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Cover: The Value of Mentorship: Part 2. Photos courtesy of AgaSound
This issue of the Quarterly is blessed with a bountiful harvest of information as Karol Urban and Matt Foglia have brought together some great articles. April Tucker and Shaun Cunningham explain a workflow for remote co-mixing. Colin Lechner offers an abbreviated version of his thesis, bringing a wealth of knowledge from his exploration of shot-specific impulse responses, a proliferating tool of great interest. Jay Rose returns with his informative review of iZotope’s new product Final Mix. Ed Greene offers a historical perspective with a look to the future on TeleMedia audio transmission. Additionally, G. John Garrett offers useful advice and lessons learned as a documentary production sound mixer in his Technically Speaking column. Finally, Devendra Cleary continues his series on mentorship. In this issue, he focuses on the legendary Agamemnon Andrianos and his professional protégés.

We hope you will find great value from these contributions and that they may inspire some of you to make written contributions of your own. Please reach out with any content suggestions you may have to CASQuarterly@CinemaAudioSociety.org as we strive to make this publication a reflection of the community it serves.

Hopefully, you watched your emails and were able to attend the 4th Annual CAS Picnic on July 26, 2015. The CAS picnic has become a great summer tradition and is regularly well attended by our members and their families as a great way to enjoy the fun of summer together (the event is happening as we go to press). Our Picnic Committee Chairman, Bob Bronow, was very busy with his team preparing for the fun.

Looking forward, the return of our collaboration with the MPSE and Mix magazine is scheduled for September 26. The event, “The Art of Sound Design: Music, Effects and Dialog in an Immersive World,” will be a wonderful expansion of last year’s successful immersive sound event collaboration. Multiple symposiums/panels covering music, EFX, dialogue, and mixing will be presented along with master classes, vendor and manufacturer booths, screenings, demonstrations, and much more. It will be held at Sony Studios in Culver City, California. Stay tuned for further announcements involving all the details or check MixSoundForFilm.com

I hope you’re having a wonderful summer.

Warmest regards,

Mark Ulano, CAS
President of the Cinema Audio Society
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At some point in our careers, we have either had a mentor or acted as a mentor. Some of our student members are wrapping up their summer internships or gearing up for interning in the fall, while many of our experienced members are continuing the mentoring they do on a daily basis to colleagues of all levels. With this in mind, we have the second installment of Devendra Cleary’s “The Value of Mentorship.” Continuing with the topic of passing along wisdom, CAS Career Achievement Award recipient Ed Greene discusses some of the challenges associated with mixing for broadcasted programming and asks us all to get involved with the industry’s developing Web audio reforms. Be sure to read his article, “Confessions of a Sound Junkie …” In his “Technically Speaking” column, G. John Garrett plays mentor to those getting into documentary sound by providing some excellent suggestions. Showcasing the fruits of his research, we have an excerpt from Student member Colin Lechner’s graduate thesis, “Shot-Specific Impulse Responses.” Colin, a former student of CAS Treasurer and professor of sound design Peter Damski, writes of how IRs can be used to increase the accuracy and believability of ADR. In the article “Collaborative Mixing Outside of the Dub Stage,” Shaun Cunningham and April Tucker provide some insight into how they co-mix projects while working in different places. Also, Jay Rose takes the time to provide an overview of iZotope’s new RX Final Mix. As always, look toward the back pages to see what your fellow members are up to in the “Been There Done That” listings and “The Lighter Side” submissions.

The CAS Quarterly is produced as a service to our members on a voluntary basis. We greatly appreciate, and want, your feedback and suggestions—so send them in! Email us at CASQuarterly@CinemaAudioSociety.org. We also truly value the support of our sponsors and encourage your commitment to them. As we gear up for the fall, here’s wishing you an enjoyable rest of the summer.

Matt Foglia, CAS
Karol Urban, CAS
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I’ve learned a lot from years of documentary sound recording. I’ve worked on five continents recording for the likes of NOVA, Frontline, tons of BBC programs, and 20 years with Scientific American Frontiers for PBS. Here are some observations and tips I’ve picked up along the way.

Documentary making is often about letting people do their thing or tell their story, with you recording it as best as you can. This takes us to every corner of the globe and into every kind of situation imaginable.
Think it out before you leave; what are you going to absolutely have to cover?

If the generator in camp only runs eight hours a day, can you charge all the batteries you need to in that time, or do you have to bring more?

Are you going to get eaten by something? Mosquito netting, bear patrols, inoculations, and special clothing have all been parts of my experience.

Is there reliable communication to the outside world? To the initial dismay of the producers, I once made a production rent a satellite phone due to the remote area we were visiting. They wound up coordinating a lot of production with it because of dangerous weather conditions. As with us all, it comes down to creative problem solving.

I think beyond having a working knowledge of what your gear can do, you need to be able to think about using it in ways you may not have thought about.

There was the time when I got a call from some friends at a rental house whose video camera had blown a fuse. Video cameras really never do this, and they suspected physical shock could have contributed to the problem. At any rate, the location was near my house and they asked me to go check it out. At worst, I’d take the broken camera back and bring the clients another. Sure enough, the camera seemed OK (nothing black and bubbly on the circuit boards), so I fabricated a kludge by pulling a single strand of copper out of an AC stinger and jamming it in with the glass fuse. It worked, nothing smoked, and the client was back shooting right away. This was a risk the rental house was willing to take, and it paid off.

As an amateur radio operator, I would sometimes take radios along on travel trips, depending on local licensing requirements. I had the opportunity to send health and welfare traffic out of the Kalahari Desert so that our pilot would know whether we could be delayed, or whether the situation would escalate.

Sometimes in documentaries, you have to plant mics and hope for the best. I remember a job observing kids playing in a playroom, where the cameras were largely hidden and mics had to be planted to cover various zones. I even remember the director yelling at me as he watched a playback that he couldn’t hear the kids talking. But the recording was fine; the kids weren’t talking!

I recorded live courtroom audio on a murder trial last year and we couldn’t put mics on anyone. I had eight mics in the courtroom, based on the movements of the attorneys. One liked to walk around as he argued, there was a podium, an AV presentation position, PZMs on...
the front of the jury box, mics on the judge and witness positions, as well as shotguns aimed at prosecution and defense tables for addresses to the court.

Sometimes planting mics can be a matter of hiding a lav on someone other than the main subject(s), which happens in dramatic work, too.

One thing that documentarians understand is that the sound is very often the content. I once had a longtime camera colleague come charging to my defense when I couldn’t get a very noisy fan shut off. “It’s an interview!” he said. “They’re going to look at the picture for five seconds, and if they can’t hear what he’s saying, they’re going to turn it off!”

Thank you, Peter Hoving.

One production technique that was popular in the late ’80s and early ’90s but is not seen so much now, is recording MS in the field. This requires knowing the picture at all times, and letting the action play out without following with the boom. It’s counterintuitive, but if it’s going to be mixed to L/R stereo, the stereo field can’t be panning around all the time, it will make the viewers nauseated! Getting the proper lead in interviews is important too, to place the sound source with the speaker.

There are a few tricks that can improve your airline travel experience. Many times flights are booked close to the departure time, so they’re full-fare tickets. Some airlines offer media discounts (always ask!) for luggage, but if they don’t or if you have a lot of baggage, you might get a friendly ticket agent to bump you into business or first class if you’re spending a lot on baggage. If not, and you’re a frequent flier on the airline, upgrades to first are often cheap when it’s a full-fare ticket, and a meal and a good nap are helpful when you’re flying a lot.

On foreign jobs, I try to learn some of the language, or at least if it’s a non-Latin alphabet, to learn that. That way, you have a chance at reading signs, at least. If you can speak at least a little of the native language, you will often get unexpected hospitality. I’ve gotten tours into the mountains, meals, local advice, made some lifelong friends, and more from knowing some of the language.

I have always carried a high-quality backpacking water filter and filtered as much of my own water as possible; it has helped me avoid gastric distress abroad! You can also take bismuth tablets (Pepto-Bismol) daily to help prevent stomach problems in a new environment.

I was an early adopter of using GPS for crew navigation. You don’t necessarily need street-map GPS technology, a small handheld unit can get you back to any waypoint you set, but local maps on GPS are always handy. Paper maps of the local area are still useful.

I always carry some basic tools, and on travel jobs, they can be critical. Small hand tools and a soldering tool have saved the day many a time, fixing camera and sound gear in the field.

- Needle nose pliers
- Diagonal cutters
- Small screwdrivers
- Solder kit
- Small battery-powered speaker for cueing or signal troubleshooting
- Loctite
- Electrical tape
- First-aid kit

Have you heard of Rescue Tape? The stuff is amazing. It sticks to itself permanently to make waterproof, high-voltage repairs. You can literally wrap a blown radiator hose with it and keep driving. It insulates at about 600VDC per layer, too.

I tend to start off with the minimum gear for the job, and choose spares carefully, depending on where we’re going. If on the airline, upgrades to first are often cheap when it’s a full-fare ticket, and a meal and a good nap are helpful when you’re flying a lot.

On foreign jobs, I try to learn some of the language, or at least if it’s a non-Latin alphabet, to learn that. That way, you have a chance at reading signs, at least. If you can speak at least a little of the native language, you will often get unexpected hospitality. I’ve gotten tours into the mountains, meals, local advice, made some lifelong friends, and more from knowing some of the language.

I can’t fix it in the field or have some other workaround, I consider spares. In the midst of a downpour on a dive boat, my SQN mixer finally said, “NO MORE!” despite every effort to keep it dry. I finished the day with my little FP31, which I always carry for emergencies if I need a transformer or as a quick headphone amp.

If we’re in a remote location, I often pack 50% more batteries than I think we’ll need. Every job is a little different but you should think about contingencies. Can something serve in multiple functions? One of the most obvious is using...
PZM adapters for lavalieres; Sonotrims sound very much like a Schoeps in plant/PZM situations.

You’re going to want an inventory of your travel gear, especially for foreign travel. Most countries require a carnet, an import-export document that proves what you have and that you’re not buying or selling gear. I was once in a place where it was unclear whether they recognized carnets. We had one, because we were going to multiple countries. I asked about this in my faltering foreign language (see “hospitality” above) and the agent was so charmed that he didn’t care about the carnet. He asked what was in a couple of cases and then waved us through. Meanwhile, the US Army, who we’d flown with, did not have an inventory of their cargo and had to wait two weeks to get their stuff out of quarantine while the paperwork was generated, translated, and processed.

Also, just because your cases are full doesn’t mean you’re done packing. Make up a list if you have to, and make sure you’re bringing it all. I once got off an airplane and realized I hadn’t brought any 1/4” tape for my job the next morning. The cases were full, so I quit packing! Fortunately, everything turned out OK on that one.

Weather protection is an obvious consideration. In the desert of Turkmenistan, the sand is like talc; it gets into everything. The mosquitos of Kamchatka can carry off a small child. We once had two cyclones and a typhoon in 14 days and, camped on the side of a volcano. High altitude and the desert can bake you and your gear in no time. Think about it, look up the weather and take precautions.

Factories, tribal villages, labs, aircraft, submarines, animals, mining operations, ships—every kind of place imaginable has been or is going to be a documentary location. Sometimes it’s a challenge to get the basic sound, and then there are days recording hours of MS ambiences along the Oregon coast, with nobody around.
Welcome to the second installment of the mentorship series. If the first one was the pilot, this is the ambitious season one, episode two. Mentorship is on my mind every day as I push through the hustle of our craft which is, not only more demanding than ever in this day and age, it’s also under harsh scrutiny as we navigate these demands and changes. Mentorship is even more important and novel—and it breaks my heart to see its absence in areas where it’s needed most. We have landed in an era of production sound where, even in the scripted sector, single-person production sound crews have become oftentimes expected or demanded. Not only is this the wrong way to operate if quality results are desired, it also eliminates the formula we have inadvertently created that induces a natural course of mentorship.

In genius fashion, Agamemnon “Aggie” Andrianos, CAS has chosen recent protégés who are coming up during this scrupulous time. Whether or not it was intentional, I do not know. Nonetheless, it is the case and, to their credit, they have probably done some of this single-person sound crew work, as it is a course of survival and necessity to make these choices. But the luck they have encountered by being mentored by Aggie can only be captured by the career paths and successes they experience. They are honored by this, and I would like to share their stories.

Agamemnon Andrianos has a production sound career that spans over four decades. This should amaze everyone here because that is a significant chunk of time relative to the span of time that sync sound has existed. The fact that this amazing professional has taken time out of his busy career to mentor some of the young crop of production sound people is admirable and noteworthy. Aggie has a very fortunate formative background. He’s such a natural and he was exposed to things that allowed him to flourish.

“I come from a family of musicians. I was trained as a classical cello player quite young. That seemed to be a path toward a career as it developed into sight reading and playing. I never thought I could make a living from it or how that would transition to sound. It just seemed like a natural area to go to in terms of the technology. I loved taking my transistor radio apart. How is this sound created?”

Aggie is what I like to call a “tinkerer.” He displayed his inventive spirit very early and this is relatable to many
people in our craft. I would have loved to have met Aggie during his formative years and watch his mentors pick up on his passion and drive. But the next best thing is to sit and listen to him speak about it.

“I enrolled in a film program [at the University of South Florida in Tampa] and, at that time, I was already mixing live sound—and film just seemed a natural place to go. It just seemed more of a craft, more interesting to me and more contained. This is in 1970. They had a really good group of teachers. A guy named Karl Storr [who was] one of the early independent feature sound mixers who worked on David and Lisa in 1962 [which was] directed by Frank Perry. He was located in Philadelphia, but moved to Florida to retire. He ended up teaching sound theory and design at our school. I was his first protégé/student. Essentially, I had a Tonmeister education that was hands-on with a master who knew production, post production, and motion picture laboratory practices. I thought I knew a lot. This was 1974 when I graduated. I had this rich environment and I get this sound teacher who was from Germany—the ‘Old Country.’ He cut for Radio Free Europe, taught me how to cut/edit on quarter-inch, how to shoot, how to do narrative, where to put the microphone, how to put the microphone, the Nagra. So I had a go-to person in those formative years. It was incredible.”

During this journey of meeting with Aggie’s several protégés, I learned so much. I learned more about the current state of our craft. I learned some fascinating history of young professionals both new and seasoned. And I learned that there is so much drive and determination in this next generation of sound mixers. I’d like to share one of the things I learned about Aggie that explains why mentorship is so important to him and why he does it.

“There’s people that have worked with me for years, like Doug Shamburger. It’s ‘osmosis.’ They ‘get it,’ and it’s a different thing. Mentorship is where somebody comes to me and they want to learn. When I started in the ’70s and ’80s, none of those older mixers would give me the time of day. As a result, I felt I would never do that to any other person in my life who wanted to come to me and ask for help. It bonded me to say: If there’s somebody who wants to learn, I will never turn them away. I flipped it, I said, ‘No, I’ll never be like that.’ For somebody who is serious about sound, if I can pick that up in them, I’m going to help them. You look for certain things, you know? It’s alertness, intelligence. How do you measure those things? Well, how did the teacher that I had pick up on my thing? You know what the word is? Passion. They may not have the experience, but they have the ‘tiger.’ They are going to be a superstar.”

Alex Names came to mind and is a very early protégé of
Aggie’s. And “superstar” is an understatement. Aggie speaks very fondly of Alex. “Alex came to me from a sound family. His dad was a mixer, his mom is Peggy. He already is a ‘rocket ship.’ I just had to mold and contain him without slowing him down. That’s probably my number one person that’s been around me.” I was already familiar with Alex through his mom Peggy and through other mutual colleagues, but had never met him. It was a pleasure to get to hear him speak of his history. We joked about family connections, but his humility about it showed me how hard working and dedicated to this craft he really is. “I am a product of nepotism. My mom is Peggy Names. If you don’t know her, you don’t belong in our Local! I got an incredible opportunity on a movie called Minority Report. That was just the foot in the door. It was really up to me and my passion for the career that I chose. I want to be on set doing it and out in the world and I feel like every single setup is just a different challenge. It’s built for people like me. But I’m a big fan of [mentorship]. It’s so much better for the community as a whole for all of us to be strong.”

Minority Report was no small opportunity. But it sounds like it was just the tip of the iceberg. But Desperate Housewives! Talk about a good run! I wondered how this came about. “My mom introduced us. She was working on the Desperate Housewives pilot. She needed a day off because she went to a funeral. It was an incredible opportunity and I was fresh in the biz. He gave me a shot. It was the last day of the pilot and at the end of the day Aggie asked, ‘If this show goes, do you want to do it?’” Over this very long span of time, the learning opportunities can be vast. It’s obvious that Aggie’s good habits and philosophies really stuck. Alex explained, “You know, when you’re a utility and you see a mixer jump out of his chair and he’s running off right after a take? Where’s he going? What’s he doing? Now, I know what he’s doing because I heard the same thing he heard. He’s going to talk to the director or the actors or someone to fix the problem. What is that problem? How do you approach it? I’ve found myself sneaking over to try and hear how he’s worded things—because that’s really important, too. How to approach certain people and how to be quick, to the point. And really know a good, solid, confident fix to the problem.” This is a phenomenal example of a mentorship cycle coming to full fruition. Alex explained, “I am right smack-dab in the middle of transitioning into becoming a full-time mixer. You know, make that next jump. I think he knew I was going to be a mixer. I think he knew I had the passion to do this for a long time.”
THE CLUBHOUSE

“The Clubhouse” is a shared workspace belonging to Jay Patterson, CAS and Aggie. Almost a production sound classroom for the likes of Travis Cote and Sheraton Toyota. A continued source of higher education for the likes of Brandon Loulias and Carrie Sheldon. Aggie remembered, “Jay [Patterson] found Travis [Cote] and Sheraton Toyota at the same time. And we have that workspace and we all kinda congregate there.” Travis Cote, who is a very skilled, up-and-coming sound utility, spoke to me about some of his first experiences at The Clubhouse. He really got to put his mark on the place. “So, Jay introduced me to Aggie who had some time on his hands. I spent time with Aggie working on his equipment package. Basically, we spent the better part of a year or longer getting to know each other at the shop. I wrapped the show with Jay and he brought me back to The Clubhouse. I had never been there and I helped them unload the gear. When I got there, it was really, really hot. We had been losing batteries on set! Apparently, it had been so hot in there that it was making the alkaline batteries leak. I saw that they had all this insulation piled up on the floor and there was no insulation on the ceiling. And I just took the initiative. I said, ‘We’re gonna do this. Human beings can’t be in here right now if batteries are exploding.’ I spent about two weeks going up and down on a ladder with Aggie. Aggie was handing me stuff and I put the insulation in what’s called radiant barrier. And then after that, we started working on the cart. Once everything was somewhat organized, then we could start the fun stuff! That took about two months!”

I spoke to both Travis and Sheraton about The Clubhouse and it instantly reminded me of my skateboarding days as a teenager. We had our two different hangout spots. If the local sound vendors are like the skateboard shops, then The Clubhouse is like the indoor skate park with masonite vert ramps and a street-course. Oftentimes, the skate parks had mentors that would inadvertently mold the younger skateboarders into better athletes. This environment is absolutely the same. Brandon Loulias reminisced with me about the first time he met Aggie: “Having worked with people on LA Sound Mixers [Facebook group], everybody knows each other. And they all started to say, ‘Oh, you should meet Agamemnon. Have you met Agamemnon?’ I was like, ‘Well, I guess I got to meet this Agamemnon guy.’ So one day, Travis called me, ‘Hey man, I’m here at the shop.’ And he introduced us. I walk in and the first time I see the guy, he’s dissecting a circuit board for his [Aaton] Cantar. He’s trying to upgrade. A lot of guys will just send it to the company. But Aggie, he’s so skilled! ‘Oh yeah, I’m going to go in and mess with this thing myself.’ Oh yeah! You and I will get along great! And so right then, we hit it off.”

The various social events in our sound community are extremely important. If there is any way to meet a mentor or a protégé, this is how. Carrie Sheldon, who is a very pleasant, up-and-coming sound mixer—and one of my favorite people—remembered, “I was at one of Seth & Kriky’s barbecues and I introduced myself to Agamemnon and we started talking about the love of sound that we share. Not a love of making money, not a love of making movies, but a love of sound.” She continued, “I’ve been to The Clubhouse a few times and Aggie has been showing me how to solder.”

Sheraton Toyota, who is a very talented and dedicated up-and-coming boom operator and sound mixer, entered the craft of sound through reality TV after college. He explained to me how he met Aggie. “After that I just, I got tired of doing reality. And I met Jay Patterson through my mentor, Paul Marshall. He brought me on a low-budget feature to boom. After that, I just started hanging out at The Clubhouse. Steve Morantz, Chris Howland—they all have shops right next to each other in Van Nuys. It’s a fun place. On their off days, they go there and we just talk or organize
the carts. It’s a hangout spot. But I go there just to learn, and that’s where I saw my first Nagra. They have so much history there. Just by hanging out, you learn so much about the ‘old days,’ how they did sound.”

It’s like a production sound laboratory run by some of the most experienced and innovative guys out there. Travis Cote explained, “If you can find somebody who’s been doing it longer than you’ve been alive, that’s awesome. Aggie’s been doing production sound since 10 years before I was born! With Aggie’s career, he’s seen a lot of the evolution of production sound. It’s very critical to hit all of the landmarks in your career along the way. You want to go and utility for somebody who’s done it a few times. It’s not just pushing the buttons. It’s all of the other pieces that work around you.”

Sheraton Toyota has several mentors in addition to Aggie with each one bringing something different to his educational table. “Paul Marshall, he’s the one I first met. Then Jay [Patterson], yeah! He helped me get into booming and away from the ‘one-man-band’ [style of working]. And then after that, Aggie! I consider Paul to be like my ‘Obi-Wan Kenobi,’ because he was the one I first met, and then Jay and Aggie are like my ‘Yodas.’ It’s mainly because those are guys that barely use radio mics. When I first boomed for Jay, I think we only used a radio mic once in a whole week. It’s literally like trying to use ‘the Force’ when you’re booming. I don’t want to settle for just wires—and Jay and Aggie are the kind of guys that don’t settle at all for that.”

THE NEW SOUND MIXER

This discussion with Sheraton bridges into my next topic. There seems to be a new breed of sound mixer coming up. Agamemnon’s following observation was discussed with every protégé that I interviewed. “The young people coming in almost have to have a ‘triple threat’ of knowledge. And they all want to come in as mixers. So, this has been a trend. It’s easy, you put the lavaliere on, bring up the fader, get the gain structure, and you’re a mixer! But it comes with experience, you know? Do you really want to be in the business and have that lifestyle? You know—the hours, the lack of personal time? I mean, I’m still driven as if I’m in my twenties. We have to take people who are serious and want to do this craft and make it a 30-year career. And bring in the people in their twenties and thirties and get them up to speed.”

As much as I’m a proponent to the idea that having the “triple threat” of knowledge is a good thing, sometimes our misguided youth may have the unfortunate obstacle of digging themselves into the “one-man-band-in-narrative” rabbit hole. Aggie expressed, “Yeah, I think there has been a large decline in people who just—it’s a paycheck and that’s a body mic—and it’s sound. I don’t come from that.”

The good thing I’ve noticed is that I do know many young people coming up that are becoming well versed in every job in sound including post production. Aggie continued, “Brandon Loulias comes to mind. You know, he’s just—he’s the future. His post-sound knowledge is extraordinary to me. And I think ‘OK, this is cool, I can learn from them.’ You think I had time to sit there and learn Pro Tools? So, Brandon came around and said, ‘Aggie, I grew up on Pro Tools. I started when I was 11 years old.’ I said, ‘OK, well, you’re going to teach me, and I’m mentoring you toward how it works on a set.’” In talking to Brandon, he confirmed to me indeed how vast his experience in post production is. “I grew up doing music. I was a professional musician. I toured a lot. I played with a lot of different bands and I played in the studio. I built a studio in my best friend’s backyard. That was my upbringing in my teenage years. I met my friend Jim who was a master architect who built a lot of studios for Universal. That’s how I got involved with King Soundworks. Then I became an assistant editor, dialogue editor, and FX editor. That was my crash-course introduction to the field. I stopped working there and went on my own for production sound. Eventually, I built clientele and then traveled the world on a couple features.”

While Brandon is a fantastic example of the new generation of multifaceted sound professionals coming up today, there are still many young people out there that are not
getting the proper training, and it’s potentially having an adverse effect on the quality of certain sectors of our craft. Brandon elaborates, “When you’re breaking into the industry in this day and age, it’s a lot different than what it was, let’s say, 10 years ago. These people, they get into the job and they’ll do whatever they can to make a living. Cutthroat, cut-rate, whatever. They put all their gear on credit and they’ll do whatever they’ve got to do to keep it going. That’s what we’re all faced with.” Sheraton adds, “Yeah, the teamwork, but it’s also the quality of work. I don’t want the quality of sound to go down because you’re just running 12 wires by yourself and don’t have enough time to wire every talent properly or get a boom in properly.” Brandon continues, “As much as we don’t like those circumstances, that’s just what’s out there. Those people are out there and they’re taking those jobs and they’re making it okay for those producers. I think it’s critical because, fortunately or unfortunately, that’s what I started doing. But it’s really great when you can utility and boom for someone and have a mentor that can really shape how you do things, because then you can adapt to them.

There is something to be said for being seasoned and working your way up.”

**FRIENDSHIP**

For most professions, and certainly in the entertainment business, like it or not, friendship is important. In mentorships, it is at the top of the pyramid. For every protégé of Aggie’s, his experience and guidance may have had a sort of “Mr. Miyagi” effect, if you will. Just hang out, do the hard work that’s involved with production sound, have meaningful conversations, and your good habits and proper training start to infuse via the “osmosis” Aggie talks about. This is how it starts, “So, Brandon hung out, helped me build my new cart, and then I finally got him on a job.” Brandon continued, “From there, we just started ‘nerding out’ every day. Whenever I wasn’t on a job, I’d be over there just helping out. You know he wanted to rebuild his cart, so that’s what we were doing.” Then this is how it continues, Aggie confessed, “I hate to say that word ‘Old School,’ but I don’t do hard drives and computers. I do sound. I think about performance. I’m looking at the actor and their mannerisms and words. This digital thing—I’m a quick learner. I do adapt or I wouldn’t be here.”

While these guys may be able to teach Aggie some things that they have always been exposed to in regard to technology, Aggie is teaching them the stuff that doesn’t exist in any textbook anywhere. He continued, “I think the hardest thing is politics and how to run yourself on the set. It’s not teachable in some ways. You know, people are all different. They all bring something unique. That dynamic when you’re working with the grips, I put them first because they’re the cement of the whole crew. How do you work with the DP, ADs, camera, electric, wardrobe, set dec, and props? Interdepartmental relationships and on-set relations are so critical to our success in recording production sound. It’s courtesy, it’s calmness, it’s politeness, it’s being professional and being firm. Standing up. You bend, but you don’t break. ‘Travis, you see that guy over there? You see what he’s doing? Watch, watch.’ You’ve got to train your powers of observation.”

Sheraton Toyota expressed to me what’s important to him in these mentoring relationships. “You know, it’s a friendship, too. I just had lunch with Aggie one day and it just turned into that. I never asked him, ‘Hey, will you be my mentor?’ We just started hanging out. It just sort of happened. When I first moved to LA, I came to set with Paul Marshall and just watched his boom op, Paul Romo, work. And then, just listening to Aggie. Just how he runs his set. You have to be on top of everything and be ahead of the game. I would tell them, ‘I just want to learn from you guys,’ because I admire what they do. That’s how I feel when I hang
out with Aggie. He was the *Desperate Housewives* mixer! I’m hanging out with a legend. You can’t get that sort of knowledge from talking to people online or learning in a book. And that knowledge is not always going to be there, so just soak it in while you can.”

Brandon Loulias expressed an even more personal advantage to a deep mentor relationship. “He’s a great friend and mentor, not only in the sound realm, but off set, too. We can relate on many levels. I’m like, ‘Hey man, I’m having trouble with the girlfriend right now.’ ‘Oh man, I’ve been there.’ He is someone who I feel like has so much experience doing this that he has something that can be of value for anybody that speaks with him. Being technologically, spiritually, romantically, or anything that you’re involved in, on and off the set. He’s almost like a conscience. It’s cool to have someone that really cares.”

HE’S A ROCK STAR

I share the same sentiment for Aggie as these guys do. I asked, “What’s next for this mentor who has given so much to the production sound community?” His answer was uniquely Aggie. An answer from someone of his experience level may have been more along the lines of explaining an exit strategy. Quite the opposite, as Aggie answered my question as if he was still in his twenties just starting out! He is still on the incline and his passion speaks for itself.

“Lighter. Faster. Stronger. It’s being innovative and solving the problems so that you can work fast, move fast. That was the same in 1970 when I started. That’s what keeps you working—that you are a problem solver on the set. I think I want to return back to feature production. You know, I had a good run of very successful television shows. *The Wonder Years, Nash Bridges, Desperate Housewives*. That’s almost 22 years of rocket ship television. I’m most comfortable when I’m sitting at that mixing board. This is year 43 that I’ve been mixing!”

How can I make that sound right? My ear—it’s a signature of depth, it’s presence, it’s performance, and it’s the balance of the voices. Giving the director what he wants without the director knowing, I’m right here on your shoulder watching everything. And when I need to tell you something, I will. And I do. I don’t have to be yapping all of the time—it’s not my style. I stay back and just hit home runs. I’m movin’ faders. I’m a mixer. That’s me.”

HIS PROTÉGÉS

So, what are some of the things these guys have learned? Alex Names remembered, “How do you anticipate when you’re watching a rehearsal, break it down for yourself so you can anticipate the hot spots? What’s going to happen and the dynamics of a scene? The cadence of a scene? That was all Aggie—and I learned a lot of that from just booming for Aggie.” Travis Cote explains, “You absolutely need to have somebody show you the way so that you understand that there’s no tolerance for mistakes—and you’re not feeling like you’re going to make one of those mistakes because, at that point, it’s just what you do.” Sheraton Toyota so tactically remarks, “You know, it’s something where you can keep the art of it and keep getting good tracks. That’s what Aggie strives for. That’s the mentality I try and keep. That ‘Old School’ workflow. He just tells me, ‘Keep the Old School workflow, but still at a fast pace.’ That’s the trick.” From the concise and efficiently spoken Carrie Sheldon, “Be firm, but be friendly. And always use a boom and not a lav.” Brandon Loulias brilliantly sums up an important, humble admission that every protégé should give: “Being able to have someone where it can be okay to make mistakes, that makes it okay to really try things, that’s how we get to where we are. Our art is problem solving. You know, you have to skin your knees a little bit in order to build something useful.” •

Parrots mimicry circa 1979 for a documentary TV series for NOVA

*Aggie’s wife, Kathleen, helping on a shoot for Portrait of an Artist.* Photo: Gregory Perillo, Southwestern Art

Remarks, “You know, it’s something where you can keep the art of it and keep getting good tracks. That’s what Aggie strives for. That’s the mentality I try and keep. That ‘Old School’ workflow. He just tells me, ‘Keep the Old School workflow, but still at a fast pace.’ That’s the trick.” From the concise and efficiently spoken Carrie Sheldon, “Be firm, but be friendly. And always use a boom and not a lav.” Brandon Loulias brilliantly sums up an important, humble admission that every protégé should give: “Being able to have someone where it can be okay to make mistakes, that makes it okay to really try things, that’s how we get to where we are. Our art is problem solving. You know, you have to skin your knees a little bit in order to build something useful.”
As the independent film market is growing, more filmmakers are seeking independent sound work for their projects. Many sound studios are also exploring ways to cut overhead and hire individuals who can work off-site. As professionals, how do we accommodate this up-and-coming market—delivering the quality of work that we are capable of—while spending more time away from the dub stage?

We have experimented with something that sounds impossible: two-person mixing remotely (as in, remotely from each other). On our most recent film, *Motivation 2*, we handled the entire sound package and only spent one day working physically together: the final day of the mix at the dub stage.

**Why Work This Way?**

**Shaun:** Our first film together was *The Motivation* in the spring of 2013. We spotted the film with the director, and because of the timeframe and budget, had to figure out a way for the two of us to tackle the film alone. We knew from the start that our stage time was going to be very limited, so we would have to pre-dub it and get it as close as possible to a final mix before we hit the stage.

**April:** Between the two of us, we knew we could cover everything needed. Both Shaun and I have diverse backgrounds—in addition to mixing, we’re both capable of splitting an AAF, cutting dialogue, sound design, recording Foley, or ADR. It wasn’t clear-cut who was going to do what, so that was part of the system we had to figure out. For that first film, we brought on an FX editor to help us have more time to focus on mixing.
How the System Works

April: It takes some preplanning, like developing a template and making sure that you are using plug-ins you both own. We’ve experimented with a few different workflows for mixing. We’ve tried the traditional way of working: splitting up elements and staying with those elements through the end (one person does dialogue/music while the other does FX/Foley, for example). On one film, we tried splitting work by reels—I didn’t care for that because it took extra work for continuity.

Now, the workflow we prefer is simple: picking up where the other person left off. We both get to know all of the elements pretty well by working that way. When we recently had stage time (on Motivation 2), we actually switched seats at one point, and moved elements between rigs to speed up the mix. I’m sure every mixer on a two-person stage has been on a dub where the dialogue mixer is working like crazy while the FX mixer is waiting for something to do. We realized that was happening, and just moved the music tracks to the FX side.

Shaun: Being able to make that quick switch on the stage was incredibly handy. Luckily, the stage at Anarchy Post is set up to fluidly move elements like that, and I do it all the time—even when I’m mixing in that room myself.

It definitely took some trial and error to get a good system ironed out. I think that we may have done a bit of redundant work on the first projects we split, but by the time we got on the stage to mix Motivation 2, we had it down and we cruised through that mix day smoothly. It really comes down to knowing how each of us thinks and works and developing a method to suit both our needs. I completely agree about not liking to split work by reels. I’ve always felt that this method sacrifices consistency on a project.

File Management

Shaun: The technical side was a little tricky at first, but using something like Dropbox to sync files was the key. We both had to start with the same session and source material. We didn’t want to work the whole show out of our Dropbox folders for obvious reasons (size and constant updates), so that meant we needed to have a method of updating session files and new audio files. Once we had that figured out, it was very easy to stay up-to-date with each other.

April: One basic thing is to copy added sounds (not just adding or linking them) to your Pro Tools session. That way, you can sort by date and easily find new files. It just becomes a part of the workflow to upload the session and new audio files when you’re done working.

Communication and Logistics

April: It’s crucial to have strong communication and organization. To work this way, you have to be able to communicate what work you did, what needs to be done, your schedule, and anything the client has told you. We both are essentially acting as sound supervisors, so we might both be communicating with directors, editors, composers, etc. We keep a spreadsheet for each film with spotting notes, our own notes, client notes, and a to-do list.
Also, trusting your partner (or team) is a huge part of making it work. Shaun and I have a history of working together (at Levels Audio and Yahoo!), so we knew each other’s work and work ethic before taking on a film together. I trust Shaun if he changes something I did, and I take his advice if he says something isn’t working. Feedback is good for the product and also to grow as a mixer. You typically don’t get feedback from other mixers working alone (unless you ask), and feedback can be minimal on a two-person mix with a client in the room.

**Shaun:** Agreed. That’s definitely one of the biggest benefits of a two-mixer session. Two sets of ears working together. I’ve had many other individual projects mixing alone that I wished April was on the stage with me for.

April started the spreadsheet on the mix of *Hot Sugar’s Cold World* (a documentary about musician Nick Koenig, aka “Hot Sugar”). We quickly realized that this project in particular was going to get swamped in markers if we tried to use those. The shared spreadsheet was also a great way to keep the director and Nick (who was very involved in the music and sound design) up-to-date. We were able to divvy up notes, delegate them to each other, and also keep Nick looped in while he was working on music and additional sound design from New York City.

**April:** The learning curve hasn’t just been workflow—it’s the logistics outside the studio, too. When you take on a project independently, you’re the sound supervisor, the runner, scheduler, budgeting/accounting, and so forth. Low-budget films may not have a post-production coordinator, so you may be chasing down specs and arranging final delivery yourself. All of that is further complicated if your client isn’t technically-savvy. There was one film where I had to go to the director’s place and output my own QuickTimes and AAFs as there was no other crew left on the project. There are always “surprise” elements like that.

**Shaun:** We’ve become accustomed to being involved all the way through making the DCP or whatever the final format is. We really have become as much of post/sound supervisors as mixers for many of these projects.

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**Switching Mix Rooms**

**Shaun:** One of the biggest benefits of remote coordination is being a two-person mixing team in separate rooms, being able to work independently of each other at the same time. However, this comes with the obvious issues of being in different rooms. My home studio is obviously different than April’s and both our rooms are going to be far different than the mix stage. On the *Hot Sugar* doc, we had the benefit of having a few days on the mix stage, so we used one day as a review and sort of predub day to get our balances ironed out. The film was particularly challenging because we were really thinking outside the box in terms of creative sound design. By having that review day, we were able to work out a lot of ideas together with the director in a theater environment. From there, we were able to adjust the rest of the mix in our rooms at home to better reflect the stage.
April: We weren’t sure about using a valuable mix day just for problem solving, but it turned out to be a really great use of time. Even just listening, you get a sense of how your home studio mix translates to the stage. I definitely would consider splitting up mix days like that again—especially if I was mixing on a stage that I didn’t know well.

Logistics

April: One difficulty that I had at first with working this way was getting used to passing off incomplete work. I remember at first we were apologizing a lot, like “sorry, this isn’t great!” As mixers, we don’t normally hand over work midway—it’s not quite the same as handing over a predub or having another mixer listening while you work. With this system, you might be “delivering” sound design that’s first pass or scenes that are literally half-mixed. It’s like dropping your pencil mid-work because the time on a test is over. It’s just part of the process, and you get used to it.

Shaun: I think again that this is where our prior experiences working together and our collaboration as a team came in. After a while, we became comfortable with leaving off midway through a sound design or mix pass and knew that the other would pick right up with where we left off.

The Advantages

Shaun: I think this method has been very effective for us because we know each other’s work styles and ethics so well. The fact that we can switch between FX and DX on the stage or in our own studios during the edit or predub (all while maintaining consistency), has been a huge benefit for our workflow, and that keeps the momentum going. There were times on the Hot Sugar doc where I was running into creative walls doing sound design and April jumped in with a fresh take and really nailed it and vice versa, and that is quite refreshing. The workflow is cost-effective for our clients and has been a great partnership for us.

I’m sure we will keep doing projects this way. In fact, we have another project coming up very soon and we are even co-writing this article in the same fashion.

April: There’s a lot less pressure working this way, too. When you’re mixing alone, there’s a lot that can interfere with mixing—especially changes and phone calls/emails near the end of the project. On a dub stage, you’re confined to what you can accomplish in that stretch of stage time. This system gets around both of those issues. On one film, I was handling last-minute sound design notes while Shaun was doing a mix pass and prepping for the mix stage. There’s time for the project to breathe—it’s not like you’re forced to make decisions on the stage days in a row and be stuck with them. Even if we make a print master on the stage, we can do adjustments from home later, if needed.

Overall, there’s a different sense of collaboration when you’re not confined by what room you’re in or the task you’re assigned to. The sound comes about very organically because you’re not limited by what’s “yours” or “theirs”—it’s just doing what’s best for the project. Like Shaun said, problems can turn into inspiration when there’s a new perspective on it. To have that experience (especially while working remotely) is pretty incredible.
Shot-Specific Impulse Responses

Excerpts from the thesis: Shot-Specific Impulse Responses

by Colin Lechner

Abstract
This thesis explores convolution reverb’s potential as a post-production technique to create a greater level of transparent transitions between production dialogue and ADR. The goal is to establish an easy and reliable methodology for capturing a set-specific impulse response during the production phase of a project, thus introducing a new element in the standard deliverables for a production mixer. This paper also examines the implementation of the impulse response into the post-production process and the potential benefits that might be realized from it.

Introduction
Creating sound for a narrative film project is a complex undertaking involving many stages of production. As a sound professional, it is important to maintain the appropriate perspective toward one’s role within the production, which is to help tell the story. Many challenges can develop throughout the process of making a film; dialogue can be particularly tricky to deal with because of the inherent level of familiarity an audience has with the spoken word. Additionally, dialogue carries a disproportionate amount of narrative weight. For this reason, high-quality production mixes are coveted because of the necessity of having ultimate control over the clarity and intelligibility of the dialogue. However, despite the best efforts of the production sound crew, circumstances beyond their control can sometimes produce unusable dialogue tracks.

On such occasions, it becomes necessary to replace the deficient dialogue with ADR. Unfortunately, ADR can lack the spatial characteristics that are present in production dialogue because of the highly controlled recording environment. This makes it difficult to create transparent transitions between production dialogue and ADR in post production, a task that has always been accomplished by the artistry of re-recording mixers. Convolution reverberation can be used in conjunction with impulse responses, recorded with the methodology outlined here, to help match the sonic qualities of ADR to production dialogue. This process should help the mixers to take less time in post production by allowing the discrete surgical application of ADR.

The particular challenge when integrating production dialogue and ADR together in post is creating a seamless aural experience. It is common practice for re-recording mixers and ADR mixers to attempt to duplicate a variety of variables present on location. They do this to provide as close a match to the production track as possible when shooting the ADR lines. These include microphone selection, microphone placement, and the use of equalizers and other signal-processing methods.

Unfortunately, the shooting environment of the production is a variable that is unequivocally out of their ability to re-create using traditional methods. The acoustic signature of the space, along with the heat from the set lighting that highly influences air density, and sound absorption by the cast and crew, are just a few of the many factors influencing the quality of sound being recorded on set or on location. Traditionally, the only method of matching the spatial qualities of an ADR performance has been the addition of a generic algorithmic reverberation to the dry signal. Algorithmic reverbers are arbitrary approximations of a space based on formulaic models of a few general categories. The difficulty of this approach is the amount of time and experience a mixer must have to manipulate the reverb to match the acoustic signature of the production track. Even in the most comprehensive algorithmic reverbs, the sonic differences between Medium Neutral Room 1 and Medium Neutral Room 2 can be ambiguous when attempting to create sonic continuity.
Challenges of ADR

The quest to re-create a sonic performance of an actor during the post-production process invites a number of challenges. Such challenges include attending to the talent, encouraging their best possible performance, and many technical concerns. Because of the relative immobility of the projection and studio recording equipment associated with ADR acquisition, the spatial characteristics of the production environment is seldom fully accounted for. Special effort is taken to match as many elements of the production environment, such as production microphone type and perspective, as is feasible (Purcell 320).

In the 2001 film The Lord of the Rings: The Fellowship of the Ring, supervising sound editor Mike Hopkins estimated that the sound post-production team replaced as much as 98% of the film’s dialogue. This unusually high ADR percentage was due to the shooting set’s proximity to a local airfield and its associated noise pollution (Hopkins). However, it is far more common to employ ADR selectively to fix moments within dialogue that contain technical errors, or record last-minute changes in a script’s dialogue after it is shot, or reconstruct unclear dialogue after some unfortunate circumstance. Still, even in this moderate context, the quest to match ADR to production dialogue can produce unexpected challenges. In the 2012 film Prometheus, actors wearing spacesuits, including fully enclosed Lucite helmets, deliver a considerable amount of dialogue. While attempting to record convincing ADR lines for the film, supervising sound editor Mark Stoeckinger sought counsel from production sound effects researcher Charlie Campagna. To help with the ADR/production match, Campagna recorded an Altiverb IR sweep of one of the helmets (Campagna). The Altiverb IR sweep implementation allowed the Prometheus sound crew to gain direct control of the wet/dry ratio of the ADR so they could have access to the best of both worlds of clarity and contextual saturation.

Convolution Reverb

Convolution reverberation DAW plug-ins use an impulse response recorded in a real space to impose the decay characteristics of the space on another sound. Convolution reverb imitates the sound of a real space through the relatively simple principal of scaled sample decay.

A convolution reverb plug-in processes each sample of a given waveform/audio file by applying the impulse response decay characteristics. This creates the illusion of the natural decay of the sampled space.

By understanding the nature of convolution reverberation, and an awareness of the inherent complexities of location recording, it is possible to implement a workflow to enable the use of convolution reverb as a continuity tool for ADR. As experienced dialogue editors know, you cannot just pull fill from any old take of dialogue. One must set about the arduous task of searching through many takes of the same shot in hopes of finding matching fill. As the microphone(s) makes locational transitions, its relative orientation shifts from shot to shot. This introduces varying degrees of room tone presence in the signal, in addition to modifying the acoustic relationships between the signal and nearby architectural elements. Skilled production mixers know this and take steps to minimize the presence of these undesirable elements in the recording. Unfortunately, with the exception of being in an anechoic chamber, it is impossible to escape the existence of acoustic reflections that make up the reverberation within a space. However, if the circumstances in post production
require the mixed use of ADR and production sound, an impulse response can be used to help create the seamless illusion of continuity.

Because dialogue is an important element of the story, through which the majority of narrative communication often takes place, it is wise to treat the selection and use of the IR as carefully as a dialogue editor would treat fill. Because of the microphone’s continuously changing spatial relationship, one should record the impulse response of each microphone position that the production mixer feels might require ADR.

It is important to keep in mind that recording an impulse response of a location does not create an accurate representation of the space. What it creates is an accurate representation of the spatial relationship between the microphone(s) and the sound source. Impulse responses from the libraries of plug-ins like those from Altiverb or Waves IR1 were captured from a spatial perspective that the recording engineer deemed most pleasing to his or her ear. In an instructional video by Altiverb on making your own IRs, the phrase, “I’ll be walking them [microphones] around to find the nicest sounding spot in the church,” is used. This illustrates the subjective nature of the location selection (Audio Ease). For the majority of the reverb applications in post production, the typical wish is for a reverb that sounds “good.”

When trying to achieve technical transparency within transitions from ADR to production, a “good” aesthetically pleasing reverb is not as helpful as a reverb that simply matches the spatial signature of the production space.

### Shot-Specific Impulse Responses

Shot-specific impulse responses can be used to give ADR recordings an improved sense of space. In order to achieve this flow, one must first have a complete catalog of impulse responses from the scenes that are being worked on. When contemplating using shot-specific impulse responses for a production, there are a few considerations to take into account:

- Is the shoot taking place on location, or is it a set (or green screen) on a soundstage?
- Are there going to be environmental effects such as rain present on the shoot?
- Is the project primarily character-driven?

These are important questions to ask during the process of determining whether recording impulse responses will be beneficial to the production. If the shot is taking place on location, the potential for unexpected problems is greater, increasing the likelihood that ADR will be required and will need to be matched to that unique sonic location. Soundstages and green screen sets are locations that allow for more control over the aural environment, reducing the amount of potential acoustic reflections present in the production recording. If the project is character-driven, then the clarity of the dialogue is paramount to the audience’s connection to those characters, in which case, impulse responses are excellent insurance to ensure ultimate transparency and preservation of original performance.

### Sine Sweep Types

There are several methods of capturing an impulse response of any given location, the most common being sine sweeps, starter pistol discharges, and slate claps. A sine sweep playback produces the highest quality impulse response of all the common methodologies.\(^1\) A measurement taken over time has a greater signal-to-noise ratio at any given moment because the amplitude of an individual frequency can be played back at a greater SPL than the cumulative level of the combined frequencies. One creates a sweep playback impulse response by playing a sine sweep of a known duration in a space while recording it with microphones. Once the sweep is recorded, the file is

\(^1\) The Maximum Length Sequence arguably produces the highest quality impulse response, demonstrating the high resistance to unwanted noise in the signal, but the tedious calibration required to use this method makes it impractical (Bart Stan-Guy).

\(^2\) Recording an impulse response from a click of pink noise is potentially hazardous for the playback speaker.
deconvolved. This process factors the sine sweep out of the recording and sums the time variant to zero, creating a final recording where the timing differences of the sweep are realigned as though they had been played back instantaneously.2

An impulse response created with a starter pistol is the next best option. The high SPL produced by the discharge of the starter pistol allows for the decaying reverberation to be recorded with greater discretion resulting in a superior signal-to-noise ratio.

Slate claps can also be used to create an impulse response from a location. However, these are usually poor representations of the spatial relationship between the microphone and the performer if taken from the head or tail slates. Head or tail slates are not desirable for treatment of ADR because the boom is commonly swung to cue the slate before returning to the position it will actually maintain for the take. A slate can be used if the appropriate spatial relationship is preserved.

Equipment Selection

The selection of audio equipment and the preservation of spatial relativity must also be taken into account when deciding how to create an impulse response. It is an important step in maintaining the transparency of the dialogue’s spatial origin. One should select a speaker with a flat frequency response when using the sweep playback method of capturing an impulse response so the speaker itself will not add any unwanted coloring to the recording.3 In accordance with typical impulse response creation techniques, the speaker used should have a frequency response of 20 Hz to 20 kHz. However, since the intended use of these impulse responses is very specific to ADR, one is not required to adhere to such stringent technical standards.

The average human voice has the ability to generate frequencies from 80 Hz to 1,050 Hz (Alten). The lack of human-produced sonic information below 80 Hz allows for the selection of a sweep speaker with a less responsive low end. Because of the great need for haste in the capture of the impulse response, using a smaller speaker such as a Genelec 8020C active studio monitor, featuring a four-inch woofer and weighing a mere 8.1 lbs., aids the speed of placement as well as strike (Genelec English 7). Additionally, the frequency response of the Genelec 8020 is 66 Hz to 20 kHz, which easily encompasses the range of the human voice. For the sake of convenience, there should be a dedicated stand for the speaker.

The selection of the microphone(s) is far more simplistic. The ideal microphone to capture the unique acoustic resonance of the production space is (are) the same microphone(s) used to record the dialogue during production. Record the impulse response with every microphone used in the scene, including multiple booms and plant mics. A possible exception is the actor’s lavaliere (“lav”) mic, since “lav” microphones are already used to limit excess noise from the environment by maintaining a close, fixed position on the performer’s body. If an impulse response from a lavaliere microphone is desired, affix a spare “lav” mic of matching type and filter to the utility sound person positioned in the appropriate location to maintain the acoustic absorption of the body.4

The final element in capturing an impulse response is the recorder itself. As with microphone selection, you want to use the same recorder used to record the production dialogue. If the recorder is good enough to record the production dialogue, it is good enough to capture the impulse response.

3 Audio Ease recommends the use of Genelec or DPA speakers for sweep playback.
4 Remember to take costuming into account when attempting to create an accurate frequency response.
**Recording the Sweep**

**Step 1** – Immediately following the conclusion of a given sound angle, position your sweep speaker at the location where the majority of the dialogue was delivered. Orient your speaker so that the tweeter is at approximately chin height of the actor(s) facing the same direction that they were. Relocate the boom(s) to the same relative vantage used during the shot, mic’ing the speaker as though it were the actor.

**Step 2** – Request quiet on set and record the sweep as it is played back with every mic used in the shot. Be sure to record both the head and the tail squelch of the IR sweep file when using Altiverb sweeps.

**Step 3** – Strike the sweep speaker.

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**Post-Production Implementation**

Capturing impulse responses on set allows you to minimize the amount of material that must be replaced. This technique is not intended to be used in scenarios where the dialogue from an entire scene is being dubbed. It is meant as a tool to enable the filmmakers to preserve as much of the original performance as possible. When implementing shot-specific impulse responses, it is possible to replace minimal amounts of dialogue within a scene, transitioning from the original performance to ADR and then back to the original performance.

Once the dialogue editors have identified lines that are potential candidates for ADR, implementing the IR methodology becomes a simple matter of importing the correlating sweep files into the session. Recording ADR considering taking an additional sweep of that position.

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5 Sound angle is a set of specific takes characterized by the repetition of camera angle and microphone placement.

6 Note that if there are any portions of dialogue deemed troublesome that occur in a different location than the majority of the lines due to the blocking of the scene, it is worth considering taking an additional sweep of that position.

7 Coordinate with the post-production team to make sure the proper sweep file is used. Each manufacturer produces their own proprietary sweep files that can only be deconvolved with their plug-ins.
with the intent of treating the dry recording with an on-set impulse response allows the ADR mixer to focus on the quality of the performance without having to compromise clarity. This is because the impulse response created on set serves as a filter that imposes the characteristics of the production recording equipment.

This process can be used within any professional DAW and any convolution reverb engine that facilitates user-created impulse responses. For purposes of this paper, Avid Pro Tools 11 was used in conjunction with Altiverb 7. All sweep files were downloaded from http://www.audioease.com/Pages/Altiverb/sampling.php

Once the ADR has been recorded and edited, preparations to add room-to-signal can be made. Create an equal number of mono audio tracks to the number of sound angles being replaced and name them according to their corresponding sound angle. Organize your ADR takes by sound angle, breaking up each take, and pairing it with the parent clip it is meant to replace. Insert an instantiation of Altiverb on each track and load the corresponding impulse response using the appropriate post processing (treat dropped audio as a sweep played back through a quality speaker if recorded as described in this document). Save this to your user IRs. Use the Mix knob in the I/O panel of Altiverb to achieve the desired amount of saturation.

Alternatively, one could adopt a checkerboard layout on only two tracks for the ADR clips and automate the IR Automation parameter to switch to the corresponding IR during periods of silence. The use of two alternating tracks is implemented to avoid potential pops resulting from resetting the IR. A decision will have to be made whether the reverb will be printed directly to the ADR stem or will be processed dynamically in the final mix in order to maintain flexibility.

**Conclusion**

The shot-specific impulse response is an investment in technical transparency that requires the cooperation of the entire cast and crew on set. The time involved in the acquisition of the impulse responses is well spent, and the commitment to making a seamless product will only elevate the craft of filmmaking as a whole. Capturing the impulse responses can seem like an inconvenience to those who are naïve to the challenges of dialogue editing. It will be difficult for them to understand how useful the impulse responses are until they have witnessed the benefits of the implementation themselves. The shot-specific impulse response’s real value will come from the experience and discretion of the production mixer; knowing when an IR is needed, and more importantly, when an IR is not needed, will save time in both production and post production.

If they are used well, shot-specific impulse responses can be an effective, surgical-like tool to allow for the preservation of the largest amount of production dialogue as possible. Technical blemishes in storytelling are the equivalent of exposed joints and rivets on high-performance aircraft. If you take the time to countersink all the technical imperfections, the story will flow along with much less drag.

To access the full thesis, please visit Colin’s website: ColinizedSound.com

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iZotope RX
Final Mix Review
by Jay Rose, CAS

Dynamic controllable parametric eq
with standards-compliant limiter

Pros: Flexible, mostly tunable, fast setup, good preset management … and does things that just aren’t possible with standard equalizers or limiters.

Cons: Not exactly intuitive. The manual could use more detail, and obvious functions are missing from this first version.

Bottom line: Great for enhancing sounds (or controlling unruly ones), and seems built for film and TV mixing. Definitely worth having around.

When I started mixing, we had simple equalizers on each console channel, and a limited amount of outboard compressors, equalizer/filters, simple noise controllers, and reverb. You patched hardware together, and either stuck with that configuration during the mix, or lost a generation pre-dubbing so you could use the processors elsewhere. That was years ago. Now we’ve got flexible plug-ins that combine processes, and designers keep releasing new versions.

So I wasn’t exactly overwhelmed with iZotope’s announcement for Final Mix. I figured it was just another multi-band compressor/limiter/expander … a miracle when I started, but fairly standard for the past two decades. On the other hand, this was iZotope. They make the RX4 processors I can’t live without. So I looked further. I’m glad I did.

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$299
What You Get

My initial guess was partly right: Final Mix can be a multi-band compressor/expander with a broadband limiter following. But that’s just scratching the surface: each of the six eq sections plus high- and low-cut can expand or compress within its frequency; each can have different Q and thresholds; each can be a bandpass, peaking eq, or shelf. It’s a lot of functions working together interactively, and this can be nonintuitive at first. Fortunately, Final Mix is easy to tune in real time, comes with a pretty good (if sparse) manual, and has a preset system that is both comprehensive and flexible.

Installation is straightforward: Select which of its many plug-in formats you like—there is no standalone version—and register using iLok or a dongle-free online process.

When you open Final Mix, it looks like a conventional equalizer with a few added controls (figure 1). Each working band appears as a colored circle on the spectrum display. You tune bands by moving their circles and bandwidth handles, or through parameter settings below the display. Equalizer gain is variable between +15 dB and -18 dB limits, Q goes from .1 to a sharp 40, and any band can be at any frequency—making it easy to stack sections for special effects.

I had to draw a table to understand it:

<table>
<thead>
<tr>
<th>Band’s mode</th>
<th>Program level at frequency</th>
<th>Band’s gain setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+15 dB</td>
<td>-15 dB</td>
</tr>
<tr>
<td>Compress</td>
<td>Input &lt;&lt; thresh</td>
<td>+15</td>
</tr>
<tr>
<td></td>
<td>Input &gt;&gt; thresh</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Input &lt;&lt; thresh</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Input &gt;&gt; thresh</td>
<td>15</td>
</tr>
</tbody>
</table>

The Final Mix startup screen (figure 1)

Final Mix looks something like a comprehensive parametric when first opened. The magic happens in the lower right part of the screen. Note how only bands 1, 3, 4, and 5 are turned on; the others don’t appear on the display and won’t use processor cycles until they’re activated.

I talked about equalizer gain limits for a reason. There are Dynamic Compress and Expand modes available for each band, where the gain depends on both the input level at its frequency, and how close that level is to a threshold. This can get tricky: when the signal is far below the threshold on a band that’s set for compression and gain, the full amount of gain is applied. As the signal gets louder, the gain decreases toward zero. But if the band was set for loss and the signal is below threshold, you start with only a slight volume reduction; as the signal gets louder, there’s more loss. And if the band was set for expansion, the effects are somewhat reversed.

This shows just the extremes. Actual gain of each section varies smoothly and continuously, depending on how close the signal is to the band’s threshold. And there are other subtle differences between Compress and Expand. Each band has its own independent settings, and bands can overlap for convoluted frequency/dynamic gain responses.

Confused? That’s the price you pay for a powerful plug-in. Fortunately, iZotope gives you lots of ways to visualize, understand, and control the process. Most important are the spectral display and threshold control, which are also real-time meters (figure 2). They give you continuous visual feedback that you can relate to the audio.
What you see really is what you get. This is just one of the eight sections, responding to a 3 kHz sinewave.

The Help button opens a PDF manual, which covers the full operation without wasting space on stuff we should already know. But the manual could use more detailed explanations of what the sections are doing. There are also a couple of pages of tips for mixers who might not be used to dynamic equalization. By the way, kudos to iZotope for reminding us that if dialogue isn’t mixing easily, it’s usually best to tame the music and fx tracks instead—something beginners often don’t realize.

Presets Are Your Friends

iZotope includes about 90 usable soundtrack presets, in folders based on stem or function. Some are conventional fixed equalizers, but many include at least one band of dynamic equalization. As with any processing, these presets have to be fine-tuned for your own elements. After you’ve modified a preset or built one from scratch, you can save it in the same system, with descriptive names and usage notes, organized in existing or new folders. It’s easy to move presets from one studio to another, or store them with a production.

On top of that, the presets are in human language! iZotope saves presets as .xml, in a special directory in your Documents folder. You can open, change, or save presets with any text editor.

Presets are saved as individual .xml files, and can be modified in any text editor.

Study the presets for an hour or two while running typical program material and looking at the spectrum display, and you’ll get the confidence to start tweaking and creating your own. Here’s an example: I was working on a TV documentary about a singer/songwriter. In a few places, she speaks in voice-over while the picture shows her singing in a live performance. The performances were stereo with no iso tracks. Speech mixed with vocal is a train wreck, made even worse when they’re from the same person. But I didn’t want to use the usual phase inversion to lower the vocal; that would also lower any centered instruments and destroy the stereo image.

It didn’t take very long to patch a Blumlein shuffler into the music track, and run just the middle of the soundstage through Final Mix. In figure 4, the green and blue bands are compressing the consonant energy of her singing—the same frequencies you might boost for intelligibility in dialogue. So the compressor muffles her words a little, making them less competitive with v-o, without affecting her sustained musical vowels. The red band helps the bass guitar, giving it some extra bounce so we can lower the overall music level. Shuffling back to left/right gave me a good stereo performance...
that kept the rhythm and sustained parts of her singing, didn’t affect instruments on the sides of the stage, and didn’t compete with dialogue. It mixed like a fine cocktail.

To the Limit

Final Mix’s dynamic equalizer, by itself, is a versatile tool for elements and tracks. But you can also use its ITU BS.1770 True-peak-compliant limiter, useful when Final Mix is installed on stems and full mixes. Threshold and gain are adjustable, and there’s a switchable bypass to keep LFE from being limited. A “Character” setting, which seems to adjust time constants and ratios, is only briefly explained in the manual: options are Clear, Smooth, or Thick. I left it on Smooth.

The limiter and equalizer can be engaged separately, as can each of the equalizer bands. So you can simplify Final Mix to use fewer CPU cycles if you’re running lots of plug-ins. You can also shrink the window to show just spectral display and meters—that doesn’t save cycles, but can help manage screen real estate.

What’s Not to Like

Final Mix is iZotope’s first effort for this kind of processing combination, and there’ll be a learning curve for them as well as for users. That’s good, because the program lacks some obvious functions.

For example, there’s a separate monitor equalizer that can be swept quickly over the entire spectrum, to help isolate problems. But there’s no way to capture where you found the problem, or paste it into an active band. You have to remember its frequency and q, and then manually apply them.

You can’t link the threshold controls and there’s no master, so you have to readjust each one separately for similar sources that were recorded at different levels. There’s no user control over time constants: iZotope chose their favorites based on frequency, but you might want to use others for special effects. Final Mix would be a lot more powerful if it either had a side chain input, or a way to unlink a band’s detector frequency from its equalizer.

And it could really use a few more manual pages, explaining what the software is doing with each setting. That way, I can write what’s definitely a positive review—you should have Final Mix in your arsenal—without spending so much time explaining the functions. 

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*Final Mix used with mid-side hookup (inset), processing music so vocals don’t compete with dialogue.*
Confessions of a Sound Junkie
(or)
Attempts at Understanding Audio Transmission for Picture: Past, Present, and Future
by Edward J. Greene, CAS

Preface: The Big Picture
For me, the primary purpose of sound for picture is to complement and add to the enjoyment of programs for the viewer. This is certainly the goal of producers and mixers when they deliver a program. As a mixer, along with many others, I try to find and use the best techniques to make this happen. Because what we mix often does not arrive at home as we heard it, I helped put together a CAS seminar in 2008 titled “What Happened to My Mix?” The short answer remains, *TeleMedia* sound travels many miles, through many facilities and their operators to finally reach the viewer. It also remains a fact that many home sets and their connections to the world still have default settings that adversely affect program sound. In my opinion, *TeleMedia* program default settings should begin with sound as originally delivered.

*(my own preferred term)*

Past Transmission Challenges

There have always been challenges in trying to deliver quality audio to a large *TeleMedia* audience. Early satellites were primarily analog using high-frequency pre-emphasis and de-emphasis to achieve a better noise floor. Here are a few descriptions of these challenges and their solutions.

1. Before satellites, I mixed a highly rated annual live competition show with a good live band originating from a Southern city on the Gulf Coast. Program audio traveled to New York via a single wideband circuit—the only one available from that city. One year while doing tests with the network, there was a significant high-frequency loss (-7 @ 10 kHz). Starting in New York, checking transmission points down the East Coast and ending up in our host city, all had the same result. By looking outside the mobile unit, we found that a Telco engineer, attempting to monitor the program, had connected a speaker directly across the outgoing broadcast line. We gave him another speaker from another source with program audio. Problem solved.

2. For many years, I mixed a three-hour-plus music awards show in February, eventually delivered via satellite to the network. Our program reference tone during transmission checks was followed by frequency response tests at -6. This meant, because of pre-emphasis, there was negative headroom for high-frequency information. To make for a better sounding show, shortly before air, we dropped our program level tone by 6 dB and asked the network to adjust accordingly. On air, the result was a much cleaner, full frequency program. The tradeoff was a 6 dB higher noise floor—no problem for this show.
Present Transmission Challenges

One assumes that with the use of fiber optic transmission and digital signals, program sound now arrives unchanged to the viewer. Not the case. One example:

In the early days of fiber optic, digital transmission, I was mixing a stereo 3½-hour awards show in March with a very large domestic and foreign audience. The idea was to mix an appropriate wideband program whose image reflects being at the event. One year, almost from the start, there were complaints of noticeable high-frequency distortion. This was not my first time mixing this program, so I checked what we were doing carefully and mushed on. Following up later and listening to an aircheck at home, I too heard this distortion. Looking further, I learned that the New York network chief engineer also heard the distortion on air and when he learned that the incoming program from the show was clean, he directed the local New York affiliate to use the incoming network feed for their broadcast.

Following up later, I spoke with someone from network engineering. He confided that they had recently installed a digital processing device across network audio. The network’s specifications for this device were that it be digital and take up only one rack unit. I consulted with an engineering associate and learned that this stereo limiter was not capable of successfully handling complex stereo high-frequency information. After hearing the same distortion on other programs from this network, it prompted a letter (email?) from me to network engineering, politely explaining the problem and suggesting a particular consultant to help.

I never received a response to my letter, but later learned the network did consult with the person suggested—and their problem was fixed. I also learned that audio mixers (A-1s) are often not highly regarded in the network engineering food chain.

Enter 5.1 surround. I have long been a fan, student, and practitioner of surround sound, so I was excited when 5.1 broadcasts became a reality. Not so fast! Mixing a successful 5.1 surround program for broadcast has its own special challenges.

1. First, the mix must be (and I hate the word) “compatible.” Dating back to the start of any multichannel product, there must be an accommodation for the mono listener. This is particularly true of major live shows with very large overseas audiences.

2. Second, the mixer should know and communicate with the people who are transmitting the program. It seems that every network has their own preferred way of handling broadcast signals. Some of my best experiences mixing 5.1 surround programs have been when the audio is embedded with picture so it can’t be altered in the transmission stream.

3. Third, the mixer must understand the likely conditions between themselves and the home viewer—making the mix work with that in mind. These are:
   a. Even with 5.1 surround, it’s probable that most viewers will be listening in stereo. Oftentimes, the 5.1 format is the only data sent to the viewer as part of the HD signal and the stereo from a 5.1 data is then created locally from a receiver. Still remaining in many set top boxes and receivers, there is an accommodation for an older surround format (Pro Logic II). By default, to make it work properly, this obsolete standard has all band fixed phase shifters on the rear channels. So in 5.1 surround, with too much common information front to back on each side, noticeable phasing effects are created. My solution has been to use the 3-to-1 rule with common information: If 9 dB Left Rear, then 3 dB Left Front. If 9 dB Right Rear, then 3 dB Right Front.
   b. Many consumer sets may also have a default “Surround Enhancer.” This goes back to 21” and 27” sets with the purpose of widening the stereo experience for the viewer. But a side effect of doing this is that it also drops center information back about 3 dB, thus distorting the mix. If desirable, viewers should be able to lose this in their set menu.
   c. With HD program providers transmitting all 5.1 surround channels, there are some stations and a few cable vendors who only broadcast
A New World: Programs on the Web

Now, with the use of smart TVs and computers, there are literally hundreds of new channels and programs available via the Web. This has caused many to “cut the cable” and rely only on programming from the www. My 27-year-old son Grant is one of them. He feels it suits his multimedia viewing just fine (home receiver, tablet, smartphone, etc.), finding all the programming he wants. One would reason this could be fertile ground for better sound quality with channels coming directly from program providers. However, he said he’s experienced wide variations in quality and levels, particularly with commercials. So, we recently listened to a wide variety of Web programs. If you haven’t taken such a tour, I recommend it. From this experience, Web audio is like the Wild Wild West, with all manor of quality and level variations, just as Grant reported. During this session, with everything else, I did hear some good sound—indicating real promise for audio on the Web.

Recognizing that there are no guidelines in place, and in the absence of the ATSC, the AES has begun an active forum attempting to suggest and implement Web audio reforms. Reports of their forum discussions are available at AES.org.

In Summary

One of the big issues with TeleMedia is that we are victims of its success. Now with Web programming, there are many thousands of hours of daily programs available to viewers. The lack of time and money producing this glut of programs is no secret to mixers because it often affects their quality. I urge mixers where possible to (politely) get involved with their projects either through ATSC or AES.

Addendum

I hope the above information is helpful in understanding the many reasons for mixers’ frustrations after hearing their work on air, cable, satellite, etc. So, while real changes may be slow in coming, perhaps our individual and collective voices can make a difference. For the moment, we’ll just have to do our best knowing “What Happens to Our Mix.”

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With thanks to:
Lynne Cruise Greene, Hugh Healy, and Denali Engineering
Matt Foglia CAS had some fun in June supervising audio-focused graduate students who were recording bands performing on Bonnaroo’s “Who” stage. The sound, along with the seven HD camera video feeds, was captured using MTSU’s production truck as part of a collaboration between Bonnaroo and MTSU’s College of Media and Entertainment (FKA the College of Mass Communication), where Foglia is a professor.

Devendra Cleary CAS is wrapping up Season 2 of Murder in the First for TNT. She would like to thank all of the crew that has worked so hard: Billy King, Chris “Catfish” Walmer, and Veronica Kahn. Also the double-up crews: Brian Robinson, Scott Solan, Alexandra Gallo, Alexander Miles Burstein, Brett Grant-Grierson, CAS, Josh Bower, and Tanya Peele. As well as the San Francisco double-up crew: Scott Kindsey, Fred Runner, and Lou Wiskes! Enjoyed an adventure vacation touring the country of Guatemala during late June. Now it’s time for more R&R, sound cart rebuilding as well as prepping for Secrets and Lies Season 2 for ABC, starting production in Los Angeles mid-August!

Steve Nelson CAS wrapped Season 2 of the very challenging naval-themed post-apocalypse action drama, The Last Ship, for TNT (thanks to all who helped!). Nelson kept the band together and jumped straight onto the untitled “Lonely Island” movie, aka Conner4Real, with the stalwart support of Knox White and John Sheridan on this challenging (is there any other kind?) and wacky adventure. If there’s no bandwidth left for the rest of you, it’s ‘cause we used it all, running three to four cameras nonstop for 35 days. We had great fun on this pop music mockumentary, featuring a parade of celebrity drop-ins. Indispensable to our efforts was the participation of Mark Agostino on Pro Tools playback and sound reinforcement. Thanks to Michael Graham and Mark Hensley and their crew at Smart Post Sound for doing such great work on the show! Waiting to hear about Season 3 or whatever comes our way.

Daryl L. Frank CAS started this year off with the miniseries Dig for USA Network, starring Jason Isaacs and Anne Heche. It was very interesting because we had to pick up on production that started off completely in Israel, finishing in the United States and Croatia because of the violence. Then it was onto three different features which were back-to-back. The last show was Shot Caller, which shot at the Santa Fe prison, the home of the biggest prison riot in U.S. history. I got to work my friend Ric Roman Vaugh again and his brother Scott Vaugh. I am now working on a new Western pilot called Edge, with director Shane Black. And then another TV show to follow that right away to finish out the year.

Jon Ailetcher CAS has been very busy. After a very successful Season 1 on Black-ish, with boom operator Chris Sposa and utility Danny Greenwald, we did two pilots. Detour for Fox that didn’t get a pickup and Uncle Buck for ABC that did get picked up. Danny and Jon then took care of a new PBS children’s show called Mack & Moxy before connecting with Chris again for Season 2 of Black-ish.

Sherry Klein CAS and Lisle Engle CAS are mixing Agent X for TNT and starting up on Minority Report for Fox, both shows mixing with Smart Post Sound!

Richard Lightstone CAS continues on the second season of Kirby Buckets, with boom operator Jeff Norton, second boom Alexandra Gallo, and music playback by Jeffrey Zimmerman.

Branko Neskov CAS has spent the past three months working on Brazilian movies. He mixed two projects in Rio de Janeiro. The first one, Quase Memória (Almost a Memory), directed by veteran Ruy Guerra, was mixed in three weeks at Meios e Midia Studio, in May. The second one, romantic comedy Linda de Morrer (not that easy to translate!!!), took one week in my studio in Lisbon, Portugal, and three weeks, again, at Meios e Midia in Rio. Between these two projects, he did a major upgrade to his studio in Lisbon, Loudness Films. He swapped their good old 32-channel ICON D-control for a brand-new 48-channel Avid S6 and also upgraded their monitoring system to a total of 34 channels, configured for Dolby Atmos.

Gary D. Rogers CAS and Dan Hiland CAS just finished the two-hour pilot of MTV’s new series Shannara. They will soon be mixing the sixth season of AMC’s The Walking Dead, the fourth season of The CW’s Arrow, the second season of HBO’s The Leftovers, and the 10 episode series of Damien for A&E and executive producer Glen Mazzara.

Whit Norris CAS with Doug Cameron on boom and Alana Knutson as utility finished Marvel’s Ant-Man in December and started 2015 with Warner Bros.’ The Accountant, starring Anna Kendrick, Ben Affleck, and J.K. Simmons. Doug is enjoying the summer with his family while Whit and Alana are on second unit of Captain America: Civil War, with Matt Derber joining them as utility.

George A. Flores CAS, having just returned from a great weekend at the Atlanta Sound Mixer Event, is about to begin 13 episodes of this new CBS/ Warner Bros. show Supergirl. Visiting the southeast audio community and discussing technique and gear is right up his alley. Yet, it was all about the
people; spending time with the production and post-production sound individuals who strive for quality and are positive and passionate about what they do on a daily basis. Jumping back to early 2015, I spent some nice time with seasoned pal Ben Patrick CAS, helping with 2nd Unit Days on his show Silicon Valley and also the wonderful Steve Bowerman CAS helping out on NCIS. Feb.-March brought the pilot for Supergirl with boom op Colin Campbell and sound utility duties being split by Laura Rush and Sara Evans. On the heels of that, I began Season 11 of It's Always Sunny in Philadelphia, with boom swinger extraordinaire Shawn Morse, 2nd boom/utility/mind reader Daniel Quintana, and the ever-present wiring abilities of sound utility/sound service/3rd boom Alexis Schulman-Schafer.

Andy Hay CAS is very pleased to have joined the wonderful sound team at Technicolor Paramount. He’ll be mixing broadcast alongside FX mixer Ken Burton on Stage 5, while continuing to service his feature clients through his company Proper Post on Stages 3 & 4 with his co-supervisor and mix partner, Colette Dahanne CAS. First up is The Devil’s Candy for Snoot Entertainment, followed by The Woods for Lionsgate, and then a full broadcast season. A huge thank-you goes out to Steve Bartkowicz, Duke Lim, and Jackie Jones for all the support over the years!

Mac Ruth CAS is so proud to have had a great run in the last year, including Michael Bay’s 13 Hours at Benghazi, Ridley Scott’s The Martian, and Paul Fieg’s Spy, whose fine crew included Balázs Varga, Sam Stella, György Mihályi, György Rajna, György Mohai, Tamás Székely, Aleks Bundalo, Jon Fenech, Bence Németh, Ervin Stark, and Aron Havasi. Thank you, guys!!

Brendan Beebe CAS, with Dennis Fuller and Ted Hamer, finished Hand of God for Amazon. Proud to be part
of the Amazon family! Next up, American Horror Story at Fox, with Dennis Fuller and Jeremy Sugalski for another great channel, FX!

Gavin Fernandes CAS, after a much-needed break (following a 60-day nonstop marathon), is mixing Demolition for Jean-Marc Vallée. After that, he’ll be on The Saver for Prospector films.

Having completed Season 1 of Marvel’s Daredevil, Joshua Anderson CAS (mixer), Gregg Harris (boom), and Terence McCormack Maitland (2nd boom), went onto the next show for Netflix, Marvel’s Jessica Jones. It’s been a year of stunts, rooftops, action … oh and dialogue, too? We were really happy with the way Daredevil turned out, both as a show and with the overall sound. It was fun and challenging to get the dialogue during long single-take shots and in between the punches in fight scenes. We’re still shooting Jessica Jones as of this writing, so we’re sworn to secrecy, but we can’t wait to hear how it all comes together. Both shows have had great crews and cast, but really it’s been fun to be a part of making magic for comic book fans.

Philip Perkins CAS mixed the live music video Don Arbor and Friends at the Freight and Salvage and the Meyer Sound-sponsored 44-channel surround music event, Acoustic Decon-struction Festival (both for forthcoming DVD releases); and continued work on American Identity and Surviving Skokie (both PBS).

Steve Weiss CAS is mixing Season 4 of Major Crimes, with Vince Schelly on boom and Dennis Carlin doing utility.

At Universal Studios: Studio 4 mix team, Jon Taylor CAS and Frankie Montaño, are pushing faders over in the Hitchcock Theater mixing director F. Gary Gray’s feature Straight Outta Compton, with supervising sound editor Mark Stoeckinger. Needless to say, the stage is THUMPIN’!

In Mix 1, Mark Fleming CAS and
Robert Carr CAS are definitely in compliance mixing Defiance. And Mix 2 is mixing Taco Shop, where David Raines CAS is serving up all the fixings. Who did it? Well, there is no denying that I Didn’t Do It, but mixers Peter Nusbaum CAS and Whitney Purple in Studio 5 are continually doing it, and doing it well. Hello, my name is Mr. Robot and my mixer, John Cook CAS, has Dominion in Studio A. Tyrant—Oh, so good! Get drawn in. Don’t sleep on mixers Alan Decker CAS & Nello Torri CAS in Mix B, you will love what they have in store! Dress to kill, it’s no doubt mixers Todd Morrissey CAS and Peter Reale mixing Suits in Studio G!

After wrapping as FX mixer on Grey’s Anatomy Season 11, Karol Urban CAS slid her chair to the gaff position for a summer schedule including her second seasons of two TV series (Edge of Alaska for Discovery Channel and The Hotwives of Las Vegas for Hulu, starring Casey Wilson and Danielle Schneider), and the indie feature film Director’s Cut, starring Penn Jillette. She also mixed FX for the very lovely independent pilot Dr. Del, starring Chloë Sevigny.

After spending the last year in Atlanta on Resurrection and Devious Maids, along with Aaron Grice on the stix and our newly acquired awesome utility, Jeff “Skippy” Hopper, David Barr-Yaffe CAS will be returning to sunny California with Aaron to take on CBS Television’s new one-hour musical comedy for The CW, Crazy Ex-Girlfriend, starring the very funny and talented Rachel Bloom. We welcome Kelly Ambrow to the team. We look forward to having her on board, as well as seeing all of our friends and peers we’ve missed.

Greg Watkins CAS and Tom Marks CAS completed mixing the first season of Proof for TNT on Warner Bros. Dub C.

After a long hiatus, Lori Dovi CAS is
returning to the world of production sound mixing! Much missed and appreciated. Please give a shoutout if you know of anything to get my feet back under me. Fresh and renewed!


**Michael Keller** CAS and Mike Prestwood Smith are just finishing up *Warcraft* on Warner Bros. Stage 9. The film has been mixed on a Euphonix System 6.

**Geoffrey Patterson** CAS followed up three months in Africa on the Cary Fukunaga-directed *Beasts of No Nation*, with the recently completed second season of HBO’s *True Detective*.

**Eric Batut** CAS is mixing the feature *The Shack* for Lionsgate Entertainment. Boom operator is Chris Higgins and sound assistant is Simon Bright.

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In celebration of her 62nd birthday, Dean Okrand, CAS and his wife, Carey, took a 62-mile hike through Los Angeles over three consecutive days leaving Sherman Oaks and meandering to Silverlake via Lake Hollywood and the Hollywood Sign and the LA River. Next, we headed SW through K-Town, Hancock Park, and LACMA, ending in West Hollywood. On the third day, our trek took us to the Pacific Palisades. Lots of beer and food at the end and a ride home with friends. It just gets better as you get older!!!

Brendan Beebe, CAS with Ron Perlman (a pleasure to work with!) on the set of Hand of God.

Tom Jao, CAS on location with The Real Housewives of Orange County crew (calm before the drama)! Also brought the wife on this work-cation!

Ariel Nelson and her extremely proud parents, Steve Nelson, CAS and Janet Walker, at her graduation from Harvard Law. She’s back in California studying for the bar and in the fall will begin clerk- ing for a federal district court judge in Santa Ana!

Matt Foglia, CAS takes a break from supervising MTSU graduate audio students at Bonnaroo to enjoy some performances with his wife, Stephanie.

My wife, Monica DeAngelas, was awarded a Gold Medal in Washington, D.C., for personal and professional excellence for her work changing shipping lanes off the West Coast to avoid endangered whale-feeding grounds. From left: David Barber, CAS, Anabella Barber, Monica DeAngelas, NASA astronaut and Dept. of Commerce Under Secretary Dr. Kathryn Sullivan.

David Barr-Yaffe, CAS enjoying a well-deserved happy hour.

David Barr-Yaffe, CAS enjoying a Sunday afternoon Braves game with AD Todd Amateau and our star thespian, Brett Cullen.

Since early retirement, Tim Cooney, CAS has found time sitting in the Philippines playing poker and watching the boats come in and out while pretty girls bring you drinks.

Triplets! Murder in the First sound crew season two. From left: Veronica Kahn, sound utility, Devendra Cleary, CAS, sound mixer, and Chris “Catfish” Walmer, boom operator.

After years of dreaming, Michael B. Koff, CAS finally reached the goal of becoming a private pilot. Now, even when not on set … headphones and a mic are being worn!!

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