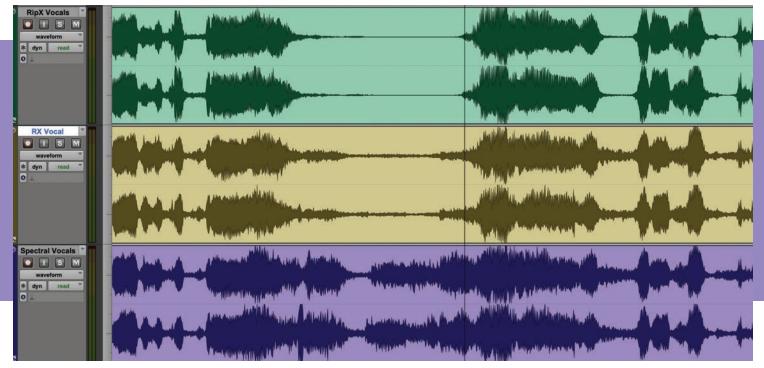
Do you remember your reaction when you first heard of spectral editing? I recall thinking, "So, we can see time, amplitude, AND frequency all at once in our editor???" The first time I used spectral editing, a picture editor sent me a clip hoping there was something I could do to make it work. The clip had a cellphone ring which featured a song that couldn't be cleared-under and in-between dialogue (this was a sourced clip). I watched a couple iZotope RX tutorials, ran the demo, and was able to remove the offending song (which was more of a keyboard melody than a fully mixed song). No more getting crazy with multiple notch filters in an attempt to suppress unwanted sounds with, typically, poor results. The editor and producer were amazed with the result, and I gladly purchased my first copy of RX Advanced.



The first clip I ever repaired using Spectral Repair.

The most recent technology in this vein features the ability to identify and separate elements within a complex music mix. While these features started popping up a couple of years ago, they're extremely impressive now. The ability of software to do this really flabbergasts me. I mean, sure, a chemist can separate elements out of a liquid, but separating audio into identifiable parts? Crazy! As was the case with spectral editing software, this technology became commercially available at just the right time for me to help a project I was scheduled to mix.

Since moving from NYC to Nashville in 2008, most of the series I work on are generally fun, entertaining shows that feature sourced clips. Many clips are sourced from the internet and have music mixed in, since everyday users can add music to their video posts somewhat easily. A couple years ago, a client was producing a series that used lots of sourced clips, and most had embedded music. While I appreciated their faith in my abilities to salvage something usable, I was somewhat unsure. Fortunately, the Music Rebalance module was just released in RX7. Using a combination of Dialogue Isolate and Music Rebalance (along with some judicious sound design and Foley), we were able to get through 26 episodes-and deliver all the required network



Close-up of the Vocal stem at the beginning of Led Zeppelin's "Good Times Bad Times."

splits—without worrying about music licensing issues. Since then, I am often sent clips during rough cut edits for shows I mix to do "audio voodoo" on so that Legal doesn't have to worry about clearance problems.

Even though I've been using the technology for years, I am still awestruck by it; probably because I've been studying audio for nearly three decades and have a vast appreciation for how complex of a process it must be. With that, I wanted to explore a couple source separation applications to hear the different results. The irony being that I can't post examples because of copyright issues—one of the contributing reasons for using the software in the first place...

Software Used

There are a number of software options available out there, from professional standalone applications to online dragand-drops. While I reached out to additional vendors, the following were examined for this article: iZotope's RX8 Music Rebalance, RipX by Hit 'n' Mix, and Steinberg's SpectraLayers 8. These either didn't require credit card info to trial, or the vendor responded to my inquiry in time for the article. Though

not examined here, some other options include Audionamix's XTRAX STEMS, AudioSourceRE DeMIX Pro, and AudioShake's Indie.

One important note: I used the basic default settings provided. As one would expect, each software can be deeply altered and each also has many other impressive feature sets.

Commercially Released Songs

If you're working on a project that is using a commercially released song and are looking for a little extra



RX's Music Rebalance default setting

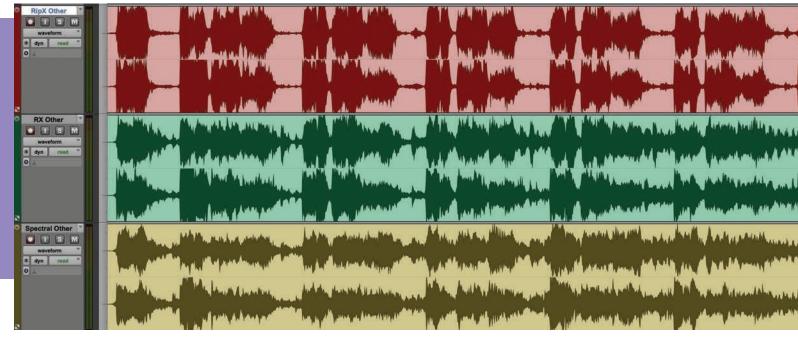


flexibility relative to, say, vocals fighting with dialogue or voice over, you might find some helpful results with some of these applications. To compare results, I ran two songs through the software.

The first was Led Zeppelin's "Good Times Bad Times" because it's straightup classic rock with vocals, guitars, bass, and some of the coolest drumming. For this tune, each software provided stems called Bass, Drums, and Vocals, along with "Other"—this is where the guitars went.

The first noticeable difference was in the vocal, which comes in on a pickup with the lyrics, "In the." Interestingly, these two words start on both the Other and Drum tracks in RX and SpectraLayers before segueing to the Vocal stem. In RipX, they start on the Vocal stem without bleed into the Other stem.

Another noticeable difference was the bridge section after the first chorus



Close-up of the Other stem during the bridge of Led Zeppelin's "Good Times Bad Times."

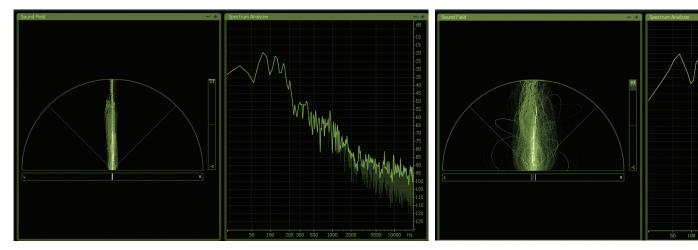


("Sixteen, I fell in love with a girl as sweet as can be"). Here, the guitar has a lot of chordal movement that bleeds prominently on the Vocal stem in SpectraLayers. It is also present on the Other stem, though with a different frequency presence (it's brighter on the Vocal stem). This area was also a little troublesome for RX, with the guitar also having a presence on the Vocal stem (though not as prominent as with SpectraLayers). However, the Other stem had guitar, some percussion, and even the bass sneaking in. RipX had some really solid isolation here.

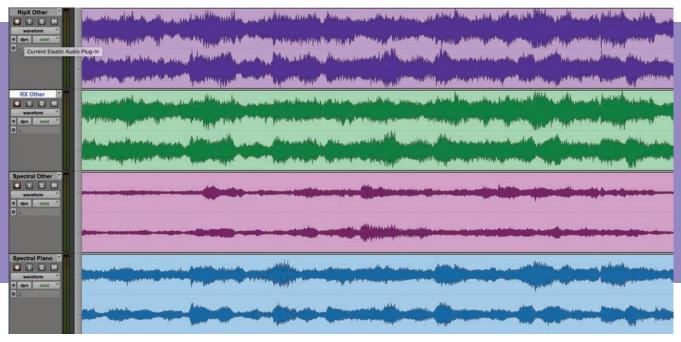
Going to the guitar solo, RipX had the cleanest representation, with the rhythm guitar and solo being pretty isolated on the Other stem, while RX and SpectraLayers had a good amount of cymbal presence mixed in with the guitar. Each software did follow the proper panning that takes place during the solo, which was nice to hear.

If I had to create an instrumental or needed a moment to adjust Glyn Johns' awesome mix of this song so that it could blend under dialogue or VO better (something that could be considered sacrilege), I'd gravitate toward using RipX.

The other song I chose is one of my speaker reference songs, Fiona Apple's "Fast As You Can." This song has very solid drums and bass, piano, Chamberlin (precursor to Mellotron), single-tracked vocals that are panned center for the verse, and double-tracked vocals panned hard left/right for the chorus.



L-R: Stereo imaging and spectrum analysis of the Bass stem for Fiona Apple's "Fast As You Can" in RipX, RX, and SpectraLayers



The Other stem from Fiona Apple's "Fast As You Can," along with the additional SpectraLayers Piano stem.

I found the Bass stem pretty interesting in both of these songs. As we know, bass is usually panned center-and it is in both of these songs. However, with RX and SpectraLayers, there is noticeable stereo imaging at points (see screenshots). RipX kept the imaging pretty tight in the phantom center. Another characteristic of the Bass stem is the steep low pass filter applied. The filter used in RipX seemed to have the lowest order while RX seems to brickwall around 3 kHz. The Bass stem in RipX still has a little "attack" that's audible, as well. The sonic characteristic of the RX and SpectraLayers stems, however, are



akin to hearing a bass playing down the hall behind a closed door; very much fundamental-focused.

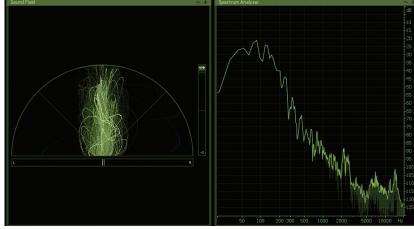
The Vocal stems also had a little added spatial quality. During the verse, RipX was the "most mono" with the other two having a little "spread" that sounds like a light stereo chorus was added with about a 20 percent width. For the panned vocal chorus, the Vocal stem was cleanest with RipX. RX and

SpectraLayers had audible Chamberlin and a little percussion in the Vocal stem. Impressively, all retained accurate panning.

The separate Piano stem available in the SpectraLayers split was interesting in that it seemed to have a brickwall filter at 5 kHz and, as a result, came across as a little dull. When adding the Other stem to it (which contained the Chamberlin and would be equivalent to the Other stem from the two additional programs), the result still wasn't as spectrally full as the Other stem in RX. The Other stem in RipX had some noticeable pumping on this particular track.

Processing music with these plugins is like going down a wormhole where you want to process all of your favorite songs and listen to all of the individual stems. Across both of these songs, some of the stems could stand by themselves, while some needed additional elements to mask some of the imperfections such as bleed or noticeable artifacts. Some of the sound quality reminded me of early lossy codecs, but once blended together, came across pretty well. If I was doing lots of music separation, I would pick





up a copy of RipX as it seems to be the most spectrally full sounding while providing, what appears to be, more accurate separation.

Copyright Clearance for Real Programs

I was mixing a TV/film-focused podcast recently and the topic of music replacement came up. The discussion was how some shows were unable to be streamed or released on DVD due to the cost of clearing commercial pop songs. One of the shows mentioned was WKRP in Cincinnati. With this fresh on the brain, I went to the first episode of this late '70s, early '80s comedy series where Howard Hesseman's DJ Dr. Johnny Fever switches the station's genre to rock-and-roll, playing Ted Nugent's "Queen of the Forest." Over the song, we hear dialogue and laughs.

I processed the clip (about five minutes in length), with each creating stems

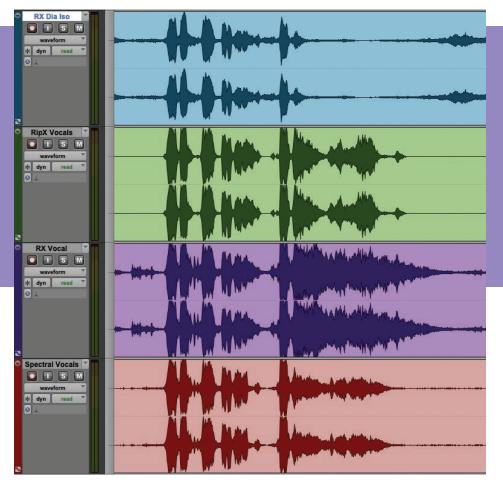
for: Vocals, Bass, Piano, Percussion/ Drums, and Other. The clip is primarily dialogue and laughs, with an acapella piece played early on for comedic effect. The Nugent tune comes in toward the end at around 4:35.

What I found interesting was the audience and laugh track mostly being separated to the Other stem in RipX. This had me thinking the software could possibly be helpful if trying to language-localize a show that hasn't delivered proper splits. everything except the dialogue was split, the laughs and some of the production effects could be retained while dubbing another language. While there were definite artifacts at times, RipX separated the audience/ generally clearly consistently. At the same points where the audience was present in the RipX Other stem, SpectraLayers and RX had audio that sounded like strange vocal

reverses on the Other stem, but had the audience/laughs as part of the Vocal stem. I assume this is because those are sounds made by the mouth. That said, there were occasions where audience was present on SpectraLayers' Other stem. RipX also had audience on the Vocal stem at times, even if it was also on the Other stem.

Out of curiosity, I processed the clip with RX Dialogue Isolate to compare results with the Vocal stem. I often do this to give myself more options. The dialogue line I wanted to focus on was spoken over music playing and is the last line in the clip, "I almost forgot, fellow babies—Booger!" This silly line transitions WKRP into the world of rock and represents the birth of DJ Dr. Johnny Fever. In the Dialogue Isolated track, you can hear some of the guitar behind the dialogue. In the Vocal stems, however, the music is pretty much gone and the frequency range is





WKRP in Cincinnati clip's Vocal stem and Dialogue Isolate results.

fuller and more natural sounding. The Vocal stems also have the audience laughter present after the word "booger" is spoken; the Dialogue Isolate track does not because, one would assume, it's trying to keep the dialogue fully isolated from other elements.

Internet Sourced

As mentioned, I work on some shows that source clips that everyday users may upload for entertainment or social media comments. Oftentimes, these

folks will add background music because it's a rather straightforward thing to do within some apps. The problem arises when Legal can't obtain clearance. Similar to most shows, we can't use something that we can't clear.

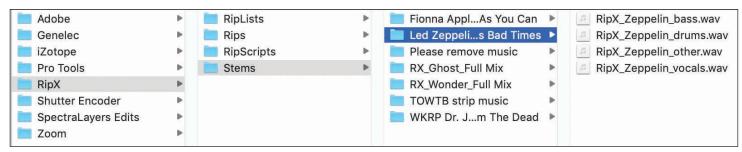
I recently was given a clip with a strong Latin percussion part under on-camera dialogue and it was just too aggressive and too up-tempo for the software to, by itself, truly minimize the music's presence.

"We still need to use our creative problem-solving skills to best remedy whatever issues are sent our way."

Switching between Dialogue Isolate and Music Rebalancing—plus some creative editing—allowed me to mask the music enough for Legal. Additionally, I had another clip with a strong synth pad score and some on-camera hits/movements happening under dialogue. The software sent the pad to the Other stem and the on-camera hits/movements to the Drums/Percussion stem—allowing me to keep the "production effects" while removing the bed music. These are just two examples to demonstrate that source separation software is hit-ormiss depending on the content.

Concluding Thoughts

Just as companies keep developing more and more impressive and mindblowing tools, we still need to use our creative problem-solving skills to best remedy whatever issues are sent our way.



RipX automatically places stems in an associated folder.

Why Should I Go DIGITAL on Set?

by Aaron "Cujo" Cooley CAS

The last several years have brought amazing advances in location sound recording technology, as well as potentially crushing obstacles. 5G and other mobile phone tech, overcrowded and shrinking RF spectrums, exponentially expanding wireless controls on film sets, expansive Wi-Fi demands and delivery, growing departmental communication systems on set and

off, and a myriad of other things are seemingly conspiring (and sometimes succeeding) to defeat the PSM in their work. When we add in the new realities of the COVID workspace and ever-shrinking budgets, it seems like PSM's the world over are simply trying to appease the bull in the china shop more than we are actually working at getting good tracks. In this article, we are going to unpack some of those realities and address some of the risk-rewards of a digital and/or remote workflow as a path to getting the bull back outside so we can focus on getting good tracks.

A common issue that I see with digital system users buying gear with a plugand-play mindset is that they ultimately end up with a system that performs worse than what they were dealing with before. This cannot only be madly frustrating, but it can actually cause the mixer to become unemployed. Many times, we are sold these bits of gear with an incorrect understanding that it is a panacea to RF problems, and that simply going digital is the answer. This is not entirely correct.

It is important to note that for the purpose of this article, I am writing about my personal experience in the continental United States, mostly in the Atlanta, Georgia region. Some of my information also comes from anecdotal and combined conversations with our contemporaries around the United States and abroad, dealers in the U.S., and manufacturers who sell globally. Please take this into consideration for you and your work, wherever in the world this places you.

Some of the perceived frailties of going digital include lower power output, decreased range, and a more complicated tuning protocol. The realities are that, yes, some of these conditions exist, however, it is exceptionally rare that any of these conditions exist in any greater significance than in an analog or analog-hybrid system when compared to a fully digital system. Further, many of the obstacles we face on set are universal in their nature and exist no matter what system we use, or where we use it.

Obviously, the lower the overall power output, the shorter the useable range, but the type of signal must also be considered. Analog and digital radio signals operate in very different ways and, therefore, the power output is only one consideration. To be sure, some digital systems are well lower than what we are used to, but that might not be the mark of death that one imagines. If you are used to



working at 100 mW on an analog system and you switch to a 5 mW digital system, you can expect to see a significant difference in useable range. But in the shared experience of myself and others, it is fair to say that at a professional level, "most" analog radios at 100 mW will be roughly even to 50 mW in a digital system, all things being equal. Better, same, worse—it will all be different on different days, in different spaces.

In relation to transmitter power settings, we have already established long ago that for almost all situations, less is actually more. The high power settings of an analog system only create more RF noise in a given environment and serve to create more interference. In a digital system, the physics of the signal and the device itself require less power to transmit a useable signal. In a practical use application, most digital radios set at 50 mW perform similarly to analog or analog hybrid radios at 100 mW. With lower power settings in an analog or hybrid system, it is possible to stack transmitter frequencies closer together without interference or intermodulation, thus delivering more useable frequencies to the user in a given amount of bandwidth. Digital radios, for all practical purposes, have no discernable intermod. Yes, intermod technically exits with any radio transmission, but with digital, it is negligible to the point of no concern. Combining this with the comparatively longer range for a given power setting and the type of signal transmitted, some manufacturers have developed density modes and transmit protocols that can allow spacing that was previously impossible in the analog world. Transmit levels in single-digit power levels can result in dozens of channels across just a few MHz with perfect dialogue capture.

As far as useable range goes, there is a difference between analog, hybrid, and digital systems. Any one is not necessarily more than the other, but the performance is definitely different.

With an analog or analog-hybrid radio, as range begins to max out, the signal will become unstable and start to falter between useable and unuseable. Sometime we call it "swirlies," "hash," "static," or something equally descriptive to illustrate the sounds heard on the signal. This noise can happen at any time, can come and go Many users are buying digital systems and remoting antennas or receiver racks trying to cope with a crushing RF landscape, and that's not necessarily a bad choice. However, the downside and often missed component of digital radio is the simple fact that digital will absolutely expose any weakness in one's RF game. Antennas, cables,



without notice, and ofttimes happens when we really need it the least. A digital signal is different in that it is either there or it isn't. There is no gradual drop of audio and none of the above descriptors. The user has full audio up to the point of drop. And then it's silent. Whether this is good or bad is dependent on the situation. The plus for the PSM is that if you have signal, you have audio. The minus is that there is usually no hard indicator where that line is, so drops can happen at very inopportune times if one is not proactive with antenna placement and monitoring the range of the action to be captured.

In terms of tuning protocol, we are all familiar with the term "blocks" when referring to useable segments of the spectrum. Depending on where you are in the world, this spectrum may be very highly regulated with only tiny slivers available for use, or there may be no regulation at all where we can operate totally unfettered and unencumbered, but usually it falls somewhere in between and we have to employ our NEW job title of RF manager, along with everything else we must do.

tuning, and overall system health are supremely critical, and where an analog system will tolerate certain deficiencies, a digital system will not.

Each manufacturer has its own definition of those blocks and exactly how much space it refers to, but as a general term, we all get it. In analog gear, there are block-specific devices and wideband devices that cover many blocks. It is important to note that all modern digital systems use some form of wideband tuneability such that they can tune to multiple frequencies across multiple blocks. Some use the entire legal band (USA: 470 MHz-608 MHz), some use smaller segments, but either way, all digital systems cover more space than the single block or single TV channel systems of analog radios.

In any case, it is my opinion that any PSM that is in a gear-buying pattern should definitely be looking at wideband gear. Block-specific and analog gear are great if one is in a fixed location with a stable RF environment, but that's really rare these days and still subject to external oddities that can't be



Digital antenna. Photo by Scott Beatty

controlled. It is a risk that should be avoided, in my opinion.

As it pertains to tuning in the digital realm, there really are no significant issues. In fact, digital should be preferred. The fact that for all practical purposes, intermodulation errors are effectively eliminated, digital should be the first choice. In the simplest terms, transmitter signals can be placed much closer together because of the lack of intermod. Also, the latest digital gear filtration is much more precise with better front-end performance.

With an analog system, the degradation of transmitted signals and the interference of intermodulated fre-

quencies all conspire to create unwanted signal-tonoise, and ultimately corrupt the audio that is desired. When one or more analog radios are introduced into a congested or highly dynamic RF zone, they create even more RF energy in the space and create even more congestion. Increasing the power output level on these radios actually makes the problem worse, and results in adding even more poor performance.

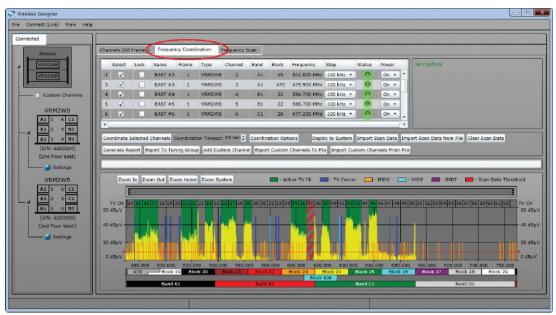
Here's a basic reality—for

nearly 20 years (some more), radio mics have been very robust, dead simple, and work in a near plug-and-play manner. PSM's have not really had to be terribly well versed in RF management or coordination. Grab the radios, find a few clean frequencies, and go to work. This worked fine when there was wide open RF space, little to no wireless on set from other departments, and low radio channel counts for sound. It was not uncommon for a PSM to have a single set of six or seven frequencies scrawled on a cheat sheet in the drawer and not change them for years. Today, it's seemingly impossible to even cross the street in the same shooting day without needing to do a full system analysis and tune while needing a dozen or more channels to use. Manufacturers recognize this horrible reality, and now routinely supply users with RF management software, super-fast scanning and coordinating capabilities, and some will even automatically hop frequencies to maintain a clean line of transmission between the transmitter and receiver.

Going digital will indeed solve a lot of problems. But, like any high-performance machine, weakness at the core will grow exponentially in the final run. Every little weakness in your RF management will be highlighted. The absolute rule for any radio system, be it analog or digital, is first managing the

signal-to-noise, and then RF coordination. There is simply too much garbage in the air for any system to work at peak performance, or even marginal performance for that matter, without at least a basic understanding of RF spectrum scanning coordination and management. There are many great tools on the market to begin this process. Many are free, some are very low in cost, and some are substantially more expensive. The features and benefits with each are mostly commensurate with the price. Some are designed to work with proprietary gear, such as Shure Wireless Workbench and Lectrosonics Wireless Designer. These each also have the ability to add non-brand specific models or channels to a profile and, therefore, coordinate usable frequencies. I have and use both and highly recommend them. One limit is that they are each designed to primarily work with their own hardware for scanning, acquisition, and deployment, but they can also import scans from other devices if done so with the correct file formats.

Also available is the RF Explorer Pro, which is a handheld scanning device that will give real-time and continuous scans of the immediate environment so that users can devise their own coordination scheme. IAS (Intermodulation Analysis System) is another top-tier software package that



Lectrosonics Wireless Designer

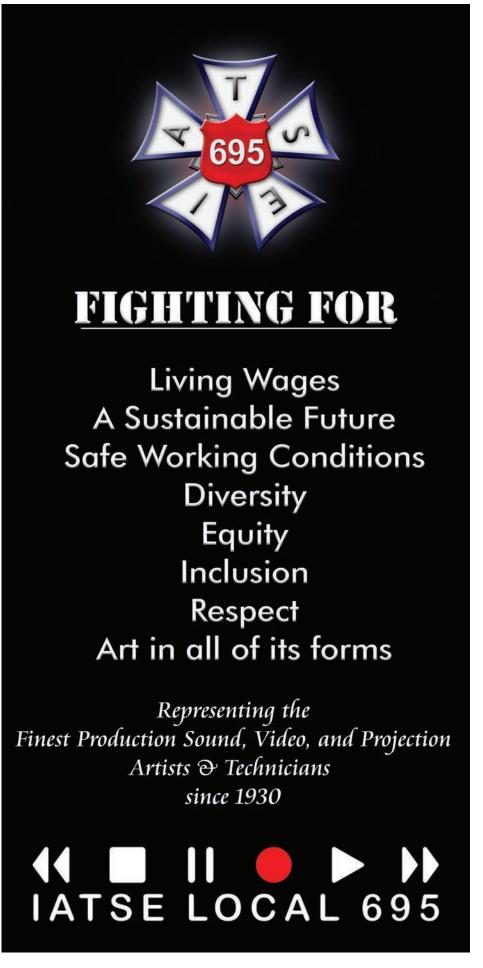


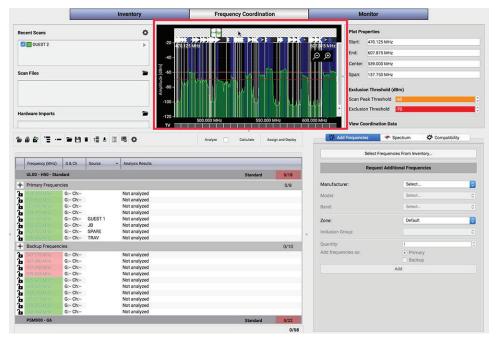
The FreqFinder app by New Endian

many consider the cream of the crop for any serious RF coordination work. And I agree.

New Endian also makes an app called FreqFinder that will help get one started on the path of RF coordination and it is, in my opinion, the bare minimum for a PSM to use. The major limiting factor—but not a total deal killer—is that FregFinder published tables from the FCC for existing freqs in use by licensed transmitting stations. It is not a scanner and will not give you a full picture of what is happening in your immediate area, and it is subject to the most current data from the government, which may or may not be as current as one imagines... Again, this is not bad, but it is a limiting factor, and users should be crystal clear on this before reliance in a mission critical use.

It is critical to understand that ANY RF coordination package is subject to the whims of the environment. It doesn't matter what brand you are using; someone can turn on a device at any time that you aren't aware of and totally blow your whole day. I can't begin to count the number of times I have completed a masterpiece of RF coordination in a ridiculously difficult environment and a random department shows up





Shure Wireless Workbench

with a personal intercom set that just starts spewing RF like a geyser all over the film set. Or the local EPK/ENG crew shows up and simply starts turning on wireless channels without so much as a hello. It can be equal parts maddening and devastating at the same time.

In the gear department, it is critical that your RF hardware be of top quality and in as near pristine condition as you can have. Antenna cables must be in perfect working order and well shielded, and the runs made clean to avoid interference. Connections must be robust and of minimal loss. Cable loss must be properly

calculated and accounted for if using powered antennas. And, if using passive antenna, they must be kept short.

RF scanning and coordination is an absolute imperative. The spectrum is chockfull of RF energy and it is changing continuously. The scans

used yesterday, last week, or last month can be nearly useless in some areas. The emergence and rapid growth of 5G is creating nothing less than sheer havoc in some areas, making wireless transmitters of all types nearly useless.

Speaking of 5G, it is worth noting that even though the signals are running in the 600-ish to 700-ish areas, the RF energy is so immensely powerful and so ridiculously dynamic, that it is reportedly creating issues with airlines in the USA. So much so that the FAA has asked for a reduction in power output from 5G towers near major airports because of possible interference in the landing instruments of airplanes. While it is unclear if there have been any actual incidents or catastrophes, the fact that the FAA and the cell providers are having these heated debates should be enough to warn us of potential issues in our own worlds. In point of fact, I can name several specific locations in the Metro Atlanta area where 5G towers have completely crushed digital radio mic functionality in our legally useable range. Many solutions are on the horizon for us as PSM's and all the major manufacturers are diligently working on keeping up, but the simple fact is that all of us-at one point or another—are going to have issues with digital radios in our environments. How we deal with those issues at the time is going to be the deciding factor in us winning or losing the battle.

Production is going to expect us to have all the solutions immediately at hand ... and at no extra cost. This is foolish to suggest, and even more foolish to try to achieve. Just as with any other department, the location has much to do with the gear that is needed. No department includes contingencies for every possible shooting element in a base package, neither should the audio department. BUT we will be expected to know what those solutions are, and how to provide them. Simply saying, "I don't know. We can't shoot here," is not the right answer.

We must be able to say things like, "I need my RF engineer to take a look at this." "We need XYZ radio system to combat the RF environment at this location." "As the FCC license holder, I need to have a list of all radios and frequencies being used for this production so that I can coordinate and mitigate interference among all." "We need to turn off XYZ items, they are causing interference with audio, camera, lighting, etc."

To answer the opening question of "Why go digital," and further exploring the perceived frailties, the answer is going to be "Yes." Not because analog is dead, but because digital is so much more flexible, yet so much more precise. Analog radio is still a viable choice for places which have a very quiet RF land-scape, fixed installations, and low channel counts. But for maximum performance in a busy airspace with wide channel counts, a wideband digital system is going to provide far more available solutions.

The key takeaway is this: Digital radio is especially intolerant of poor RF system hardware and work practices. An analog system will generally allow a lot of system faults before utter failure, and many mixers have been operating (perhaps unknowingly) on the edge of failure for a long time. Installing a digital radio package without making sure the rest of the gear and best practices are followed will absolutely result in frustration and poor performance.



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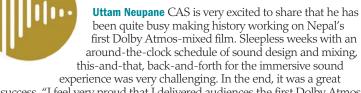


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experience was very challenging. In the end, it was a great success. "I feel very proud that I delivered audiences the first Dolby Atmosmixed film for Nepal, *A Mero Hajur 4*."

Philip Perkins CAS has been mixing the PBS doc features *Clarissa's Battle* and *Do I Need This?* He also recorded and mixed the live music video *Duo B vs. Charlie*.

Steve Welss CAS is mixing *All Rise* Season 3 with Stacey Washer on boom, Brent Ellingwood doing utility, and Oscar Alva as our trainee. Happy the show moved from the WB lot to Allied Stages (Simi Valley) where full equipment rental is.

CAS Associate member **Kevin Strahm** has been busy in Savannah, GA, mixing **Panhandle** for Sony Pictures Television with boom operator Chris Main and utility Chris Gantt.

Devin Golub CAS has been working with William Munroe and Rachel Schroeder. They wrapped up Season 1 of the Apple TV drama/comedy *Carpe*, and send thanks to all their day players! Then, for the first time in two years, Devin was off to a much-needed three-week vacation. This summer, it's back to one of his favorite lots, (CBS) Radford Studio, for a Netflix comedy. Devin is looking forward to the next adventure and wishes everyone a great summer!

Gavin Fernandes CAS has been busy with the features *Arlette!*, for director Mariloup Wolfe; *You Can Live Forever*, for co-directors Sarah Watts and Mark Slutsky; as well as returning on *Tempête*, which is returning for 400 VFX changes ... that almost never happens. LOL!

Woody Woodhall CAS has been fortunate enough to work on a number of things as a supervising sound editor and re-recording mixer, including the series **Wasteland** for Paramount+, the feature doc **Bella** that chronicles the life of Bella Lewitzky, **Apostate** for Discovery+ which is a limited series about Warren Jeffs and his takeover of the FLDS Church, **Herbal Tea & White Sofas** and **It Goes to 11** for the Recording Academy, and the powerful feature doc **No Ordinary Life** which chronicles five camerawomen who worked the front lines of many war zones for CNN over the last several decades. It was supposed to air on the new CNN+, but will hopefully find an audience soon. Making movies is easy!

Jon Taylor CAS and and Frank Montano CAS completed the final mix at Sony for David Leitch's feature Bullet Train. At Universal Studios, on the new Hitchcock Mixing Stage, director Alejandro González Iñárritu is in mixing his first feature film with the team since *The* **Revenant** titled **Bardo**. On Mix Stage 1, **Mark Fleming** CAS and **Myron Nettinga** CAS recently wrapped on *Raised by Wolves* S2 for HBOMax and Law & Order S21 for NBC. This summer, they will be working on Vampire Academy S1 and The Missing S1 for Peacock, and the Untitled Mike Daniels Pilot for NBC. On Mix Stage 2, Keith Rogers CAS is mixing S4 of *Westworld*. Keith recently teamed up with FX mixer **Steve Bucino** CAS and mixed Amazon's new series, *Paper Girls*. They look forward to AMC's *Interview with the Vampire* and Hulu's Untitled Chippendale Project this summer and S2 of Single Drunk *Female* in the fall. Over in 3153, the Mix 12 team of **Peter Nusbaum** CAS and Whitney Purple CAS just wrapped A Million Little Things S4 and the final season of *Black-ish* for ABC. They completed the Apple TV+ series *Loot* and *Never Have I Ever* S3. This summer, the crew will be working on the S2 of *The Sex Lives of College Girls* for HBOMax, S5 of *Grown-ish* for Freeform, and *Everything's Trash* for Disney+. Michael Jesmer and Brian Dinkins are mixing *Blockbuster* for Netflix and will be mixing the *Untitled Shea Serrano Project* for IMDBTV. In the fall, it's *Abbott Elementary* S2 and *American Auto* S2. Over at Bluwave on Mix Stage A, John Cook CAS and Ben Wilkins wrapped Hacks S2 for HBOMax and Rutherford Falls S2 and Angelyne S1 for

Peacock. This summer, it's *Little America* S2 for Apple TV+, *The Resort* for Peacock, and, later, *White House Plumbers* for HBO. On Mix Stage B, **Robert Edmondson** CAS and Reuben Ripley mixed *FBI: Most Wanted* S3 and *FBI* S4. **Todd Morrissey** CAS and Brian Dinkins on Mix C mixed *Chicago Fire* S10 & *Chicago PD* S9. **Greg Watkins** CAS and **Derek Marcil** CAS worked on the *Getaway Pilot*, in addition to *Chicago Med* S7 and *Law & Order: SVU* S23. The crews are looking forward to returning to the Dick Wolf slate starting in early fall.

At Westwind, we are excited to announce that Frank Morrone CAS has joined our team! With this news, in Mix 1, Frank Morrone CAS and Craig **Hunter** CAS will be mixing *Freeridge* for Netflix in mid-July. This is a spinoff of the hit series *On My* Block. In Mix 2, Christian Minkler CAS and Kurt **Kassulke** CAS are set to mix the ABC drama pilot The Company You Keep in July. Chris Minkler CAS is also mixing the show *Iron Mike* with partner Doug Andham CAS. Chris Minkler CAS and Doug Andham CAS are also scheduled to mix the small feature *The Trainor* this summer. In Mix 3, Doug Andham CAS and Kurt Kassulke CAS just mixed the 400th episode of *Grey's Anatomy*. Talk about a show with legs! And they will begin Doogie Kamealoha M.D. S2 in July. Across the street in Mix 6, The RH Factor mixers, **Craig Hunter** CAS & Dave Rawlinson are mixing *Station 19* for Westwind and still have time to mix The RH Factor shows *Big Shot* and *Sprung*.











Here we are after wrapping **George & Tammy** at the Ryman Auditorium. Utility James T. Jones, production sound mixer **Larry Long** CAS, and boom op Matt Fann.



Beau Baker CAS (front) finished Season 18, episode 400(!) of *Grey's Anatomy*! Thanks to the good-humored hard work of Mike "Fuzzy" Anderson, Brandon Pert, and Maddie Phelps! Too many others to thank for filling in, second units, and the other crazy stuff that goes on.



The Continental sound crew sending their regards from Hungary. Zsombor, Gabor, **Tamas Csaba** CAS, and Zsolt wrapping up episode 3 of this Lionsgate show.



Uttam Neupane CAS mixing Nepal's first Dolby Atmos-released film, **A Mero Hajur 4**.



in the Catskills finishing

comedy with Steadicam

operator Peter Keeling and dolly grip Dave Ganczewski.

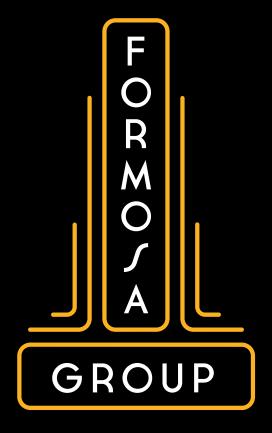
work on a new Netflix



Shooting in Texas and Montana for the Paramount+ series **1883**, boom op Tanya Peel, utility Kelly Lewis, and sound mixer, CAS Associate **Richard Bullock**. This was an incredibly difficult challenge, as it was set in the 1880's and shot nearly entirely day exterior on remote ranches.



Bob Bronow CAS getting away for a ski weekend in Tahoe with his son.



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