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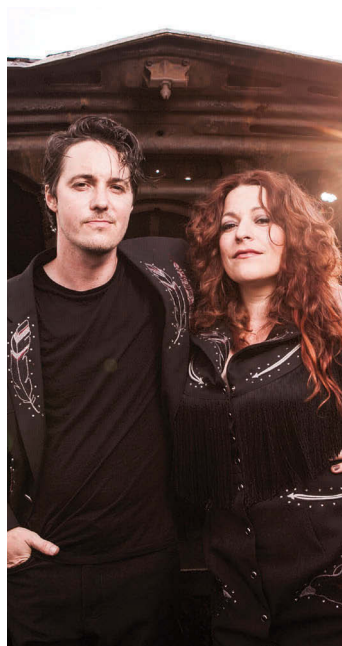


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On the Cover: Scott Wynne, associate professor and chief recording engineer of the Hayes School of Music at Appalachian State University in Boone, N.C., seated at the new SSL Duality console and surrounded by the students who commissioned it in-house, from left: Graham Sloboda (2017, Boone, N.C.), Charles Cannon (2017, Vanceboro, N.C.), Tyler Rabe (2018, Cary, N.C.) and Shea McKissack (2018, Graham, N.C.)
Photo: Courtesy Appalachian State University.

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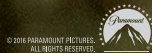
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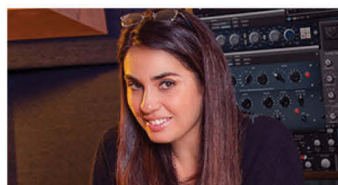


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From the Editor

AUDIO EDUCATION AND THE BINARY CONSTRUCT

Sometimes, in the middle of a normal conversation, I'll hear a word or phrase and for the next day or two I will fixate. I'll drift into tangents, try to figure out how it applies to my world view, twist it around—just because that's the way my brain works. I do crossword puzzles; I do pretty well at Scrabble. I'm one of those guys who believe that words matter.

So just the other day I'm on the phone with Cynthia Wisheart, a longtime editorial colleague and friend whom I've known since the late 1990s when she was editor of *millimeter* and we were both owned by Intertec. She's now editor of *Sound & Video Contractor*. She's a dancer, and she lives in the world of art and technology. She's well-traveled.

Cynthia is intelligent, insightful, and pays attention to the larger world around her. She would be equally comfortable attending opening night at the Met or dipping into a dive bar and playing pool. So as we're chatting away about cover stories and upcoming events, sidetracking into Facebook, our children and the election, she says, and I paraphrase, "That's the whole problem today, people are living in a binary construct..."

Now that's a new one, I thought to myself, and we soon went down the rabbit hole of zeroes and ones, black and white, for or against, male and female, yin and yang, and the way that modern communications, modern culture even, guides us down a path where the options are either one thing, or one other thing. But that's it. There are no gray areas anymore. We got animated. Everything made sense. And then we hung up and I got back to my cover story on Appalachian State University and audio education. And I started thinking, "She's on to something."

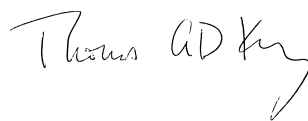
We are so inundated with information and opinions these days that most people retreat into what they know, feeding their own Binary Construct. It might not be conscious, and nobody wants to admit it, but it's there. The trick is to step outside of the construct and acknowledge the rest of the world. Sometimes that means that you have to get up from the mix chair, go have dinner with

a friend and interact with people who might not share all of your opinions. That's how we learn.

There is no "right" way to mike a kick drum, and there's no sure-fire formula for a hit song. There's no one plug-in or esoteric piece of outboard gear from the 1950s that solves every vocal issue, and there are no pushbutton fixes for adding emotion to a track. There are a lot of decisions to be made between 20 Hz and 20 kHz, many of them in the gray area. The best engineers know that.

Which brings me back to audio education. There is no right or wrong way to educate a budding recording engineer. A program might be six months with a certificate at the end, and it works for that individual. It might be two years, four years, at a for-profit, at a community college or in a studio one-on-one with a mentor. It all depends on what works for that individual. That doesn't mean that a school should abandon the basics or modify curriculum with each new trend or technique. Who's to say what's right when it's 2 in the morning and the harmonica part is lost and the mix is due in the professor's inbox by 8 a.m. We get an education so that we learn how to think, how to solve problems, how to advance our art.

Appalachian State University, pictured on this month's cover, has chosen music as the bedrock of its four-year recording education. Other schools might lean toward the GUI and the newest technology's feature set. There's room for multiple approaches. But it's important to remember that The Binary Construct breaks down once you engage a room full of musicians and hit Record. Then it's just time to jam, and there is no right or wrong.



Tom Kenny
Editor



Sound for Film 2016 Wrap-up From Sony Pictures Studios

More than 500 audio professionals turned out for the third annual Mix Presents Sound for Film, a daylong event featuring product exhibition and expert panel series, held on the Sony Pictures Studios lot in Culver City, Calif., on September 17. The theme for 2016, “Film & Television: A Merging of Art, Technique and Tools,” was chosen to reflect the changing nature of both how visual content is produced and distributed.

New this year: The Production Sound Pavilion, featuring a Parade of Carts, where production sound mixers showed off their rigs and the Cinema Audio Society presented workshops; the Virtual Reality room, where Dolby showcased Atmos at Home and Atmos for VR in a small-room environment, and with headsets; and the Sound Reel Showcase, where Formosa Group assembled eight-minute sound clips from some of the year’s major releases, presented in the Holden Theatre with introductions from the sound teams.



“The new programming really helped round out the event and bring in a full range of audio professionals,” said Tom Kenny, editor of *Mix*. “And this year our anchor sponsors added exceptional presentations. Dolby took over the executive screening room and the Kim Novak Theatre, showing everything from Cinema Tools to Audio for VR. Avid showed its S6 in the Cary Grant Theatre and had a packed panel on sound for *Stranger Things*. JBL again built its Dolby Atmos mid-

size rig inside a TV stage and wowed everyone with its 7 Series monitors. Yamaha/Steinberg revealed how Nuage is tailor-made for object-based audio. They all really stepped up.”

Mix Presents Sound for Film was held at Host Sponsor Sony Pictures Studios and produced in conjunction with Event Partners Motion Picture Sound Editors and Cinema Audio Society. Additional sponsors included Westlake Pro, Audionamix, Meyer Sound, Auro Technologies, Lectrosonics, Audio Intervisual Design, and RSPE,

For more photos and podcasts from the event, including the keynote speech from re-recording mixer Gary Bourgeois, visit mixonline.com.



Mix Nashville/HOW Nashville 2016

Mix Nashville returns to Music City on November 12, 2016, at Belmont University’s Johnson Center and at Music Row Studios. And this year, to add to the program, *Mix* has partnered with sister publications *Pro Sound News* and *Sound & Video Contractor* to introduce HOW Nashville: Expanding Your Mission Through A/V Integration. Mix Nashville/HOW Nashville provides a full day of manufacturer exhibits, master classes and demonstrations of the latest technologies, including behind-the-scenes studio tours along the famed Music Row.

The event features panel discussions presented by leading producers, engineers, artists and music industry professionals: The New Studio Business: Versatile, Affordable and Artist-Centric; How Records Are Made Today, Part I; and, following a provided lunch, Part II. From 4 p.m. until 7:30 p.m., attendees will receive a tour of some of the finest facilities Music Row has to offer, followed by a Closing Party at Ocean Way Studios.

The HOW Nashville one-day intensive event will provide insights and hands-on opportunities to learn how to integrate A/V into an existing facility or into plans for a build, expansion or renovation.

Plus, be sure to check out the Exhibition Hall, where leading technology companies showcase their latest in speakers, microphones, DAWs, plug-ins, outboard gear and recording services. Go to www.proaudioliveevent.com for more information and to register.



Photo: Merrick Morton

CAS Filmmaker Award to Jon Favreau

Actor, writer, director and producer Jon Favreau will receive the Cinema Audio Society Filmmaker Award at the 53rd Annual CAS Awards on February 18, 2017, at the Omni Los Angeles Hotel in downtown Los Angeles. Presently, Favreau is an executive producer on the TV series *The Shannara Chronicles*, which was recently renewed for a second season. Favreau will be the 12th CAS Filmmaker Honoree.

“Having worked with Jon on multiple projects, including the iconic *Iron Man* films, I am particularly pleased to announce the selection of Jon Favreau as the recipient of the CAS Filmmaker Award,” says CAS President Mark Ulano. “Jon has been a steadfast presence humanizing his storytelling with intelligence and skill. His light touch continues to produce engaging classics, from *Elf* to *The Jungle Book*. As a director, actor, producer, his ubiquitous creativity continues to entertain millions and makes him a wonderful choice for the CAS Filmmaker Award.”

Also being honored that evening with the CAS Career Achievement Award is previously announced recipient John Pritchett, CAS. During the awards ceremony the CAS will also present the CAS Student Recognition Award to one of five student finalists.

The 53rd CAS Awards will honor Outstanding Achievements in Sound Mixing in seven categories. ■

Product Hits From AES 2016

By Kevin Becka

There were a lot of new audio products for a relatively small show, so let's get right to it.

Coming in both rack and 500 Series format, the RSPQ2 from AEA features a new look with custom knobs and color, front-panel ¼-inch direct inputs, post-mic and pre-EQ inserts, switchable phantom power, polarity, and mic/line mode with corresponding LED indicators, 81dB of clean gain, and 63k-ohm XLR input.

Avid Pro Tools 12.6 brings solid new features that will change workflows for all users. There is a new shortcut for auditioning playlists, advanced and quick fade editing, and clip-based processing, which for starters includes dedicated, real-time EQ and dynamics taken directly from the Euphonix S5 console. There is also layered editing meaning laying clips over clips is nondestructive if they're removed—clips below remain intact. An SDK is available for third-party developers.

API debuted its Legacy AXS analog console, with the first board sold off the show floor to Strange Weather in Brooklyn. Legacy AXS returns to a 1.5-inch module width, allowing for 500 Series EQs on a per-channel basis, access to two API 200 Series slots, and a new center section for 5.1 monitoring. API entered the pedal market with the release of Tranzformer LX Bass Pedal, incorporating API circuitry and combining an API 525 feedback-type compressor with a bass-optimized 3-band equalizer, both independently in/out switchable.

The M5P passive mastering monitor bowed upstairs in Dynaudio's listening suite. Features include a 5-way cross-over feeding 4x7-inch woofers, 2x5-inch midrange cones and 2x28mm tweeters with crossover frequencies at 290 Hz, 480 Hz, 2.2 kHz and 8.5 kHz. The frequency response covers 28 Hz to 25 kHz, and the speakers are capable of handling up to 550 watts at 4 ohms.

Radial Engineering showed a range of products including the LX2 and LX3 line splitter/attenuator allowing users to send a single source to two different destinations at once without noise, and the ability to attenuate the input signal and tame hot outputs (LX2 only). Also bowing is the Studio Q desktop talk-back system and the JDX Direct-Drive that simulates the sound of a guitar amplifier while doubling up as a direct box.

BAE announced the shipping of its G10 500 Series graphic EQ and a new guitar pedal, Hot Fuzz. The unit is a dual-stomp effects pedal that combines the power of a classic top boost with a premium '70s-style fuzz.

Shure announced the introduction of a 50th Anniversary model of the SM58 featuring a new finish and look. The company also shared that the Microflex Advance Ceiling (MXA910) and Table (MXA310) Array microphones are now shipping.

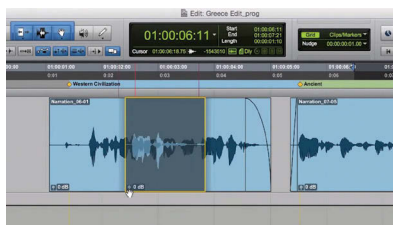
Sennheiser unveiled the HD 280 PRO headphones with a THD of 0.1% with detailed, linear reproduction spanning a frequency response of 8 to 25,000 Hz. The headphones feature a single-sided, coiled cable with 3.5 mm/6.3 mm plug and impedance of 64 ohms ensuring universal connectivity.



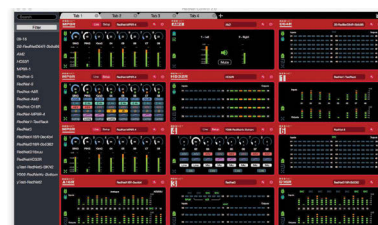
Dynaudio M5P monitor



Audio-Technica ATM350D Drum Mounting System



Avid Pro Tools 12.6



Focusrite RedNet Control 2.0



Radial Studio Q



QSC TouchMix-30 Pro



Shure SM58 50th Anniversary mic



Ocean Way Audio HR3.5 Reference Monitor

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Michael Trent and
Cary Ann Hearst



Photo: Leslie Ryan McKellar

SHOVELS AND ROPE

Growing *Little Seeds* at Home Is a Family Affair

By Barbara Schultz

I don't know how they made this record, to be honest. I was on call, basically on Louie's schedule," says engineer Andy Dixon, marveling at Michael Trent and Cary Ann Hearst's time-management skills, as well as their artistry. "Mike and Cary are superheroes. Their talent is mind-blowing. I'm wildly fortunate to have anything to do with their music."

Husband and wife Trent and Hearst comprise the two-person band Shovels and Rope, and they have just released their third album, *Little Seeds*, a dynamite collection of

post-punk rock 'n' roll songs, with occasional folk leanings. And Louie? That's Trent and Hearst's baby girl, Louisiana, who was born just before tracking commenced.

Anyone who's tried to do pretty much anything with an infant in tow would be impressed: Not only do Trent and Hearst write all of their own tunes, and play and sing all of the parts, but Trent also does most of the recording, in their Charleston, S.C., home studio, Studio Bees.

"We just go right from songwriting into recording," says Trent. "We're very much a team

in the writing department, and when we get a nice pile of songs together, and we come home, we flesh them out in the studio."

"Michael goes mad-scientist in there, and he and Cary build the track up as it's written," Dixon adds. "He would have me come over and help track drums, for example, but that wouldn't necessarily be the first thing to get cut. My involvement was piecemeal, whenever he wanted help."

Trent's recording platform is Logic, which he says he appreciates particularly for its editing capabilities. "Almost everything is inside the

box,” he says, “but I do have a Retro Powerstrip that we run a lot of vocals and overheads through, as well as some decent preamps.”

Over the past few years, Trent and Dixon have acquired many of the same pieces of gear, partly because of similar sensibilities, and partly because it helps them join forces. Both use the Universal Audio Apollo Quad interface, and both make frequent use of Peluso mics (a P12 for Trent, and a 2247SE for Dixon). So there are common sonic touches on many of the tracks on *Little Seeds*. However, the process for building each of the songs was unique.

“Drums are always a good thing to have down first; it makes things easier,” Trent says. “But every song was different. Sometimes we’ll get a guitar and a vocal down, and build everything around that.”

On the lead track, and first album single, “I Know,” guitars came first.

“On that song, I was specifically inspired by the Jesus and Mary Chain recordings, and also by this Tom Waits song, ‘Goin’ Out West,’” Trent recalls. “We started that one with an acoustic guitar and both of us singing at the same time, just to get the structure and the vibe, and then I put down some of the heaviest guitars that I could dial up.”

For all of the guitars on *Little Seeds*,” Trent played a Loar 301T thin-body archtop through a Fender Blues Jr. amp, close-miked with a Shure SM57 and a Coles 4038 in the room. This track also featured an MXR Octave fuzz pedal. “And I think we went back later and tracked some additional feedback, just to get it as hairy as possible,” Trent says.

“The other main instrument on the track is a microKORG synth with an organ sound octaved down, run through a Big Muff [pedal],” he continues. “I actually run that keyboard through a Blues Jr. as well. A lot of times, we’ll run the microKORG through a fuzz pedal—run it out of the amp and close-mike it with a 57, and we’ll put a Coles 4038 in the room, same as the guitar.”

As they do in many instances, Trent and Hearst recorded their vocals for “I Know” together, sharing a Peluso P12 mic. “We set it up in figure-8, and we can get a lot of our final takes that way,” Trent says. “There’s a lot of push and pull in the way that we sing, so it works out well for us to cut those live.”

Trent recalls that drums—most of which Trent played on the album, though Hearst plays half the drums live—actually went last on this particular song, and Dixon was on hand to help. He used an Electro-Voice RE20 on kick, 57 on snare (top only), and his and Trent’s Peluso mics as overheads. “That P12 gets all the air,” Dixon says, pointing out as well that the room sound of Studio Bees, captured by a Coles 4038, is a big part of the mighty drum sounds on *Little Seeds*.

“When you’re tracking in there, you definitely want to capture the room sound, it just sounds so great,” Dixon says. “It has vaulted ceilings, and it’s perfectly treated, in my opinion; it has just enough reflection but is really warm-sounding. It’s just one big, open room, which is how Michael prefers to work, and I do, too.”

Dixon mixed *Little Seeds* in his own home studio, also in Charleston. “This town has an amazing network and community of musicians and just all around great people,” the engineer says. “The music community is really close-knit. It’s a place where an artist can record an album they’re happy with, affordably.”

Dixon’s home studio centers around Pro Tools 12 and his Universal Audio Apollo interface, as well as API and UA 6176 preamps, and Neumann KH120 monitors. He says that his UAD plug-in suite makes up more than 90 percent of what goes into his mixes, particularly when it comes to compression and EQ.

“I love their 1176s,” he says. “The LA2 plug is probably somewhere on every song, and the Neve

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Studio Bees in Charleston, S.C.

1081 EQ is really strong and works really well on guitars. For vocals, I use their Pultec; the air of that is so nice.”

On drums, Dixon makes use of the UAD ATR-102 and Studer A800 plug-ins. “I use those things for color,” he says. “I’m mostly trying to get harmonic content from the tape saturation, with an EQ after it to calm any weirdness that results. I will also turn on the Neve 1073; I think just the color it imparts is nice.”

Dixon will also use some of the same plug-ins on Trent and Hearst’s vocals, but he says most of their dynamic, sometimes distorted vocal sound is already developed before the tracks come to him.

“That’s something I love about the way Michael works; he’s not scared to print stuff,” Dixon says. “I feel like people do that less now that we have such great-sounding plug-ins. But Michael will use that Retro Powerstrip—if he wants the vocal crunch, he’ll push it hard to that.

“It truly is amazing the way Michael is able to seamlessly slip in and out of different parts of the process, from writing to arranging to producing to recording the overwhelming majority of the song,” Dixon concludes. “With most people, if they wrote the song, it’s hard to have that much perspective, but he never seems to have that problem. It’s a rare skill set. And all with a new baby at home. Scientists should study his brain.” ■

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DWIGHT YOAKAM

Vocals for Country Star's Bluegrass Album

On Dwight Yoakam's latest album, *Swimmin' Pools, Movie Stars*, the country star covers himself, reinterpreting his hits, and adds a cover of "Purple Rain," in bluegrass arrangements. Yoakam and his co-producers, Gary Paczosa and Jon Randall, put together an all-star band, including guitarist Bryan Sutton, strings player Stuart Duncan, bassist Barry Bales, banjo player Scott Vestal, and mandolin player Adam Steffey. Yoakam plays acoustic guitar.

Band tracking took place with Paczosa at Zac Brown's Southern Ground Studios in Nashville, and then Yoakam took the tracks to L.A., where Marc DeSisto—who also worked on Yoakam's *3 Pears* and *Second Hand Heart*—engineered all of the album vocals. Those sessions started with lead vocals at Capitol, with Paczosa and Randall on hand. And then Yoakam and DeSisto kept going after the co-producers went home, visiting EastWest Studio 3, Henson Studios, and Capitol again to get the final takes.

"We moved around a bit because of schedules and studio time availability," DeSisto says. "Dwight likes to spread the vocals out a bit because he is producing his vocals as we record, making changes and trying different approaches. He would listen and make sure the vocal had energy to it, come up with ideas and work on the phrasing he wanted."

DeSisto's vocal chain for Yoakam is the go-to setup that he's been using for the artist for several years, with slight variations, depending on studio inventory: a Neumann U47 (or 48 at Capitol), a Telefunken V78



Photo: Emily Joyce

mic pre, and then a Fairchild compressor.

"Each studio had a Fairchild, and they are all calibrated a little differently," DeSisto says. "So before each session, I'd put a tone through it and see where unity is, and try to match my setting to the notes I had on what I'd done from room to room, also keeping serial numbers of the microphones we used in each studio."

"All of those studios have independent headphone mixers," he adds. "We'd have a rough mix going in the control room, and we can patch in separate inputs to the mixer so Dwight can make a headphone mix he wants to sing to."

For backgrounds, Yoakam enlisted Jonathan Clarke, Brian Whelan, Davey Faragher and Brian Joyce; they worked in various configurations, with Clarke in the center. "Jonathan is so good with Dwight's direction," DeSisto explains. "Brian Whelan was touring, so Davey came in, and then we added Brian Joyce for another texture." —*Barbara Schultz*

'GREGORY ALAN ISAKOV WITH THE COLORADO SYMPHONY'

Gregory Alan Isakov With the Colorado Symphony is a singer/songwriter-meets-classical album that pairs Isakov's gentle, intimate voice with moody orchestral parts. It was conceived as a live album: producer/engineer Jamie Mefford would record Isakov performing with the symphony, playing and singing his original songs while Scott O'Neil conducted new scores arranged by violinist Tom Hagerman (Devotchka) and singer/guitarist Jay Clifford (Jump Little Children).

However, the artists and producer Mefford ultimately decided to go with a cleaner, more studio-style approach. "They have a recording setup with Logic in Boettcher Hall, where they perform," Mefford says. "We went in with our scores and we gave them click tracks."

Symphony sessions were miked systematically, where the first and second musicians in each section would be close-miked, and the remaining members as a group. Mefford made use of the symphony's extensive inventory of Neumann D Series mics; models included the DM184D and Do1, and the KU 100 binaural head microphone. "Their entire system is digital, starting from the microphones," Mefford says. "It was a full-size symphony, and we came out with 74 or 75 tracks."

Mefford and Isakov took the orchestral tracks over to Isakov's person-



Gregory Alan Isakov

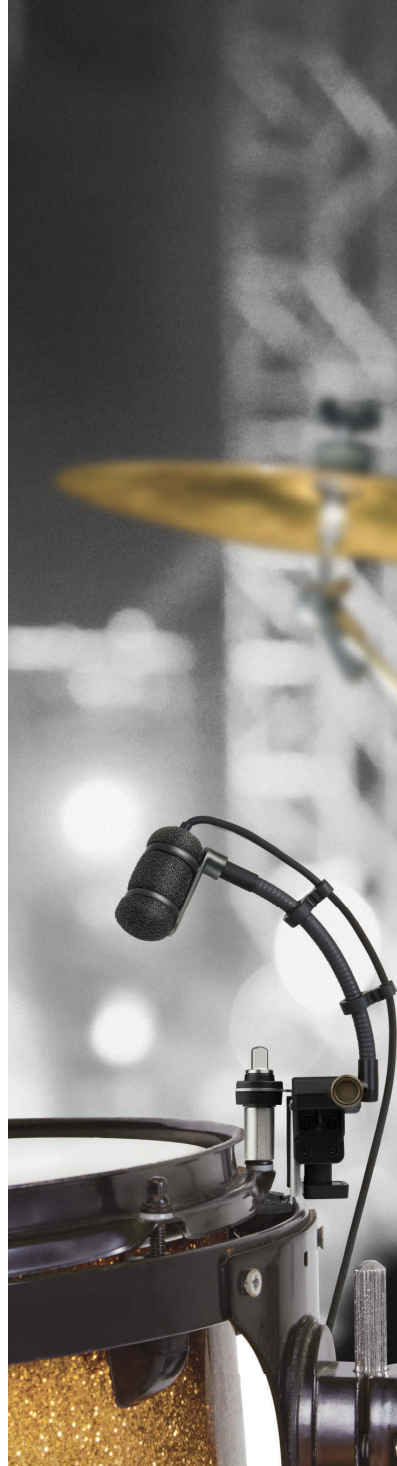
Photo: Rebecca Caridad

al studio, which is installed in a barn on the farm where Isakov lives. There, Mefford recorded Isakov and his band: Jeb Bows, fiddle; Philip Parker, cello; James Ham, piano; John Grigsby, bass; Julie Davis, vocals; Steve Varney, electric guitar, banjo and vocals; and Mefford playing organ, synths and additional electric guitar. Those sessions were recorded to Pro Tools; Isakov's guitar and vocals were among the last parts to be done. "He played a lot of acoustic guitar on this record," Mefford recalls. "We miked that with a Royer 122 and

a Neumann U87, blended together, into a Vintech 72 preamp and a UA 1176."

They tracked Isakov's voice to Mefford's Flea 47 microphone, through a Classic Audio Products CAPI VP28 pre, into a Retro Double Wide compressor and an IGS Rubber Bands EQ.

"It was an interesting project, just to take that many tracks and put everything together. It ended up being more than 100 tracks of audio; just keeping organized was a handful," Mefford says. "We mixed in Pro Tools. We also did a mix outside of the box. We tried all different kinds of summing. And ultimately, we mixed down to a Tascam ATR-60 16-track 1-inch tape machine and summed analog back into Pro Tools. That tape machine won. It gave the album more of a 'record' feel. Everything just instantly sounded more together and more classic." —*Barbara Schultz*



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KEITH URBAN AT EASTWEST

Keith Urban talked about his life, his ups and downs, stripped down the songs on his newest album, *Ripcord*, performed pieces of songs accompanied by some of the key players, and charmed an invited guest list in an intimate presentation on September 22 in EastWest Studio One's legendary room.

The four-time Grammy winner is becoming pretty legendary himself, breaking records everywhere. "Wasted Time" from *Ripcord* is his 21st Number One song, making Urban the artist with the most consecutive top 10 songs on Billboard's country chart.

Grammy Foundation vice president Scott Goldman moderated the discussion with Urban, weaving him from his early life in Australia to his journey to Nashville in 1989.

Urban talked about the 10 years it took him to make his first album and the trust he needed to build in the Nashville community before they could take him seriously. Since he was on a visa, each time he had to return to Australia, the Nashville folks thought he was not coming back.

Addressing *Ripcord*, which debuted on the country charts at Number One, Goldman and Urban detailed the writing, production and instrumentation, which included Nathan Barlowe on what he developed and dubbed The Phantom System, a MIDI triggering sample system using four iPads with an Akai MPD 232, which acts as a mixer with 16 pads of its own.

About the second single, "Break on Me," another Number One country hit, Urban talked about creating simplicity.

"Growing up with those Don Williams records still has an influence on me," Urban said. "It was really Garth Fundis and him who made those



From left: busbee; Scott Goldman, Vice President, Grammy Foundation; Cindy Mabe, President, Universal Music Group Nashville; Keith Urban; and Greg Wells.

Photo: Chris Schmitt Photography. © 2016.

records, and it was masterful in minimalism. Sometimes that's the hardest thing to do. It's like the audible version of what Dolly Parton says: 'It costs a lot of money to look this cheap.'

He wrote "The Fighter," with busbee in London. "I wanted a simple conversation between a guy and a girl," Urban said. "We finished the bridge in this room." They had to record Carrie Underwood's vocals in a studio in St. Louis before her gig, while Urban Facetimed during his video shoot for "Wasted Time."

Touted as his most experimental record, Urban enlisted musicians not always thought of for "country" records, such as guitarist Nile Rodgers, rapper Pitbull, bassist Tal Wilkenfeld, and drummers James Gadson and Matt Chamberlain. "The initial thing I wanted to do was get [Rodgers] into a studio and take my 6-string banjo and have him play his funk thing he does and see if the banjo would go with it," Urban said, demonstrating his banjo along with Rodgers' part on "Sun Don't Let Me Down." —*Robyn Flans*

JAMIE LIDELL BUILDS A BEGINNING

In the two decades Jamie Lidell has been releasing music, he has swung from abstract electronics to authentic soul. No matter the style, it has always been Lidell's wonderfully warm voice that has been not just the connecting thread but the standout characteristic.

It took four years to complete his latest album, *Building A Beginning*, the first on his own Jajulin Records. Lidell worked in Coney Island Studios (Los Angeles), Red Bull Studios (New York City), and Sound Emporium Studios (Nashville)—where the ex-pat is based—but mainly in his home studio. "It's better for me there than in a traditional studio," says Lidell of this space where sketching and finishing always happens. "Even with its limitations, I feel I can control it. I like the weird DIY nature of having to work out which place sounds better to track. It gives you something unique you can't get in a big studio."

It is here that Lidell cut his signature vocals—which on *Building A Beginning* are sounding more than ever like Stevie Wonder. Lidell borrowed a pair of 1961 short body U 47 microphones and worked them to death in a variety of ways. Selling his SSL E Series console, he brought in two UA 2100 and two Quad Eight 310 channel strips, as



Jamie Lidell plays with his son, Julian, at his home studio.

well as a Chandler Curve Bender. These he used in a number of combinations to get as dynamic as possible.

"The majority of the time I sat with the monitors and microphone so I could operate the computer while I was tracking," he says. "I'd work late into the night, very relaxed in my chair, listening to takes, tones, my voice, taking my time and experimenting with ideas. I'm liable to go completely crazy and do far too many takes. There'll be lines I'll go over 30, 40, 50 times, but it's not doing any good. It's a combination of vocal technique, engineering and the psychology of myself."

Lidell also used his voice to communicate his ideas to the viola, cello and harp players.

He sang 10 different vocal lines, which he had transcribed into score. Recording a layer at a time, the string musicians switch places using three microphones to mimic the ambience of multiple players of the same instruments sitting in different locations of a room. This helped a great deal in making the overdubs sound genuine.

"I always make everything complicated," Lidell admits. "I'd love to be in a position where I'm in one room with a set of instruments, hit record and that will be it. But it never seems to work out that way." —*Lily Moayeri*

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Classic Tracks

By Robyn Flans



“HOW SWEET IT IS (TO BE LOVED BY YOU)”

James Taylor

How sweet it is! The James Taylor track of that name with Carly Simon vocals and a David Sanborn sax solo went to Number 5 on the Billboard 100 in 1975, dominating radio and adding a sweet voice to the din of the turbulent mid-1970s.

The Russ Titelman/Lenny Waronker production of “How Sweet It Is (To Be Loved By You)” became the most successful version of the Holland-Dozier composition, originally recorded by Marvin Gaye in 1964.

Titelman and Waronker produced about 15 projects together, and speaking of their teamwork, Waronker says, “When you’re working with somebody, you have to have the same aesthetic. Russ and I had been really close for years. I had ultimately convinced him to come work for Warner’s. He wasn’t sure he wanted to work for a big company, but it worked out really well. I think we had the same taste for the most part.”

Waronker adds that their mutual knowledge about songs allowed them to bounce off of one another well, and Titelman’s temperament balanced his personality perfectly. When Waronker got negative, Titelman calmed him down.

“He’s upbeat and has a real sense of enthusiasm,” Waronker says. “I tended to get a little nervous if things weren’t going quick enough. Plus,

Russ was the musician who could play. Obviously, I was musical and have been around it my whole life and know the language, but I always felt more comfortable when there were specific musical things driving us nuts because he could deal with that.”

As they were making Taylor’s *Gorilla*, Marvin Gaye was on their radar when they were searching for a cover song.

“Lenny and I were looking for a cover song because [James] had had success with covers,” Titelman explains. “We had great songs he wrote, but we thought, ‘Let’s get a hit, let’s do a sure thing.’ So we started throwing around ideas. I wanted to do ‘Stubborn Kind of Fellow,’ Marvin Gaye’s first hit record. I put that song forward, and they went, ‘No, maybe not,’ and then I thought some more and said, ‘Well, what about ‘How Sweet it Is’? And they said, ‘Oh, that’s a good idea.’”

The track was recorded at Amigo Studios in Los Angeles, which Titelman recalls had an API board and Ampex tape machines; Lee Herschberg engineered. They knew they wanted to use Taylor’s band musicians—Lee Sklar on bass, Russ Kunkel on drums (and tambourine) and Danny Kortchmar on electric rhythm. Then they added piano from Clarence McDonald, who Titelman says he was working with on another project, to bring a touch of Motown to the blend.

At some point, in order to differentiate the Taylor version from the Marvin Gaye original, Waronker came up with the idea to use two drummers on the track, so he brought in Jim Keltner. “You get two guys like that in the room and it makes the room that much more powerful,” he says.

“I remember that Jimmy Keltner was playing these little upbeat things on the hi-hat, not consistent, so it kind of made the thing have this really beautiful bounce,” Titelman adds.

Keltner remembers the session well. He says they didn’t talk about it beforehand; they just sat down and played. While he says he did supply a little backbeat on the choruses, he played only hi-hat on the verses.

“Russ [Kunkel] has always been one of my favorite drummers, and favorite people. One of the sweetest people in the world,” Keltner says. “That night, as usual, he played beautiful—he played the tom-tom fills going into the chorus and I stayed out of all that, and then when we got down to the groove, I played the hi-hat as if that was the way I would be wanting to play the groove. So it had a nice little swingy kind of feel to it.”

When it came time to record Kortchmar’s guitar part, they still had in their minds Curtis Mayfield’s “It’s Alright,” which they were originally going to cut.

“I remember we started running the track, and we ran it a couple of times and went back in the studio to make suggestions to the musicians and I was walking with Lenny,” Titelman recalls. “Lenny leaned over to Danny and he said play the ‘It’s Alright’ part to Danny. That’s how that those little things all came together.”

“He killed it and that was the final thing,” Waronker says. “The personality started to take shape. And once James voice was on the thing, it was its own thing.”

They recorded Taylor's lead vocals first with either a Neumann U 87 or U 67, Titelman believes, with Taylor singing a few versions that would be composited later. Then they cut the background vocals, which Waronker says he almost hesitates to speak about, but admits was "typically me." He began to second-guess putting Simon's vocal on the track, afraid to mess it up.

"I just left and went out into the studio and laid down and dozed for a while," Waronker recalls. "I guess I had a lot of tension and stress about it. I got up and walked in and there it was. Obviously, those guys had made the right choices."

"There are times when you're producing a record where you have to know when to keep your mouth shut," he says, frankly. "When I walked in, I said, 'Oh, my God, you guys. That's unbelievable!'"

The last instruments to go on the record were strings and sax.

"I remember when we got together with Nick DeCaro, the string arranger, in Lenny's office, everyone made little suggestions as to what to do and where to play," Titelman says. "Lenny had an idea for the line in the B section of the verse and of course then you block it on where the strings play. It was very sweet, the arrangement."

David Sanborn on alto sax was the last piece of the puzzle. Titelman says it was Sanborn's first pop record and the idea to hire him came about one night as Titelman was driving Taylor back from the studio to the house the artist was staying at in Coldwater Canyon.

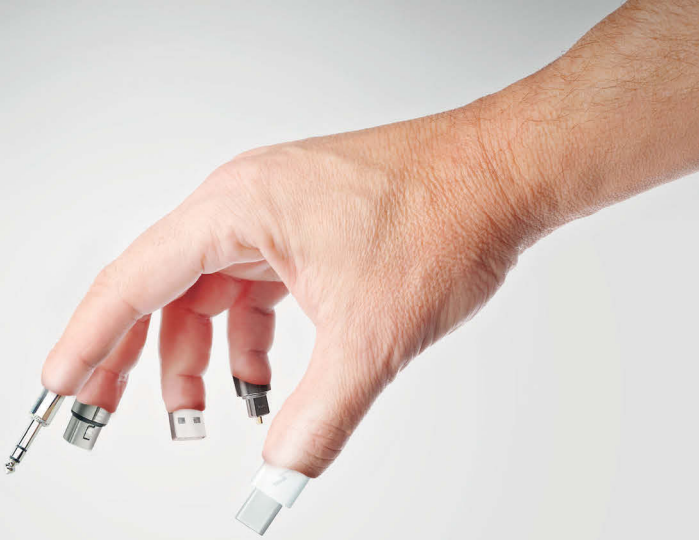
"We had been working on the record and I think we had most of the tracks cut," Titelman remembers. "One night on the way home, I said, 'Why don't we stop at Tommy LiPuma's house.' He was living in Studio City and on the route that we would take on the way home pretty much. It was about 8 o'clock or 9 o'clock at night and we went over to Tommy's, and Tommy had had a guest that he was entertaining named John Court, who was the partner of Albert Grossman. We were talking and he said, 'You should hear this guy, he's playing with the Paul Butterfield Blues Band,' and there was David Sanborn. We heard him and said, 'Let's call him and have him play on the record.' I don't even know if we knew which songs he was going to play on. We called him and flew him in."

Then they flew Sanborn in from Chicago. When they showed up to record Sanborn, he was already in Studio B, waiting for them.

"We open the door and we hear the saxophone playing," Titelman says, pausing to sing the theme from *I Love Lucy*. "We knew we were in for it. There was this very funny, weird, cool little guy playing TV themes. It was love at first sight. He was so funny and nice."

Sanborn recorded another song for *Gorilla* first—"You Make It Easy"—and then took a few passes at the solo for "How Sweet It Is." Then Sanborn went out into the coffee area. "Lenny and I made a composite out of what he did," Titelman says, "chose all of the best bits that had an emotional arc to it and he came back in and listened to it and said, 'Well, that's good. I wouldn't have played it that way, but that's fine.'"

"How Sweet It Is" came easily. Titelman recalls the track only took a couple of takes. Waronker says it took 45 minutes, and ultimately, he muses, it is all about collaboration. "When you're working with an artist, you're trying to help an artist and fighting as hard as you can to assure that their personality and character come out. Russ and I were very fortunate. Almost always we worked with very strong artists. Both of us were very sensitive to the fact that the artist, if they were as good as we thought they were, needed to be involved in a significant way. Personality was a big thing in terms of records. It was very important to us, and the only way that comes across is not only if you're working with the artist, but if you're pushing the artist in musical ways. So if Russ and I had an idea about an instrument or instruments, we'd talk to James about why we thought it would be a good thing. He was such a great musician, and that's what you find with great artists." ■



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Paul McCartney, left, played his first-ever gig in Hershey, Pa. (with the Beatles, Wings or solo) at Hersheypark Stadium during his recent One on One tour. Also pictured are drummer Abe Laboriel, Jr., right, and guitarist Rusty Anderson.



Credit: © 2016 MPL Communications Ltd./Photo: M.J. Kim

MCCARTNEY WRAPS ONE ON ONE TOUR

By Mark R. Smith

If you're working front-of-house for a rock legend—like Sir Paul McCartney—you know the nuances of a vast and various number of venues, no matter how similar some may seem. Just ask Paul “Pab” Boothroyd.

During his recent One on One tour, McCartney made his first-ever visit to Hershey, Pa., on a summer's night at Hersheypark Stadium, which comprises two football field-long sections of concrete grandstands (and little else), with the stage in one end zone and the other open-ended; later in the tour came a two-nighter at

Washington, D.C.'s, Verizon Center, a typical indoor sports arena.

With the last leg of One on One in the rear view, McCartney's band of about 15 years—which includes guitarists Rusty Anderson and Brian Ray, keyboardist Paul “Wix” Wickens and drummer Abe Laboriel, Jr.—and the crew are preparing for two nights in Sacramento, Calif., before two highly-anticipated, open-air concerts during Desert Trip, in the Southern California town of Indio, on October 8 and 19.

Boothroyd—or “Pablo on the sound,” as Sir

Paul likes to shout-out—has been McCartney's soundman since he returned to the road after the release of *Flowers in the Dirt* in 1989. He has been mixing McCartney's latest worldwide trek from an Avid Venue S6L console.

TECH HAPPY

Boothroyd has been mixing since late last year on the Avid S6L, which features full 96kHz Pro Tools integration, making it a fine choice for archiving the content from McCartney's 2-hour, 45-minute shows.

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In like manner, the Mix With The Masters residential seminars are held at the Studios La Fabrique in the South of France, which is the perfect setting to both learn and relax. Each weeklong seminar includes, among other activities, a series of discussions about production techniques, mental and philosophical approaches towards mixing, career advice, workshops, during which the guest speaker tracks a band, and mixes in front of the attendees, as well as giving them feedback on their own projects.

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The S6L is “stable and I have no problems with it,” Boothroyd says, noting the ease of making software updates and tweaks. “It’s very powerful and has massive capability.”

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Essentially, the S6L allows Boothroyd to create bigger, better mixes. That’s crucial for an artist like McCartney, who plays a varied set, from staples like “Band On The Run” to occasional inclusions, like “A Day In The Life,” which encompass varied style sequences.



System engineer Dave Coyle, left, of Clair Brothers, and McCartney front-of-house stalwart Paul “Pab” Boothroyd, hit the Pause button after soundcheck for a quick snap on McCartney’s second night at Washington, D.C.’s Verizon Center.

Photo: Mark R. Smith

“There are endless capabilities within a song,” he says, noting that he also still mixes manually, like at the end of “Golden Slumbers/Carry That Weight/The End.” “I don’t get too tricky with it. People and engineers need to remember that the sound comes from the source. I fine-polish my end, but I don’t overdo it.”

INSIDE/OUT

The P.A. system comprises three hangs (16, 12 and eight CO-12s) from Lititz, Pa.-based Clair Brothers’ Cohesion Series, with 12am wedges and R4 sidefills (with an additional in-ear mon-

itor for Wix). It’s all run from an analog Midas Heritage H3000, with a sidecar run by monitor engineer John “Grubby” Callis.

The speaker arrangement is also a new for the crew, says system engineer Dave Coyle. “We’re trying to cover 360 degrees,” he says, noting that the old speakers weighed 255 pounds each, and the new Clair models only weigh 149 pounds each. “I can run them off of a single-amp power source.

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bleed and feedback."

~ Jim Warren

FOH: Radiohead, Arcade Fire, Nine Inch Nails, Peter Gabriel

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INSIDE

That's half of the energy we used to need."

The CO-12s also affect the way that Boothroyd mixes the show (he mentions that earplugs are not needed at a McCartney performance). "The levels are about 105 decibels for the heavier songs, about 90 for acoustic," Coyle explains. "The sound is nice and clean, not brittle."

For mics across the stage, Boothroyd explains that he doesn't "just stick to one brand because of freebies. I use the right mic for the task at hand, and we also have a lot of pyro and concussion during 'Live And Let Die,' so it's not like I'm gonna use fancy, vintage stuff or ribbons, as they would just get punished."

It's mainly Audix/DPA on the drums, with a RØDE and Shure mix on guitars. "They seem to be doing their jobs just fine," Boothroyd says.

Boothroyd, who also tours extensively with AC/DC and has worked with the likes of Paul Simon and Faith Hill, also chimes in on how McCartney tours often include a mix of indoor and outdoor shows, though he prefers stadium dates. "A sold-out stadium, that's the best feeling ever," he says. In the case of Hersheypark Stadium: "It's open and long, so the sound washed right over the audience and escaped beautifully."

Sports arenas, on the other hand, present various challenges. "They're generally not designed with acoustics for music in mind, because for sports, they want the crowd to sound big," he says. So Boothroyd scans each arena for normal reflections. "Corporate facilities are built with concrete and glass, and plate glass is highly reflective, so you avoid it," he explains. "Plus, you may have a scoreboard to deal with."

As sports arenas go, he says Verizon Center "isn't so bad, because of the relatively small amount of glass in the seating bowl and the acoustic panels in the ceiling. In many sports arenas, [making that addition] is a cost issue."

Another circumstance to address with McCartney shows is the fact that, oddly enough, his shows sell well. "That means that the front-of-house is always moved back on the floor," Boothroyd said. "That's not the best place to mix."

DESERT STORM?

Then, there are locations like the Desert Trip, which was held in mid-October at the Coachella/Stagecoach site, at Empire Polo Grounds in Indio, Calif. It "includes numerous areas for the festivalgoers to hang out," Boothroyd says. "It's going to be one big stage in the middle of one end of the field," with two outer sections of temporary seats.

"But the main problem [with this setup] is that the site is very, very wide," he says. "The careful placement of audio delay towers has already been worked out" by Clair Global. "I believe we have 36 delay locations, with, of course, substantial stage hangs, with subs and front fill as necessary."

While that sounds great, Boothroyd knows what can happen during an outdoor show and always offers a nod to Mother Nature.

"I think the biggest problem could be wind, or even dust, storms," he says. "Let's just hope it's a peaceful evening." ■

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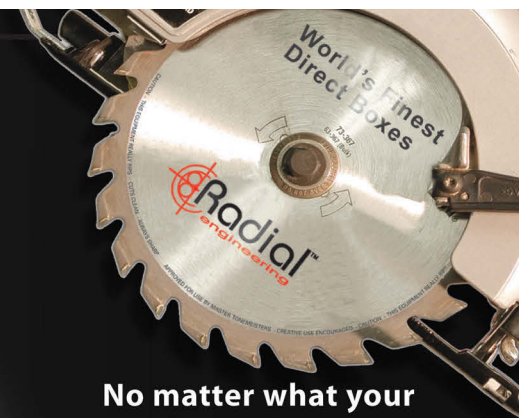
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WARREN HAYNES CHANNELS JERRY GARCIA, WITH SYMPHONY

In January 2016, Warren Haynes announced a revival of his Jerry Garcia Symphonic Celebration, where he and a band comprising drummer Jeff Sipe, bassist Lincoln Schleifer, and backup singers Jasmine Muhammad and Jacklyn LaBranch would do a one-week tour playing songs Jerry Garcia wrote and performed with The Grateful Dead. And they would be backed by the local symphony.

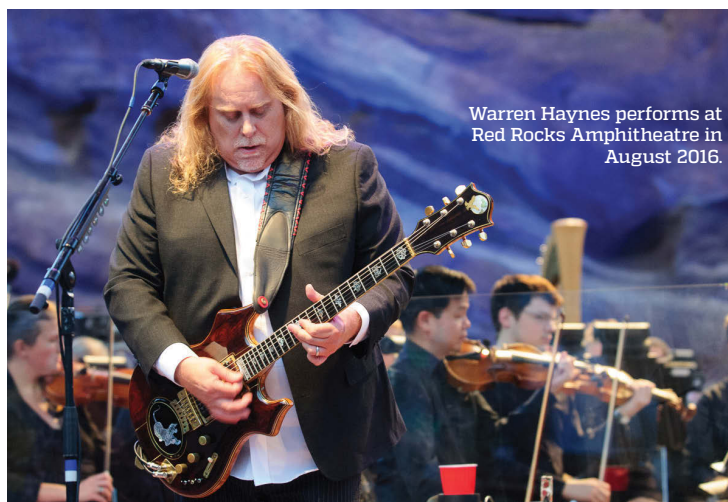
About one week before the show at Colorado's famed Red Rocks Amphitheatre, the news broke that for that show, which took place on Garcia's birthday, Haynes would be wielding Tiger, the guitar custom built for Garcia by luthier Doug Irwin.

Tiger, so named for the beautiful tiger inlay at the bridge, was the guitar Garcia played the most during his career in the Dead, and was the last guitar he played live. His regular guitar in 1995 was in the shop, and then his Rosebud guitar suffered technical difficulties, leading Garcia to play Tiger on the encore at Soldier Field in Chicago on July 9, 1995, the last show before his death.

Tiger was bought by Indianapolis Colts owner Jim Irsay at auction in 2002 for close to \$1 million (including commission), and hadn't been played in public since Garcia. Irsay loaned the guitar to Haynes for the Red Rocks show. Haynes also used it a week later in New York City at Central Park SummerStage.

The sound crew for the show at Red Rocks also went old school with analog consoles. "At Red Rocks I had a [ATI] Paragon 4, and Slim [FOH engineer] was mixing on a Gamble EX56. The Colorado Symphony was fed through a DiGiCo SD7," says monitor engineer Graham Mellor, who started working with Haynes' Gov't Mule in 2013. Bruce "Slim" Judd has been with Mule since 1989, and also worked with Haynes in the Allman Brothers Band before that.

"Dowlen Sound [DSI Event Group] provided the consoles and P.A. for the show," adds Mellor. "It was really great to get back to our roots on analog



Warren Haynes performs at Red Rocks Amphitheatre in August 2016.

Photo: Candace Horgan

for the evening, and there is nothing like the sound of strings and low brass through a good analog preamp like those on the Paragon. Those consoles have a comp built on every channel strip, so there was no outboard on the monitor end at all, except for the graphics. It was a pleasure mixing on it."

The P.A. comprised Outline GTOs for the main hang, Outline Butterfly for the downfill, and proprietary wedges ported for high altitude, 15-inch speakers with a 2-inch horn bi-amped on B&C components.

"They use a proprietary subwoofer, which we had nine per side in a cardioid setup," says Mellor. "At 6,400 feet, it's hard to move a lot of air, so their subs are designed and built for use in low pressure. Some of the best-sounding low end I've heard at over a mile high!"

Mellor got stems from the orchestra console (high strings, low strings, high brass, low brass, woods, percussion, piano, harp) for his monitor mixing. "It's a game of cat and mouse trying to find which microphones are too loud/soft and building a mix with the orchestra engineer every day is time-consuming, but fun. When it's finally dialed in, it's an amazing sonic experience." —Candace Horgan

CORINNE BAILEY RAE

British singer-songwriter and guitarist Corinne Bailey Rae has been busy touring behind her May 2016 release, *The Heart Speaks in Whispers* (Virgin/EMI), her third studio album and her first since 2010's *The Sea*. She began a new leg in the U.S. in August, which included a September 4 appearance with Stevie Wonder at Jazz Aspen Snowmass in Aspen, Colo., five dates with Alabama Shakes in September, and the Austin City Limits Music Festival in late September and early October.

Her new album is a lush, expansive, textured, and often buoyant work of R&B, pop and soul music with guests such as Esperanza Spalding and KING (Paris Strother, Amber Strother, and Anita Bias), among other collaborators. Bringing this music to the road is Rae's quartet of Steve Brown (musical director, keyboards, bass, backing vocals), Mark Walker (keyboards, bass, backing vocals), John McCallum (guitars and backing vocals) and Myke Wilson (drums and percussion).

"We are touring songs from the new album along with other hits, and I want the live sound to replicate the amazing textures of the original records," says Rae's front-of-house engineer Sam Hocking, who works



Corinne Bailey Rae in Seattle at Triple Door in June 2016.

Photo: Todd Berkowitz

with monitor engineer Lorien Edwards, production manager Mikey Jerku of 24/7 Productions, and tour manager Mark Pickard. "We're a self-contained production. In the U.S., we have been using in-house consoles. To help with this I tour my own outboard rack with effects. I am touring a Universal Audio Apollo with some of my favorite plug-ins. I utilize as many of the plug-ins I possibly can depending on what system I'm faced with."

Hocking calls Rae's vocal chain "the money channel. It's all about her voice being heard.

Her voice naturally sounds great when I just turn the mic on. The microphone of choice is a Sennheiser SKM5200 with an E5235 capsule. The rejection of spill has really blown my mind. I then have her going through a Neve 1073 preamp mainly for the color, an Empirical Labs Distressor, then through some minimal EQ, also reducing any frequencies that are prone to feedback whilst retaining high-fidelity audio, especially in smaller venues. Lastly, I use a beautiful Bricasti vocal plate.

"I'm not just an engineer for Corinne but a fan of her music," Hocking says. "I feel that you can tell when the FOH guy is actually into the music that he is mixing." —Matt Gallagher

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BUMBERSHOOT 2016

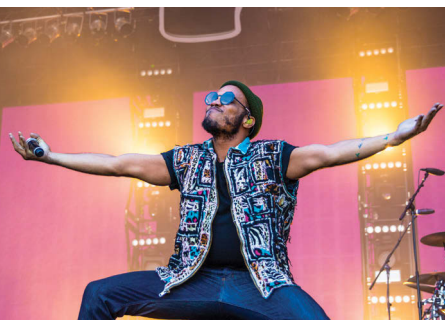
PHOTOS BY TODD BERKOWITZ // TEXT BY MATT GALLAGHER



Bumbershoot, Seattle's Music & Arts Festival now in its 46th year, is held at the 74-acre Seattle Center, home of the iconic Space Needle. This year's Bumbershoot took place over Labor Day weekend, from September 2-4, and presented a live music lineup of 167 artists and bands performing in Key Arena, Memorial Stadium (the Main Stage), Fisher Green Stage, Starbucks Stage at Mural Amphitheater, and Silent Disco at Experience Music Project Museum's Sky Church venue.

Pyramid Staging & Events of Auburn, Wash., helped with staging at multiple locations throughout the venue, and partnered with Carlson Audio Systems in Seattle, which handled sound reinforcement for the Main Stage (d&b audiotechnik J-Series P.A., d&b M4s for wedges, Avid Venue | Profile consoles at both FOH and monitors), Fisher Green Stage (d&b V-Series P.A., EAW MW12s for monitors, powered by QSC, plus Avid Venue SC48s at FOH and monitors), and the Mural Amphitheater Stage (EAW point source array, EAW MicroWedges at monitors, and Avid SC48 consoles). Carlson Audio has helped to support Bumbershoot since 1990.

Mix art director Todd Berkowitz was on-hand to capture many of the bands that performed, and we present them here.



Anderson Paak



Andrew Bird



Bishop Briggs



Secret Weapons



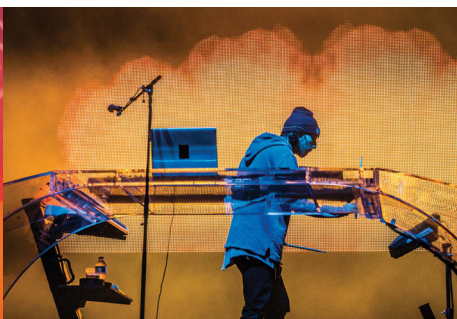
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DRAKE SUMMER SIXTEEN TOUR



Drake performed three nights in the Bay Area in mid- to late-September, two at Oracle Arena in Oakland and then at the SAP Center in San Jose, where *Mix* caught up with the audio team just a couple of weeks before the tour was postponed due to the artist's ankle injury.



FOH engineer Demetrius Moore is mixing on a DiGiCo SD7 console, which he says he's been using "for its warm, smooth, musical sound. For this tour I'm using all plug-ins instead of my analog outboard rack. I'm using an AMS RMX16 Reverb, Lexicon 224 'verb, H Delay and Eventide Black Hole. Then on outboard, a 737 Avalon for Drake's vocal." Drake's vocal mic is a Sennheiser 9000.

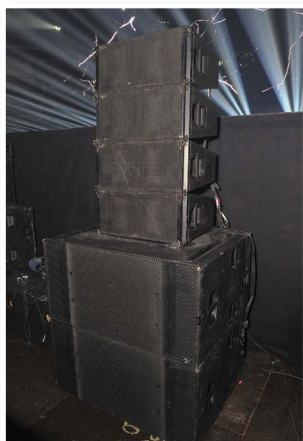
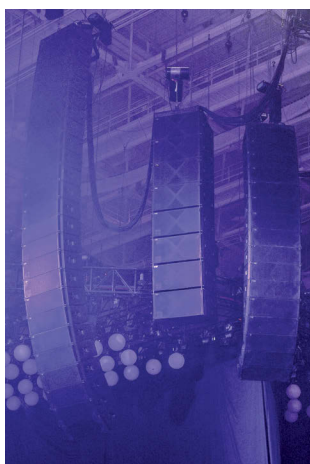
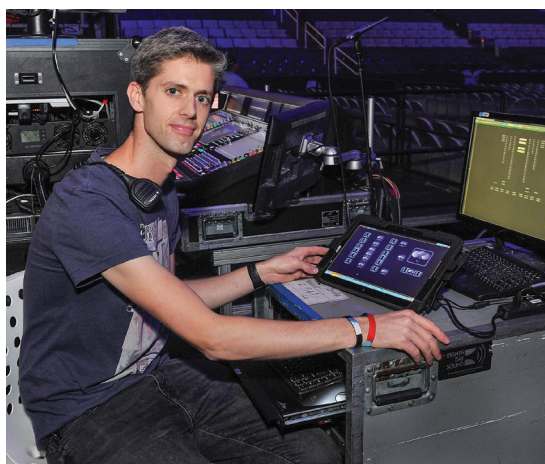
"I try to bring a clean, warm sound to the mix," Moore adds. "People might think it's a rap show that's just going to be all bass, no vocal clarity, with some feedback. That's quite wrong because you're going to get a big present vocal with a dynamic orchestration of music and a big bass sound. The combo of DiGiCo and d&b helps me achieve the musical sound that I'm after: Clear, smooth and in your face. The new d&b B22 is by far my favorite sub."



Monitor engineer Sean Sturge mixes on a DiGiCo SD5 and is "a big fan of the console's multiband compression. And I like the layout of the snapshot section with recall time duration and using timecode recall. I'm using two Waves Extreme Servers for the show, as well. This tour has been a real pleasure. To top it off, I'm touring with my son now that he's 21—Ryan Koolman, our stage left P.A. tech."



Drum tech John A. Cooper at the all-Sennheiser miked-up kit.



"We are using a d&b loudspeaker system comprising of J8/J12 subwoofers and B22 subwoofers, d&b's latest sub to be released," says Eighth Day Sound **systems tech Wayne Hall**. "We have their Y10P & V12 as front fills. **The main hang is 24 J8s per side** (array processed); flown-sub hang is eight J-Sub per side; side hang is 12 J8 and four J12 per side (array processed); the **B22 Subs** are used in a subwoofer array in front of the stage—nine stacks of two-high B22 subwoofers. The d&b's array processing on the main and side hang P.A. has proved useful. We're using d&b's array calculator and R1 remote network to assist in designing and using the system, and Dolby Lake Processing for handling all the loudspeaker tuning and AES distribution to racks."



Keyboard tech Dan Selim, left, with musical director/keyboardist Dalton "D10" Tennant. "D10 has been using Yamaha keyboards onstage with Drake for years now, most recently with the Montage series," says Selim. "His keyboard kit consists of a Yamaha Montage 8, Yamaha Montage 7, MiniMoog Voyager and Yamaha XF7."

"The MiniMoog Voyager is used primarily for synth bass during songs without tracks, or to freestyle bass parts on top of songs. It's a digitally programmable analog synth, so, some tuning is required. The Montage 8 is the default keyboard for Drake's solo vocal segments of the show and song transitions, using blended stock sounds of grand piano, Rhodes and strings that are adjusted on the fly using the Part Control faders that are accessed like organ drawbars. Drake often will sing with only D10's accompaniment, so the Montage 8 is turned way up in the mix, revealing every detail of the keyboard's output. Yamaha's Motif and Montage series have been a noticeably better choice when you need a rich and believable piano sound."

"The Ableton Live playback system is using two 'roided out MacBook Pro laptops sent to two UA Apollo i6 interfaces via Thunderbolt. The system is redundant and switchable from the A or B computer (for stable playback and for in-show edits), so there are completely different audio paths before reaching the three Radial SW8 switchers—the third being used for clicks, SMPTE timecode and accessory tracks. The system was built using Novation Launchpads, so songs using tracks can be started by multiple users, such as a playback operator, D10 or the DJ, Future The Prince. The MOTU MIDI interfaces are used to link the multiple Launchpads together. MIDI timecode is sent from the laptops' USB 3 into two Rosendahl MIF4 time-code convertor/generators and sent out via SMPTE audio to the DiGiCo FOH and monitor consoles so that snapshots are advanced as soon as the song is triggered."

On the Cover

By Tom Kenny // Photos Courtesy of Appalachian State University

APPALACHIAN STATE UNIVERSITY

Music Industry Studies in Hayes School of Music

The spacious, Walters-Storyk-designed live room, which can feed both Studios A and B. Inset: Kim Wangler, associate professor, director Music Industry Studies, and Scott Wynne, Associate Professor, Chief Audio Engineer.



“As with all of our degree programs, we continue to place emphasis and value on core musicianship skills, because we know they are essential to later musical and career achievements.”

THE PROGRAM

There are roughly 120 students within the MIS department at any one time, and recording and production accepts a maximum of 15 per year. Through attrition, that might dip to 10 or 12 by senior year. Class sizes are kept intentionally small, with support from the university, so that students can start hands-on training on Day One and receive personal instruction throughout. It also tends to foster cross-pollination and integration among students in MIS, and within the larger school of music. If you need a trombone player to replace a harmonica part, you can find four options down the hall. If you need help on a live performance in town, a recording student is there to record, and a marketing student will be there to promote it.

“Our dean has been so supportive of the department,” says Kim Wangler, director of the MIS department. “We have brought the program down in size a little bit so that we can focus on the quality and not the quantity of students. I teach a lot in the Core curriculum. My job with the engineers is to expose them to all aspects of the industry so that while they’re waiting for their recording career to ramp up, they can get jobs throughout the industry.”

Wangler is an interesting blend of a nurturing mother who meets every single student individually on the first day, and no-nonsense businesswoman who can both poke holes in a senior’s proposal and champion a music festival fundraiser to benefit a local nonprofit. She owns a side company, Bel Canto Reeds, which does a good business in reeds for bassoons, and only bassoons. She’s played the wind instrument since the fifth grade. She knew that she wanted to be a music teacher in the third grade.

The best engineers know music. They know the language, the nuance, the math and the emotion. They know the scale and the rules, the progressions and the timing. Most importantly, they know how to talk to musicians and make them comfortable. Of course they know technology, but the best know how to remove the studio from the recording and focus on the player and the tone. They know what makes a song work. Those types of skills are hard to teach. Yet there are endless ways to try.

At Appalachian State University, a beautiful brick-lined campus nestled into the hills of western North Carolina, in the picturesque town of Boone, music is clearly and decidedly the foundation of a recording education. All students must first apply to the Hayes School of Music and audition on an instrument. Once within the school, they can apply for a Bachelor of Science in the Music Industry Studies major, which is further broken

down into one of three program concentrations: Manufacturing and Merchandising, Marketing and Promotion, and Recording and Production.

There are recital rooms and recital halls and classical venues, featuring student, faculty and guest performances throughout the year, and all MIS majors must continue with their instrument through the four years, whether solo or in ensemble. They also must complete a minor in the School of Business, in addition to the core MIS classes and general-ed requirements, in addition to their program concentration. It’s a busy schedule, and it’s meant to be. The philosophy is based on a well-rounded understanding of the *entire* music industry, with, in this case, an emphasis on recording—although not all students are recording.

“We hear regularly from internship supervisors and employers of our alumni that the musicianship of Hayes School of Music students stands out and provides tangible professional benefit for our students,” says ASU Dean William L. Peltó.



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Student managers in the Yamaha DM2000-equipped 5.1 Studio B, from left: Jodhi Mather-Pike, studio manager (2017, Nelspruit, South Africa), Henry Neal, studio manager (2017, Bunn, N.C.), Nikki Grande, social media manager (2018, New City, N.Y.), and Michael Leckrone, concert recording manager (2018, Waxhaw, N.C.).

a couple, and we've moved into artist management."

In her second summer, with the departure of the then-recording head, the Hayes School of Music hired Scott Wynne as Associate Professor/Chief Recording Engineer, someone she describes as "the perfect example of a music industry professional."

THE FACILITIES

Growing up in Florence, N.J., Wynne was on a path to being a composer and "never in a million years" thought he would become a teacher. Yet, with his gear-geek brain inside a musician's mind, he seems perfectly suited to be in front of a class. He has a DIY mentality, and he cares equally about the soldering when students build DB-25 connectors as he does about the mix on a final project. His enthusiasm is unmatched.

Wynne is the lone full-time professor in recording and production, and he also manages recording for the school's concert series—with a staff of six Recording and Production students and one student manager—comprising up to 250 performances a year in venues ranging from campus concert halls to local Boone brewpubs. With student help, he maintains and runs four studios, and his penchant for getting maximum use out of quality gear, within a limited state budget, has allowed the program to develop professional facilities and production methods far beyond what might be expected in a program of its size. The shining example of that approach is the new SSL Duality in Studio A, the Robert F. Gilley Studio,

pictured on this month's cover with the students who handled the commissioning of the board over a three-week period in June.

"In my 11 years here, equipment choices have been a purchase and trickle-down process," Wynne explains. "If we fill up a rack, we trickle down the other units to the other studios. That was the impetus for us moving to Duality. The Sony DMX R100 in our B studio finally died, and we had to move forward. The Yamaha DM2000, which was in A and is still a great board to learn on, is now in Studio B. We're wiring the last 24-channel snake today."

Over the past year, Wynne researched large-format analog consoles. He looked at API, he thought he might bite on a Neve Genesys at one point, and he ended up where he started—SSL Duality, with Delta engine.

"I had met Don Wershba from SSL at AES in 2009, and he has always been great to me, but it just seemed too expensive at the time," Wynne recalls. "We're a small state school, but we wanted something to differentiate our program, and Don and Piers [Plaskitt] both came down, visited the students, remembered their names. The Duality is sonically superior and so clean as an analog desk, but the way Don and Piers managed the relationship is going to win you over in anybody's eyes."

Leading the group of students (seen on this month's cover) in soldering connections for an SSL install, then sitting behind the board for a jazz ensemble recording, is a far cry from Wynne's fourth-grade

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beginnings on a Commodore 64 computer, learning to program BASIC, then DOS, then stumbling across MIDI playback at a computer show he went to with his dad. By ninth grade he had a Yamaha keyboard and full Cakewalk-centered MIDI sequencing rig with Tannoy monitoring, assembled piece-by-piece, often out of order.

After Edison Community College in Fort Myers, Wynne went to Eastern Kentucky University for a degree in composition, where he would drop in the broadcast facilities because they had Cool Edit and he could do 2-track editing. He then earned his master's in media writing and production at the University of Miami, where he was exposed to his first Sony and Euphonix consoles and became instantly hooked; his technology and studio chops matured under the guidance of Raul Murciano, among others.

Wynne was expecting to head back to Fort Myers after graduation and open a small studio when he got a call from Michael Zager at Florida Atlantic University, who was looking for a part-time engineer and instructor, \$20k a year, 20 hours a week, who could also help build and maintain a studio. Murciano had recommended him; he took it. Four years later he accepted the position at ASU. Like Wangler, who had arrived a year earlier, he was lured by the university support and the opportunity to create a new model.

ASU when Wynne arrived was in a decent place. They had Walters-Storyk designed studios, A and B, built while Michael Fleming ran the program. While Wynne still marvels at what Fleming, who moved on to MTSU, and then Sam McGuire accomplished with the infrastructure, his

first order of business was to create some sense of cohesion with technology platforms.

"They were running Nuendo at the time, a great auxiliary program, but then they had a bunch of Macs in the lab," Wynne recalls. "Michael had inherited some gear, and then Sam made some choices. They had a Creation Station from Sweetwater. We had RADAR and Pyramix. We were dealing with a myriad of small, different issues. When I came in 2006, it was a matter of bringing Pro Tools online, bringing in the DM2000, and, ultimately, the SSL."

Along the way, Wynne continually added boutique outboard gear, better mics, Marquette Audio Labs I/O, a variety of AD/DA and much more. The biggest advance in the past year, console aside, was the installation of a Focusrite RedNet-based Dante network.

"The Dante infrastructure allows both studios, A and B, to talk to a central machine room for our outboard effects processors," Wynne explains. "We have a System 6000, Lexicon 960, Bricasti Designs System 1, an Eventide reverb, a spring reverb. Now we can do sample rate conversion with the effects processors allowing studios to be at different sample rates and talk to any of the high-end digital or analog effects units. In November we're upgrading the concert hall stage and dropping in 10 channels of Cat-6 that will hit a switch in the Rosen [concert hall] control room. Dante is definitely robust. And it's functional."

Continued on p.52

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Photo: Britt Bowman

PERFECTLY NOT PERFECT

Producer, Guitarist Rob Caggiano Reveals His Metal Methods

BY ANTHONY SAVONA

If you've listened to any rock/metal music over the past two decades, you have undoubtedly heard Rob Caggiano's handiwork—both in back of the board and in front of it. Rob is currently out conquering the world as the lead guitarist for Danish hard rock pioneers Volbeat, but as a record producer he's worked with a wide variety of artists throughout the years, including Anthrax, Cradle of Filth, Volbeat, The Damned Things, H2O and Jesse Malin. His work is critically acclaimed and he's been Grammy-nominated five times.

Caggiano joined forces with thrash metal icons Anthrax back in 2001 as their new lead guitarist and produced the album *We've Come For You*

All. "That album really opened the doors for me on many levels," Caggiano says. "I jumped head first into producing records and I jumped head first into playing guitar for one of my favorite bands."

Caggiano's tenure with Anthrax would last until 2012. Just prior to leaving the group, he produced and played guitar on two career-defining records—Anthrax' *Worship Music* and The Damned Things' *Ironclast*, which featured him, Scott Ian of Anthrax, Joe Trohman and Andy Hurley of Fall Out Boy, and Keith Buckley from Every Time I Die.

"The reason I left Anthrax was because my heart wasn't in it anymore and I needed a change," says Caggiano. "I am very proud of my work with the band and I'm proud to be a part of the Anthrax legacy. We accomplished a lot together—the albums we released and all the great shows over the years. I basically grew up in that band, but it got to the point where I just felt like I had taken things as far as I could take them."

After leaving Anthrax, Caggiano decided to focus on producing while he figured out what he wanted to do next as a performer. He didn't have to wait long, as he was called in to produce Volbeat's 2013 album *Outlaw Gentlemen & Shady Ladies*, and things clicked so well that he was asked to join the band very early into the process.

"The stars just aligned," Caggiano says. "We had been friends with Volbeat for years—The Damned Things toured with them. Even then we had talked about the idea of working in the studio. It seemed like a good idea, but our schedules were tough. When I moved on from Anthrax it was perfect timing, as Volbeat didn't have a guitar player. Initially they asked me to play some solos, but we just really clicked and it turned into a lot more



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Rob Caggiano, Brian Johnson of AC/DC and Jim Breuer in Clear Track Studios in Clearwater, Fla.

than that. I ended up contributing a lot of creative ideas to the songs and it quickly turned into a very powerful dual-guitar-player band.”

He also co-produced Volbeat’s current album, *Seal the Deal and Let’s Boogie*, which debuted at Number 2 on *Billboard*’s Top 200 Albums chart and contains the song “The Devil’s Bleeding Crown,” which was Number One at Active Rock for 10 straight weeks. He also produced legendary comedian Jim Breuer’s recently released musical project, *Songs from the Garage*.

“Making Jim Breuer’s record was probably the most fun I’ve ever had in the recording studio,” says Caggiano. “On top of being one of the funniest people I ever met, he is super-talented and he has a really strong creative vision—and he’s a huge metal head! I understood exactly what he wanted to do with this record, and it was my job to connect the dots and make it come to life.

“We spent a considerable amount of time in preproduction because the songs and arrangements all needed to be figured out,” he continues. “Jim and I basically wrote the entire record together and I ended up playing all the guitars on the album, too. Jim is an elite international comedian with a very strong following. However, plenty of comedians have tried to cross over into the music world in the past and it doesn’t always work out. As a producer, my greatest challenge going into this record was trying to create an overall sound that was potent and a batch of tunes that were undeniable. I wanted people to take this seriously when they heard it, but at the same time I knew we couldn’t make things too

serious! The spirit had to be light-hearted throughout, and it had to be funny at times. There’s a fine line with this kind of thing, and it was a learning process for both of us, actually.

“Jim didn’t know it before we started working together, but he was about to become an amazing rock singer. My approach with him was a bit unorthodox, but it worked great: We would figure out the lyrics together and get a general idea of the melody; then I would go in and sing a guide vocal. Jim would go in there and sing on top of me until he had his own command of the part. That’s how we did every song.”

For Caggiano, the biggest highlight of producing *Songs from the Garage* was getting the chance to work with one of his personal heroes, AC/DC’s Brian Johnson, who supplied guest vocals on the song “Mr. Rock ‘n’ Roll.”

“*Back in Black* was the first album I got when I was younger. It got me into music and made me want to play guitar,” Caggiano says. “It is one of the best-sounding records to this day, and it also has the best vocal performance of any rock record I’ve ever heard. So I ended up doing some research for the vocals on *Back in Black*—what did he use; what’s the vocal chain? I ended up setting up two kick-ass vocal chains, one from *Back in Black* and one from what AC/DC did on the Rick Rubin stuff. I had Jim do his [excellent] Brian Johnson impersonation on the mics before Brian came in. I couldn’t wait. He finally shows up, and I tell him that I’ve got an amazing sound for him that he will love.”

Caggiano’s main vocal chain for Johnson would’ve been a U87 into a Neve 1073 and finally into a classic UREI 1176. That’s based on what Johnson (probably) used when they recorded *Back in Black* years ago. However, when Johnson walked into the studio and found out that there were a couple of mics set up in the live room for him: “Brian says, ‘I am not going out there,’” explains Caggiano. “I am singing in the control room with you lads!’ I had to re-think the whole thing on the fly, and that is what we did. I used a Shure SM7 into a Vintech 500 Series, and then into the Purple Audio 1176 copy—all of which was very easy to patch into quickly. We cranked up the tune and Brian sang into the handheld SM7. That’s when I realized that it didn’t really matter if he was singing into a tin can—it would always sound like Brian Johnson! The vocal tracks have tons of

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bleed, but it doesn't matter; still sounded great."

Caggiano's typical guitar recording path features a Shure SM57 through a Neve 1073 mic pre or a Universal Audio 2108. For heavy rhythm guitars, his preferred method is a 57 in conjunction with a Sennheiser 421 or Audio-Technica 4050 placed on the edge of the same speaker. He keeps them phase locked and does not combine the tracks, keeping them separate throughout the process.

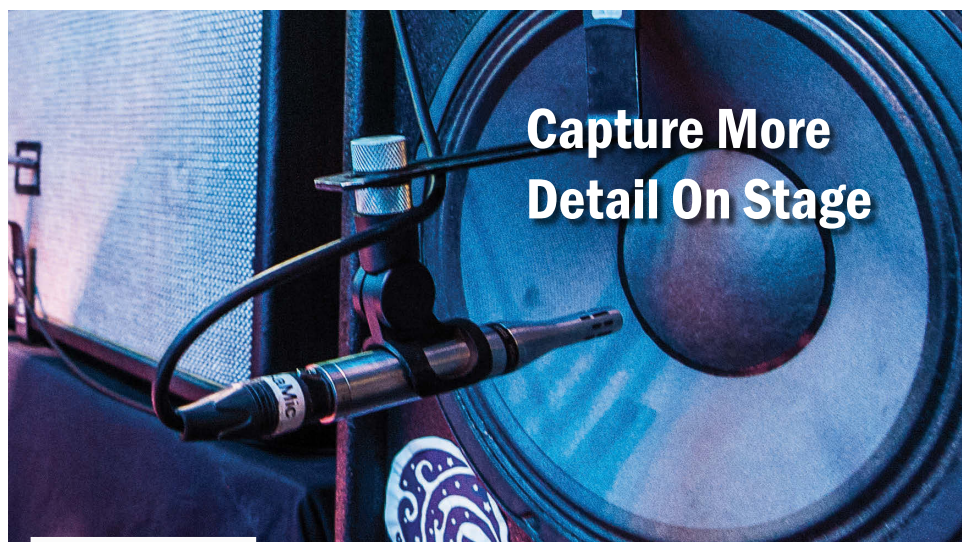
"With Volbeat, [rhythm guitarist] Michael Poulsen and I both play rhythm when we record—Michael on the right speaker and me on the left," he explains. "I wanted to capture that classic two-guitar player vibe à la Judas Priest or Iron Maiden. Michael and I play off each other really well, so I think it worked out perfectly."

For guitar solos, interestingly enough, Caggiano treats them the same way he does the lead vocal when tracking. "I would usually use an SM57 straight on the center of the cone, into a Neve pre and then into an 1176, which is basically the same thing I would do with the vocal except for the mic choice. I want the solo to cut through everything," he says. "Even when I write my solos, I look at them from a vocal perspective, and I think of them as 'songs within songs.'"

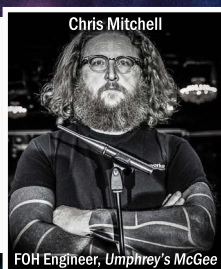
With his hectic travel schedule, Caggiano is always on the go with his trusted mobile rig, which features Metric Halo ULN-8 converter mic pre's, a MacBook Pro, Universal Audio 2108 mic pre, Neve 1073s, and UREI 1176s. "No plug-ins," he clarifies. "I don't do a lot of mixing, and I prefer to use hardware for tracking. My setup allows me to get top-quality results wherever I am, anywhere in the world."

His tactile approach to music tracking is supported by his producing philosophy: "Technology has killed music as much as it has helped it," he explains. "With Pro Tools, it is very easy to make things perfect, but music is not supposed to be perfect. That lesson came with experience, learning every step of the way. It does not have to be perfect, but it should always have magic and it should always feel good. That's the important stuff."

"A lot of records today in the metal genre are 100-percent quantized to the grid and cut, copy and pasted all over the place," he concludes. "At the end of the day, you might as well as put the computer in the band photos! Imagine if *Zeppelin IV* was made like that? Pink Floyd's *The Wall*? That's what I mean—it's very easy to suck the soul and magic out of music with technology if you're not careful. I'd also like to add that a lot of producers out there these days have their own sound and formula that they apply to everything they work on. Not me! I strongly believe every band and record should have its own unique voice. It's own magic. That's what making music is all about." ■



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DIGITAL AUDIO WORKSTATION CHOICES

WHAT'S OUT THERE IN 2016

BY STROTHER BULLINS

Whether among industry professionals or fledgling hobbyists, choosing a digital audio workstation remains the single biggest commitment in modern gear selection. Why? DAW choice necessitates a dedication to a unique workflow and a financial commitment to its particular ecosystem.

That said, many professionals report an increased ubiquity of key, “must-have” functions in the top DAW choices of 2016, while accompanying hardware continues to play a large role in the DAW selection process.

At professional and top-tier levels, proprietary work surfaces like Yamaha/Steinberg's Nuage and Avid's S6 are ideal matches for Nuendo and Pro Tools DAWs, respectively, well-suited for a broad range of applications. Bridging gaps between studio and live environments, meanwhile, PreSonus offers its tactile mixers plus touchscreen control of its increasingly popular DAW, Studio One. Choices further abound in multi-platform touch-based control—such as Slate Digital's Raven MTi and MTX or comprehensive DAW control software, like Neyrinck's V-Control Pro 2, an iOS, Android, OS X or Windows OS-friendly system.

MORE AFFORDABLE, MORE SIMILAR

Increasingly, DAW software is affordable, regardless of the platform (if not free, in some forms). As a pro audio retailer (and committed Pro Tools user) speaking on the condition of anonymity reminded me earlier this year, most are capable in much the same way for most tasks and are more alike than different.

“Mathematically, they're all the same,” he explained. “If you're using it basically like a tape recorder, any of the DAWs are going to work for you. They all actually work exactly the same way, in the way they record audio; the big differences are going to be in plug-ins, virtual instruments and ease-of-use. It's really not like choosing one microphone over



Avid Pro Tools]



Yamaha/Steinberg's Nuage

another, or even perhaps one preamp over another. If you recorded into Pro Tools or Cubase, or Studio One, and you did nothing to manipulate the audio, you'd get exactly the same sound. To me, [the choice] is about how good the bundled plug-ins are, third-party plug-in compatibility, and how well the program is designed.”

Regardless of the similarities in DAW platforms, Pro Tools remains the go-to DAW of the industry. Logic—the noun, not the DAW—tells us that a popular standard allows for more collaboration, easier sharing and transferring of ideas, and innovative use of its inherent tools. Nashville-based engineer Russ Long, who has been a Pro Tools user since its early '90s Sound Tools iteration, has experienced the wide range of available DAWs through real-world usage, evaluating many of them in the pages of *Mix's* sister publication *Pro Sound News* over the years. He has his own theories on why Pro Tools has had seemingly undefeatable staying power among pro users.

“It's a living, growing piece of software that continues to be updated on a regular

basis,” he explains. “Avid listens to its user's requests and complaints, and constantly updates the application. That said, there are features available in other DAWs that I'd love to see added to Pro Tools.”

An additional perk to growing capabilities and shrinking costs of all DAWs is the end users' ability to invest more in third-party plug-ins and digital tools, as well as problem-solving tactile hardware pieces—microphones to monitors, infrastructure, space and acoustic treatment to networked audio systems, streamlined routing and new I/O.

COLLABORATION, ORGANIZATION

A key component to attractive DAWs today are found within their heightened emphasis on collaboration and organization. This is evident in a number of ways, from Avid's “Avid Everywhere” philosophy—organized in Artist, Media, Storage and Studio “suites” of gear and tools—to easier ways to try and buy plug-ins and even the Pro Tools DAW itself, now



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available by subscription; as illustrated by the firm's exhibition floor space at the recent 141st AES Convention, Avid Marketplace is a landmark, indeed. Avid now boasts a rather comprehensive gathering of premium-quality plug-in manufacturers as part of its streamlined audition/install/purchase-ability of plug-ins for Pro Tools including AAX-ready Waves, Crane Song, Eventide, iZotope, Sonnox and Nugen offerings.

Long a key Avid competitor, Steinberg has raised the bar on collaborative audio production for new media via its efforts in developing the Nuage work surface, a perfect pairing for the Nuendo DAW, long proven to be ideally suited to audio post-production work. With potential job growth in gaming and audio for multimedia content, virtual reality is at the top of many academic curriculum lists, as explains Kyle P. Snyder, Lecturer and Outreach Coordinator of Ohio University's Scripps College of Communication, where the faculty of its School of Media Arts & Studies recently installed a 32-fader Yamaha Nuage control surface paired with Nuendo.

"We determined that the Yamaha Nuage control surface provides expandable and future-proof functionality, and as a team, we started looking at all the components surrounding Nuendo and Nuage, realizing how Nuendo is astonishing software," Snyder says. "For our money, it feels professional and works phenomenally well with world-class support. As a faculty, we are committed to teaching techniques, not a piece of software. We just wanted to have the best tools to teach post-production; we're pretty sure that's Nuendo and Nuage."

Fast on the heels of Pro Tools and Nuendo as a pro-grade DAW, especially in music production, PreSonus's Studio One, now in Version 3 for Mac or Windows, offers widely reported intuitive functionality, great sound quality and PT-rivalling features, not to mention seamless integration with PreSonus's broad line of I/O, work surface and hybrid analog/digital consoles. The latter of these offerings—hybrid mixers—are designed to better serve the current trend of blurred lines between live performance and studio environments, making Studio One, its associated live tracking program Capture, and more multi-touch integration in Studio One V. 3 a compelling choice for the modern, flexible audio engineer/content producer.

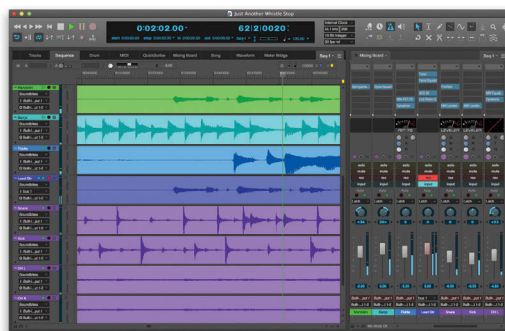
Long before PreSonus's entrée into the DAW market, MOTU had paired its hardware and its elegant Digital Performer workstation to



PreSonus Studio One



Slate Digital's Raven MTi



MOTU Digital Performer 9

great success, nurturing quite a passionate crew of DP devotees. Why? I'll let my colleague, engineer Rob Tavaglione, explain; he's a proud, multi-decade-spanning DP user:

"Originally known for its pioneering MIDI sequencing capabilities, DP has slowly grown into one of the most comprehensive workstations around," he says. "Widely respected for its transparent audio, logical layout and ease of use, DP is still only Mac-compatible, as it has been since its inception. This Mac-only approach has been very appealing to DP users, and we all know how much unflinching loyalty Mac users seem to have to their OS, myself included. With stability, functionality and flexibility, DP has earned a user base that is rich with composers—those scoring for film or television and many songwriter/musicians, as well."

Also worthy of note is Harrison's Mixbus, now in its third version, which not only offers a notably "console-like" workflow for either Mac or Windows CPUs, it courts the truly independent engineering minds of our industry via its Ardour platform's universal compatibility, allowing it to run on Linux OS, too. As such, Mixbus has experienced steady user base growth among some very passionate users.

TOUCH GUI RENAISSANCE

For musicians, self-recordists and savvy broad-based audio wranglers, the touch GUI renaissance in DAW control continues. Most every DAW in the marketplace today now offers downloadable iOS or Android control software, as untethered

mixing becomes less of a rarity and more of an expectation.

One third party, hardware manufacturer, Slate Media Technology, offers its Raven Multi-Touch DAW Control Surface V. 3 software supporting most major DAWs. Slate's 27-inch MTi2 Raven Multi-Touch DAW control surface, among the other Raven models, will now support Pro Tools, Cubase/Nuendo, Studio One V. 3, Logic Pro X, Digital Performer and Ableton Live. Raven V.3 software includes upgraded hardware fader modeling and Batch Commander record features, allowing customized multi-move commands within the user's DAW of choice. (Raven V. 3 does not support, for example, Cakewalk SONAR, a Windows-only DAW; only Mac OS DAWs to date.)

Using third-party hardware (e.g., an iPad), tablet DAW pioneer Wave-Machine Labs now ships its the Auria Pro digital audio workstation for iPad, significantly updated for the increased capabilities of Apple's new flagship tablet, the iPad Pro. Auria Pro features comprehensive

MIDI capabilities, real-time audio warping, advanced internal bus routing, audio quantizing, audio transient-to-MIDI conversion, groove templates, transient slicing, unlimited tracks, synths such as FabFilter's One and Twin2, plus WaveMachine Labs' own multi-format sampler, Lyra, and more. It's literally a complete GUI-controlled DAW, easily carried under your arm.

It's worthy of note that WaveMachine Labs is not a hardware manufacturer; it is dependent on whichever iOS tablets are shipping, as well as currently available USB class-compliant I/Os—the latter of which were relatively scarce upon Auria's NAMM debut in 2011. Today Auria remains a simple download from Apple's App Store and a favorite among audio engineers for its straightforward, near-traditional studio aesthetic and features that arguably rival some widely accepted DAW standards.

NO ANDROID DAW?

Despite very promising Windows and Android OS advances, bleeding-edge pro audio developers, designers and manufacturers are still mostly found plying their trade within Apple environments, though An-



WaveMachine Labs Auria Pro

droid-based control—not audio processing—products are multiplying.

“Right now, we’re solely focused on iOS and iPad because the power and the development is there,” offers Corey Winer, technical support supervisor/product specialist, WaveMachine Labs. “With Android, it would be hard for us to keep up with compatibility issues simply for the sheer number of devices available. That’s definitely a hindrance. I won’t say we won’t develop for Android, but there are \$60 Android tablets out there, and [owners] may expect it to do what an iPad Pro can do. It

could be a messy situation and we don’t have the resources to deal with it.”

Such resources, like a large tech support staff, are nearly essential when attempting to build an ultimately bug-free DAW for a non-proprietary OS. “I do tons of technical support for [WaveMachine Labs] plugins, made for Macs and PCs,” says Winer. “You can see big differences troubleshooting between Pro Tools on a Mac and Pro Tools on a PC. It’s the same difference [as iOS and Android app development]; there are so many PCs out there that the differences inside—in terms of performance, troubleshooting and what their BIOS [basic input/output system] looks like—make service increasingly more difficult.” ■

Neve



...No Question

WESTLAKE PRO GOES ALL IN ON ATMOS

New Hollywood Studio for Education and Demos

BY TOM KENNY

At the third annual Mix Presents Sound for Film event, held in mid-September at the Sony Pictures Studios lot in Culver City, Calif., longtime Los Angeles pro audio retailer/integrator Westlake Pro sponsored an expert panel called “Building an Immersive Room: Small, Medium and Large.”

It was moderated by Westlake CTO Jonathan Deans and included design consultant Jerry Steckling of JSX Audio, Peter Chaikin of JBL, Nathan Oishi from Sony, Bill Johnston of Formosa Group and Atmos-equipped studio owners Tom Brewer and Mark Binder, representing the small and medium facility. The panel was standing room only; there is a lot of interest in immersive audio.

“Atmos is what we wall wanted 5.1 to be,” says Westlake Pro President Joe Taupier. “It’s a giant step forward, and it’s fascinating how the technology works. That experience of being in an immersive room is what we wanted to bring to clients and to engineers, people who simply want to learn more about the technology.”

Taupier, along with his Westlake Pro partner and co-owner, George Adjieff, put their money where their mouth is and this month will be opening the first full-blown Dolby Atmos dub stage in a retail showroom space, right on Lankershim Boulevard in North Hollywood. The idea for building such a room had been tossed around since the emergence of immersive formats, which just happened to coincide with the company’s move to a new facility in 2012.

“We had an 800-square-foot space, with high ceilings, in the new building that we were wondering what to do with,” recalls CEO Adjieff. We had already put in two smaller music production studios, sort of as model homes for people to come in and see a complete system, in a working studio. At the time, we were starting to reach out more to the post-production world, and Joe turned to me and said, ‘Why don’t we just go all-out and put in an Atmos room?’”

Adjieff, a guitarist, engineer and composer for film and television, and Taupier, a session guitarist from Boston, had worked together at West L.A. Music for nearly 20 years. In 2005, West L.A. Music purchased Westlake Pro, and in 2012, Adjieff and Taupier purchased it back and set up shop. In the ensuing years they expanded the facilities, set up two studios, built out the new *Pensado’s Place* control room on site, and now, added a fully professional Atmos post-production room.

They weren’t novices, as the company had designed, integrated and

built a number of projects around town, both consulting and equipping the lots and doing turnkey packages for independents. They knew that there was more to come.

“Our goal was really to put in the room so we could learn about the system so that we weren’t necessarily guessing at what we’re doing” Adjieff says. “One of the ways Joe and I learned about digital recording was to set up systems. So we decided to make the mistakes on our own dime as we put up our own room. Plus, we build all these rooms for other people; it was time we built one for ourselves.”

The timing is impeccable, with Westlake’s services emerging right as the market was opening in the middle. “Originally, the concept was that there were a lot of smaller midrange post-production facilities all over Los Angeles that don’t necessarily have the manpower to put into the technical side of this type of build. People at Universal, Disney or the other lots have plenty of technical prowess. But the independents, with smaller facilities who are doing a lot of different things, might not have the time to sit there and learn this. We can be their technical eyes and ears and bring them into a market they might not be tuned to. We give them the ‘one-throat-to-choke’ option for building and maintaining their facility.”

“The other side of that is that there are audio engineers out there who want to learn about the products, so we will be offering training on it so that engineers simply have the opportunity to learn,” adds Taupier. “There may be some specialty, invited sessions, but most will be free to the public. Learn how it could benefit your facility or chops. We’re all about that community approach to the audio world.”

The Dolby Atmos room has 20-foot ceilings, sloping up from 11.5 feet at the front. A cloud and full acoustic treatment is in place, tuned by Steckling. An Avid S6 sits in the middle, feeding a series of Crown amps, BSS for DSP and a 9.8.1 JBL monitoring system, with M2s across the front LCR, and 7 series monitors along the sides, back wall and ceiling. It also includes three, soon to be four, of the new JBL 118 subs.

The Atmos stage is then connected to the other two music production studios through a Focusrite RedNet-centered Dante network, with an emphasis on demonstrating workflow options for a multiroom facility. An entire series of events is planned, including piping content from a

Photo: Jukka Montonen



The new Dolby Atmos-equipped control room at Westlake Pro, Los Angeles, featuring an Avid S6 and JBL monitoring.



The rear-wall diffusion, with ceiling speakers in place.

much client-driven as it is a technology we are very interested in. That's why we do things: for the sound. That said, the big financial opportunity for us will be in the midsize room. That's where the real focus is going to be, and that's where the need is. I just heard that Netflix is starting to require the facilities they work with to deliver Atmos as a requirement."

"And game developers," interjects Taupier. "We have a lot of clients there, and they can bring in sound designers or composers come and experience it themselves, sitting down with our experts and running through the system on a Saturday afternoon if they like."

Westlake Pro has hit on something here. Midsize immersive rooms, as we

control room to the Atmos stage for live streaming and a mini-broadcast booth-style production.

"The market for us is really the midrange post facility that can use our technical expertise," Adjieff says. "But building the room wasn't so

learned on the Mix Sound for Film panel, translate well both up and down the chain, for those who feed them and for ultimate distribution to the cinema or home. If you're in Los Angeles, head on out to North Hollywood and experience it. Then build one for yourself. ■



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In 1971 Belmont University created a Music Business program designed to prepare young men and women for operational, administrative, creative, and technical careers in the music industry. The Mike Curb College of Entertainment and Music Business was established in 2003 to provide educational programs of study for future entertainment industry professionals. Belmont's Curb College offers five academic degrees and five areas of study in Music Business, Audio Engineering Technology, Motion Pictures, Entertainment Industry Studies, and Songwriting and a Master of Science with a major in Audio Engineering. The college boasts an impressive faculty of academic scholars and authors, entrepreneurs, songwriters, producers, and sound and recording engineers. A world leader in music business and entertainment industry education, and the only freestanding college of its kind accredited for both business (AACSB) and technology (ABET), the Curb College has been featured in *Billboard*, *Time Magazine*, *Rolling Stone*, and *Business Week*.

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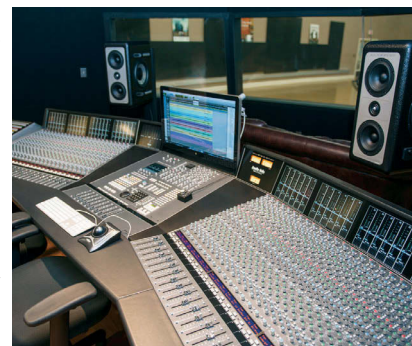


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DMI Entertainment Industry Studies

A GRAMMY Museum® Affiliate University

The DMI is an independent center under the College of Arts & Sciences at Delta State University. Our mission is to provide our students with a broad and thorough education in the technological, creative, and business areas of the entertainment industries. The DMI offers a Bachelor of Science degree in Entertainment Industry Studies. This innovative program is intended to develop a broad range of skills in audio engineering technology and entertainment industry entrepreneurship that will give students a foundational base of knowledge for working in various entertainment industry careers. Our alumni will be well prepared for the technical, business, and legal issues that confront the practicing entertainment industry professional today and in the future.



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"The campus is beautiful, the recording studios are state-of-the-art, and the instructors are experienced industry professionals." - Allen Ross

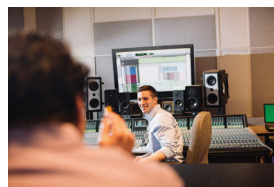
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Contact information: Dr. Barry Hill, Director of Audio & Music Production Program



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Degree/Certificate(s) Offered: Bachelor of Music in Recording Arts
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The Peabody Conservatory of The Johns Hopkins University, in conjunction with the G.W.C. Whiting School of Engineering at Hopkins, offers a unique double degree program: the Bachelor of Music in Performance and Recording Arts and Sciences. This rigorous five-year program combines three major components that are essential to success in the audio industry: music performance, recording technology, and the related math, science and engineering courses. Peabody also offers a Master of Arts degree in Audio Sciences with concentrations in recording and production, and acoustical studies, and courses in sound for film and video games.

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The Omega Studio's School operates within the facilities of Omega Recording Studios, a world-class five studio recording complex just outside Washington D.C. Training audio professionals since 1977, Omega's Audio Engineering for the Music Industry Program provides a superior education in every aspect of audio engineering for the music industry, as well as music business education essential for a successful career. The Audio for Film and Television Program prepares students for careers as recording engineers in the television and motion picture industries.

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The Blackbird Academy provides post-secondary mentor-based Studio Engineering & Live Sound Engineering Programs where students will be taught by a unique cast of professional instructors and award-winning guest lecturers. Each of the programs being six months in length, with four start dates per year. Our campus is built on the foundation of Blackbird

Studio, the Nashville home to a community of engineers, producers, musicians and technical staff who over the years have taken the art of audio recording to new highs. The principles and beliefs that guide the Academy's program are simple: Challenge and educate students by presenting them with real-life scenarios an engineer would encounter on a regular basis. We believe training should take place in spaces that are not empty, cold classrooms but professionally designed studios and labs where engineers can hone their craft. Realize your potential by taking part in The Blackbird Academy experience!



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Degree / Certification Offered: M.Mus. in Music Technology
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**UNIVERSITY OF TORONTO
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The Faculty of Music at the University of Toronto is a comprehensive music school in a world-class university. UofT Music offers a Master of Music (M.Mus.) in Music Technology and Digital Media. This two-year program combines creative experience and professional training in sound recording, production, digital creation, and distribution. Students work within and across areas to develop their individual skills and ultimately work together in teams to realize professionally viable projects in ways that parallel industry practices. Focused on music as entry point, the program extends to incorporate various forms of media, including film and video, website development and gaming, electronic and digital creation, as well as interdisciplinary creative arts. Students come to the program from a variety of undergraduate disciplines, including music composition, performance, sound recording, and various academic fields. Courses are taught by UofT Music faculty and by industry professionals. December 2016 application deadline for September 2017 admission!

Continued from p. 35

THE COMMUNITY

Long hours are the norm for App State MIS students. Beyond their major and minor coursework, commitment to their instrument, and preparation for a full-credit, final-semester internship, they are also encouraged to get involved with the Boone community.

"We have a weekly show at Lost Province brewery, where we work with them to book the talent, give management and marketing students a chance to work with artists, and get our engineers live sound experience," says Wangler, adding that a recent grant proposal funded an Allen & Heath console for their portable rig.

"We do a singer-songwriter night at Chick-fil-A once a month; they've been a great partner," she continues. "We do a holiday event where we partner with the town and the local chapter of the Nashville Songwriters Association International to put on a singer-songwriter showcase the first weekend in December. And this spring we're partnering with an event called Village Vision, a musical, artsy local vendor, working with them so that we get our feet wet in the music festival business. And then our major fundraiser is a 5k race called Music Moves My Sole, where we put the money raised into our recording projects for the label. It's been very healthy for us to do more in the community."

Wynne's philosophy is one that seeks to prepare a student for whatever might come up, to give them the skill set to troubleshoot any problem, whether artistic or technical. "When a student graduates and goes to a studio, my hope and dream is that they know how to make any job that much more effective and quick," Wynne concludes. "I want them to be able to say yes to as many opportunities as present themselves." ■

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TIPS & TECHNIQUES

From the Pros

1 It's a balancing act

On your initial pass of a mix, try limiting all your decisions to level and panning. You'll find that your mix will come together much faster if you balance all the sounds before you reach for any plug-in or outboard gear. Also, where you put a sound in your stereo field will generally influence how you want to EQ or compress it—so definitely make that panning decision beforehand.

2 Try bussing - it'll get you around

Send related groups of audio to auxiliary tracks (commonly called busses, in this case). For instance, make busses for your drums, musical information, vocals, and effects. That way you can make subtle macro tweaks across a range of instruments, thereby getting the most out of EQ, dynamic, or harmonic-distortion decisions. If it's good enough for top mixers like Michael Brauer and Dave Pensado mix, then it's worth a try.

3 Working in a new space?

Listen to some of your favorite tracks in the room before you start working, to know how frequencies translate in that space, so you can adjust your workflow when you start tracking. This will help you create tracks and mixes that translate well when delivering to your client.

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Tech // new products



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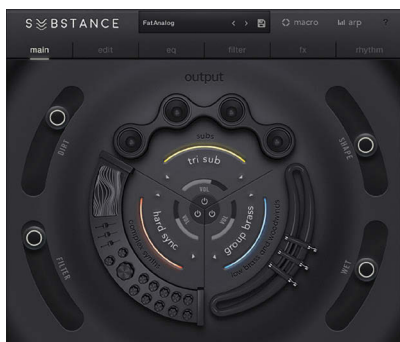
FXpansion, now a part of ROLI, has released BFD Metal Snare (\$70) for BFD3. Each of the five hand-selected snare drums was recorded with two top mics, one bottom mic, and one side mic, along with mono room, ribbon room and far room ambience channels. Also in the mix are two additional stereo reverb channels. BFD3 is the third generation of FXpansion's flagship software acoustic drum studio, featuring a revamped interface with a new mixer and sound browser.



AEA RPQ2 AND RPQ500 PREAMPS

Optimized Gain for Ribbon Mics

The AEA RPQ2 (\$TBA) is a 2-channel preamp that improves on the original with custom knobs and a new color front panel DI, post-mic and pre-EQ inserts, and a light-weight and smaller chassis. Other features include switchable phantom power for condenser and active ribbon mics, a polarity switch, and Mic/Line mode with corresponding LED indicators. The 12-position volume knob provides from +13 dB to +62 dB of gain for the preamplifier circuit, as measured between the input and output line driver. There is also a switched LF shelving filter and switchable CurveShaper EQ. The 500 Series version offers the same features in a single-channel, vertical orientation.



OUTPUT SUBSTANCE BASS ENGINE

Big Bottom From a Plug-in

The Substance Bass Engine (\$199) from Output features processed electric and acoustic basses, brass sections and analog synths. The interface combines three layers of sources and blends them together with layer and global FX, filters, modulation, an advanced arpeggiator, flux control and macros. Features include a preset menu with smart tagging, layer FX and global FX, four macro sliders unique to each preset, monophonic and legato modes, and a rhythm page that syncs to tempo.

QXS SERIES BOOM POLES

Five Models for ENG and Documentary Audio

The QXS Series boom poles (\$344 for the shortest, up to \$708 for the longest) use a five-segment design along with light-weight and durable 1mm pull-wind carbon fiber tubes featuring knurled collars for outstanding grip, especially with gloves, and enhanced segment locking with new compression rings and mating nuts with steep threads. The booms come in five models with extended lengths from 6.4 to 17.7 feet, offering multiple internal cable options. Adding internal cables adds \$140 to \$220 depending on type and length.





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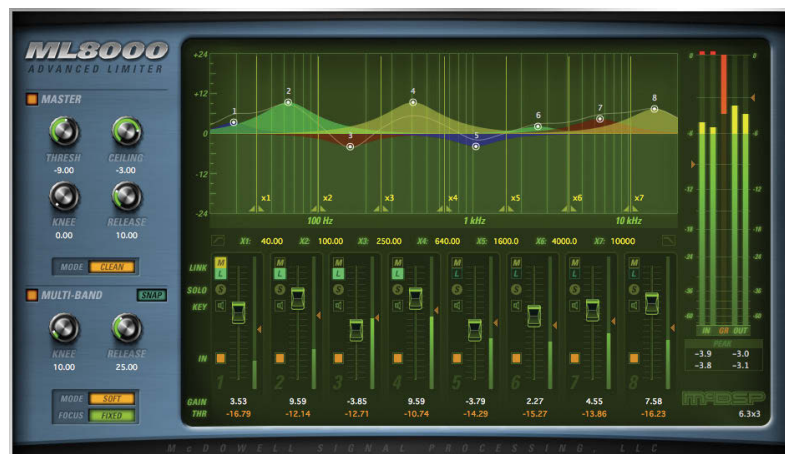
Straight out of AES in L.A., the new range of Sonifex AVN (Audio/Video/Network) talkback/listening/paging intercoms aid communication between studios, stages, theaters, offices, and different areas in a facility or building complex. The AVN range uses Ravenna as the communication method, providing compatibility with other AES67 systems and allowing simple Cat-5 cabling and expansion. Features include an advanced feature set allowing them to be used in multiple applications with both 4-wire analog I/O, as well as AoIP network audio connectivity.



FOCUSRITE CLARETT OCTOPRE

8-Channel Expansion for ADAT-enabled I/O

The Focusrite Clarett OctoPre (\$699.99) features eight Clarett mic preamps, eight line outputs and ADAT interfacing. The mic preamps include a switchable analog "Air" effect that models the sonic signature of the classic Focusrite ISA mic preamp. Other features include 24-bit A/D and D/A conversion up to 192 kHz, 118dB dynamic range, eight analog outputs, switched insert points on every channel, and two instrument inputs. Other features include six-segment LED input metering on every channel, switchable 48-volt phantom power on every channel (1 through 4 and 5 through 8) and word clock I/O with JetPLL jitter elimination technology.



MCDSP ML8000 ADVANCED LIMITER

Two-Stage Processing Plus Eight Bands

The ML8000 Advanced Limiter (\$229) offers two completely separate stages of processing for significantly improved peak-level adjustment. The first stage, the Multi-band Limiter, uses eight bands of active processing each with its own gain and threshold (output ceiling) control. Additional overall band controls include release time and limiter modes, calibrated similarly to the modes of the original highly acclaimed McDSP ML4000 limiter. An additional Focus mode provides subtle articulation changes in how each band tracks and limits the incoming signal. The second stage of the ML8000, the Master Limiter, is a precise re-creation of the patented ML4000 limiter algorithm, right down to the limiter modes. The Master Limiter also includes filter design enhancements to further reduce peak distortion.



BIAS FX AMP & FX GUITAR PROCESSOR

Acoustic Guitar Expansion for iPad and Desktop

Positive Grid updates the popular BIAS FX amp-and-effects guitar processor with a new effects expansion pack for acoustic guitar. Users can choose from acoustic guitar pickup emulations and add them to BIAS FX's dual signal chain, then integrate them with BIAS Amp models. Users can also share, download and customize pedal boards on the ToneCloud, Positive Grid's tone sharing platform. Effect models include an Acoustic EQ, Imager and Chorus. The Acoustic Image pedal neutralizes a guitar's pickup and then restores the natural body resonance.

New Sound Reinforcement Products



BASSBOSS VS21 "RUM PUNCH" SUBWOOFER

Boomer Promises Fast Attack, Operation Down to 27 Hz

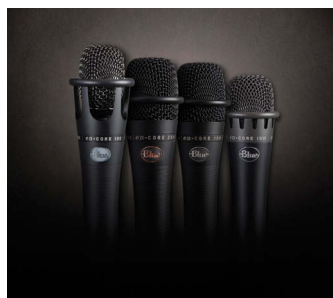
The VS21 from BASSBOSS (\$3,995) features a hybrid vented short-horn enclosure delivering exceptional transient response thanks to performance efficiencies at the upper end of its operating range. Features include fast attack and high performance due to a large acoustical volume, low tuning and the massive displacement of a long-excursion 21-inch woofer—up to 58mm of excursion peak-to-peak. Frequency response is 27 to 100 Hz at 132 dB of continuous output.



YAMAHA TF-RACK CONSOLE

Portable Digital Mixer for Small Venues

Yamaha's TF-RACK Console (\$TBA) is a compact rackmount version of the company's TF Series digital mixing consoles. TF-RACK offers all of the features found in TF Series desktop models released in 2015, including fast, accurate gain setup, single step compression and EQ, and microphone specific presets to even the most modest sound reinforcement applications. TF-RACK fits in a 3U rackspace and includes Steinberg Nuendo Live recording software, apps for mixing and expansion capabilities. Yamaha has also partnered with Ultimate Ears, a premier supplier of in-ear monitoring products, to create presets for the TF Series to provide stunning sonic clarity for the performer.



BLUE ENCORE LIVE MICS UPDATED

Restyled, Customizable Handhelds

The newly restyled enCORE 100 (\$99) and enCORE 200 (\$149) from Blue Microphones provide a darker, sleek aesthetic. The models can be further customized with included grille color options to match the character of a performance or stage setup. Both units include two grilles: the new matte black option, plus the original chrome grille for enCORE 100 and original rose-gold grille for enCORE 200. The enCORE 100 features a dynamic capsule custom-tuned for exceptional detail, clarity and optimal frequency response, while the enCORE 200 is a phantom-powered active dynamic microphone ensuring powerful and consistent performance regardless of mic cable length.



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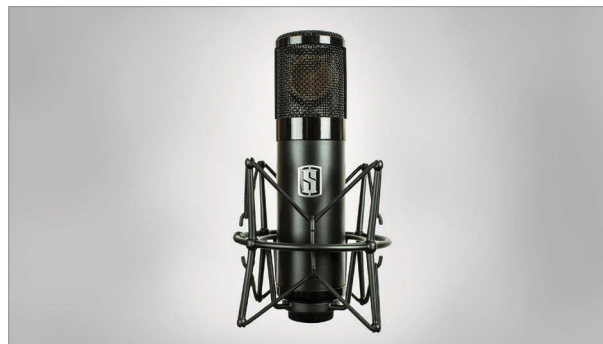
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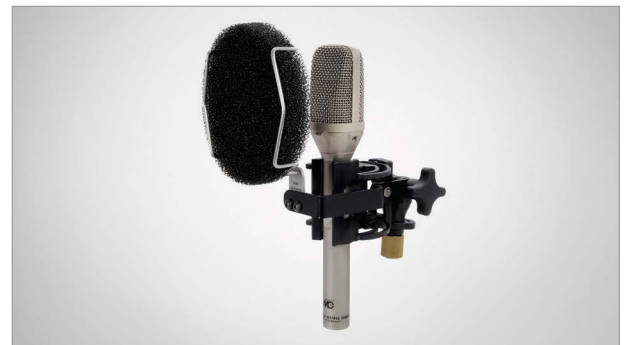
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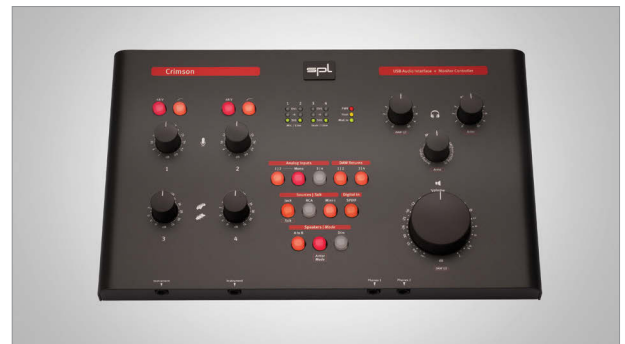
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Tech // reviews

CHANDLER LIMITED ABBEY ROAD RS124

Mono Tube Compressor Brings Vintage Flavor to the 21st Century



The look and sound of the RS124 accurately mimics EMI-exclusive mods of the same Altec 436B compressors used at Abbey Road.

In the early days of recording, it wasn't uncommon for studios to either make or mod their gear. Abbey Road, for example, purchased several Altec 436B compressors and the studio's Head of Technical, Bill Livy, Deputy Head Len Page, and EMI Audio Designer Mike Bachelor brought them up to their specs and preferences. The units were altered so much that they renamed them. Thus the original, and EMI-exclusive RS124 was brought to life and used on iconic records from the Beatles and many others.

Wade Goeke, owner and chief designer at Chandler Limited, worked in collaboration with Abbey Road, receiving technical info on the original mods and then re-creating this classic. I tested a pair of RS124s over some sessions at Blackbird Studio in Nashville.

HOW IT WORKS

The RS124 is two-rackspaces tall and, like the original, is simple in design. The controls include two large chicken-head knobs for Input and Output gain, and two smaller knobs for Attack and Recovery. Also on the front are an on/off switch, large gain reduction meter and a "Bal" button that re-calibrates the push-pull sides of the amplifier so they are even. The manual states that this is set at the factory and shouldn't need to be adjusted, but the process is simple and well explained in the documents if it is deemed necessary.

While the Input and Output controls work as you'd expect, the Attack and Recovery knobs need some explaining. The Attack, which was not available on the original Altec, is fastest when the knob is hard left with each of the nine positions getting slower as you turn it clockwise. Among the attack settings are three

positions in red that emulate three distinctly different RS124s only found at Abbey Road (serial numbers 60070B, 60050A and 61010B). To call up one of these units, you simply move the dial to the serial number. Like vintage microphones, the RS124s in London were distinctly different, to the point that engineers asked for specific serial numbers on their sessions.

The Recovery knob's operation is genius. There are six numbered positions—the higher the number, the slower the release. In between each number are identical Hold positions. These are used to prevent unnatural grabbing of a signal by the compressor at the onset of a transient, such as you'd find at the beginning of a song going from silence to downbeat.

Another use would be to Hold the unit's compression setting in place at a quiet section of a song. How it works is all hands-on. You roll the song to the hottest point and let the compressor grab the signal with the unit at the Hold setting closest to your desired Recovery setting. Then, rewind, and once the first peak hits, you kick the knob to your desired setting, 1-6. The same would go for a quiet section. Before you hit a down-chorus or bridge, for example, you'd select the nearest Hold position, and then knock it back at the end of the section. The result is a smooth transition between musical sections varying greatly in amplitude.

TRY THIS

When using any compressor for the first time, find its nominal setting and memorize it for future use. For example, the famous "Dr. Pepper" setting for the 1176 where input, output, attack, release are set to 10 and 2 o'clock, and the ratio set to 4 is a great starting point no matter the material. Every compressor has a similar place where the settings are close and a great place to start.

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BACK TO THE FUTURE

My first use was to strap two RS124s across the output of a Dangerous 2Bus by connecting two units together with a 1/4-inch TS cable via the Link ports at the rear. Drum tech Paul Simmons brought a 4-piece '65 Leedy drum kit to the large room, and I set up three Telefunken 251s around the kit, Glyn Johns-style. Each mic was laser-measured to the snare drum and run through three Blackbird Edition Gama 8 preamps from Shadow Hills. Each preamp was set to the Steel transformer setting. A pair of Coles 4038 ribbon mics were set back in the room in X/Y, and further back, in the live chamber, was a single RCA KU2A "skunk" mic run through an original RCA OP-6 preamp.

At the first hit, I was all over the pair of RS124s, learning how they work. There was no setting where the sound was bad, just too much or too little of what this unit does best—provide beautiful, unique gain reduction with round transients highly reminiscent of a lot of great records from the '60s. Once I nailed the Attack and Recovery for the tempo played, it made the drums sit together as a kit, rounding off the transients and bringing the rumble and rattle of the kit closer to the peaks. It was beautiful.

Next, I used a single RS124 on a male vocal. The singer was recorded using a Neumann U47 through a Martech MSS-10 preamp. Once again, the RS124 sounded fantastic and put the vocal right at the top of the track

PRODUCT SUMMARY

COMPANY: Chandler Limited

PRODUCT: RS124

WEBSITE: www.chandlerlimited.com

PRICE: \$2,875

PROS: Solid design and sonics.
Puts a 1960s finish on any track.

CONS: None.

with plenty of personality. Even with the needle pinning upwards of 20 dB, the unit was still musical and usable. You could also back off the input and crank up the output if you wanted less of the effect. Make no mistake: the RS124 is a compressor that has a personality; you can have more or less, but it's got a "sound."

I also tried the RS124 on electric and acoustic guitars, hand percussion and electric bass with equally great results. The RS is addictive, making you want to try it on anything to see what it can bring to the track.

IMPRESSIONS?

Sure, you've heard it before: "This <gear name here> sounds exactly like the original." And if it weren't Wade Goeke behind it, you and I both would be skeptical. But the RS124 is no knockoff. When used on individual tracks, or strapped in stereo across a mix, the RS124 imparts pure Beatles-era personality at its output. If you're looking for transparent gain reduction, don't look here. But if you want an iconic sound that brings buttery, thick and delicious compression to any source—I'm not kidding, when you hear the RS124, it puts a smile on your face. Want to be happy? Get this box. ■

Kevin Becka is Mix's Nashville-based technical editor.

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A DESIGNS AUDIO TONY SHEPPERD'S MIX FACTORY

Summing Box With Panning, Inserts, Cinemag Xformers & More



Although Mix Factory is 16 channels, more units can be added to increase the channel count.

Mix Factory is a 16-channel analog summing system that allows a hybrid combination of a DAW's editing precision, plug-in processing and automation with the sound of an analog console. It was initially conceptualized by music producer/engineer Tony Shepperd to facilitate his particular workflow and mixing style. Fix Audio's Paul Wolff expanded on Shepperd's idea with a custom-designed system that makes Mix Factory flexible enough to enable anyone's workflow and mixing style.

Mix Factory comes in an all-steel 2U cabinet with top-notch internal construction that uses a combination of surface-mount technology and hand assembly. The 35 silver control knobs, stereo LED output meter and 20 pushbuttons are slightly recessed into a thick, black anodized aluminum front panel, making for an elegant presentation. It is powered by an included A Designs Audio 50-watt switch-mode external power supply connected using a sturdy 1.5-meter cable.

A single Mix Factory will accommodate up to 16 line-level signals coming into the unit via two rear panel 25-pin D-Sub connectors. Each channel input uses a THAT Corporation 1256 op amp chip that is diode-protected against accidental application of excessive voltage spikes—such as 48-volt phantom power.

For extra reliability and long life, each of the 16 channels use

dual pots wired redundantly for both the pan pots (-3dB pan law with center detent) and the continuously variable Level controls (no detents). I liked the LED-lit Mute buttons that double as signal-present indicators, flashing green dynamically with audio peaks and turning red when muted.

The 16 channels are split into two groups of eight, each feeding its own stereo bus with Sub Master level controls located on the front panel. Both of these stereo submaster buses have balanced rear panel send/return XLR connectors for inserting separate stereo processing, complete with lighted front panel Insert in/out buttons.

The two submasters mix into the Grand Master stereo bus in the Output Master section. Fitted with a pair of A Designs AD-10 discrete op amps, the Output section has its own set of send/return XLR connectors with a front panel Insert in/out button. A blue Bypass button is for the insertion of two gigantic Cinemag CM-ET3042 line output transformers. Switching of

TRY THIS

The Mix Factory has sufficient headroom/dynamic range (+27dBu max input level) that I tried setting all 16 level controls to unity at fully clockwise. I liked this method for easy recall, and this "hot" setup drives the buses and any inserted processors harder. If you're into transformer core saturation, you'll get even more with this setup.

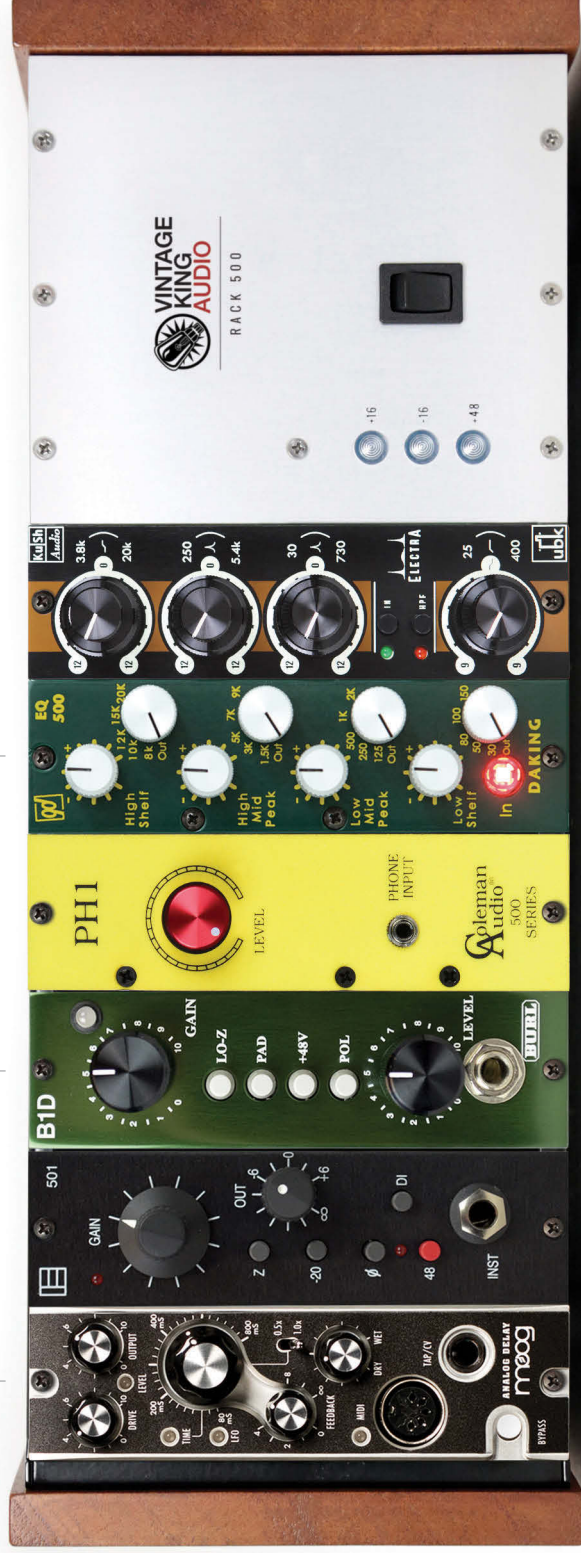
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A Designs Audio
50-watt switch-mode
external power supply.

all audio signals—mutes, inserts and the transformer bypass—is done with sealed Axicom relays.

There are monitoring XLR outputs that are pre-master fader level, for separately monitoring volume level. The sound of the output transformers is included in the sound of the monitoring path if they are switched in. The rear panel finishes with an expansion XLR to add a second Mix Factory for a total of 32 channels. Up to 64 channels are possible by linking four units. Linking allows for the accumulative effect of the transformer's sound in each Mix Factory if desired.

MIX FACTORY IN USE

Here is the way I set up the unit for a song I mixed that sounded so much better than the original in-the-box mix. Note: This is just one way and you are not limited in any way setting up Mix Factory depending on your specific workflow, track count and the requirements of your deliverables.

Using test tones coming out of Pro Tools (-18dBFS ref), I verified that all 16 channels were each contributing exactly the same level to the mix buses. For recall purposes, I set the stereo submasters and the Grand master controls at maximum—full up. I found that all level controls matched very closely in their actual knob positions. For faster mix recalls, adding a “calibrate” position for each of the 16 level pots would be a good update. A switch on each pot could substitute in a front panel accessible trim pot.

STEM CONFIGURATION

I always record mixes to a new stereo print track inside of Pro Tools, so I was able to quickly A/B between Mix Factory mixes and previous ITB mixes of the same song, all residing on the same playlist. I slipped all

mixes together in time for instant X-OR soloing comparison.

I spread out all tracking instruments as individual mono or stereo stems into channels 1 through 8 under control of the first stereo sub master. The second eight channels (9 through 16) were configured this way: lead vocal (9); lead harmony (10); stereo background vocals (11 and 12); strings/brass (13 and 14); and all mix effect returns (15 and 16).

For this song and for A/B'ing the ITB mix, I found it easier to dedicate two outputs from Pro Tools that contained all ambient and overall effect returns—reverbs, rooms, stereo wideners, delays used globally on all tracks. I like building mixes this way. I'm using Pro Tools automation exactly the

same way as always, and I found that analog console “forgiveness”—you can make exaggerated mix moves, if required—without overloading Mix Factory's buses and without having to back everything down and rebalance other mix elements.

I did get into the habit of using separate Master faders in the box for each stem output for occasionally automating stems. I also tried inserting my pair of Warm Audio WA-2A Leveling Amps on the tracking stereo submaster insert, and they worked great for that!

The sound of my mixes when using Mix Factory is noticeably bigger and clearer. They are stereophonically wider, and there is a depth of field I don't get with the same mix done ITB. Mixing music this way has the sonic integrity of a good-sounding and well-maintained large-format analog console. There is a punchy presence; a clear, tight and thick sound that's not muffled, dark or distant. Inserting the transformers adds low-frequency roundness and a kind of harmonic “glue.” For certain songs I liked the option of using the transformer as a final touch without having to deal with a significant level shift.

PRODUCT SUMMARY

COMPANY: A Designs
WEBSITE: www.adesignsaudio.com
PRODUCT: Tony Shepperd's Mix Factory
PRICE: \$2,990 MSRP
PROS: Big-sounding 16-channel analog mixing console in 2U of rackspace.
CONS: Could use a calibrated switch for preset channel levels.

MIX FACTORY GOODNESS

I'm impressed with Tony Shepperd's Mix Factory; it is like mixing on an analog console but using your favorite DAW automation, analog processing power and consistency. I'm can still personalize my mixes with my own particular input/output gain structuring in Mix Factory and freely use outboard analog processors as I would use when mixing on a desk. ■

Barry Rudolph is an L.A.-based engineer and educator. Visit him at www.barryrudolph.com.

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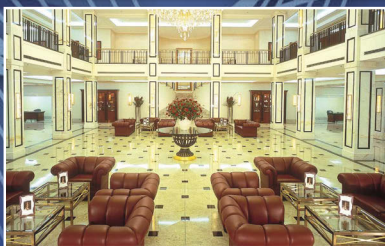
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AUDIO EASE INDOOR REVERB PLUG-IN

Sophisticated, Captured Ambience Specifically for Post



Indoor's captured spaces were recorded using nine microphones placed in different rooms at a variety of locations.

When it comes to reverb in the music world, we are usually trying to elevate dry tracks by adding exquisite virtual acoustics. Presets and models are usually geared toward this goal, presenting a selection of amazing-sounding spaces that add desirable color to the source. However, when working on films, we are forced to serve the visual and make the acoustics match the space portrayed on screen. Because of this, the typical “plate, hall or room” choices of most reverbs leave us looking for that elusive hallway, car, conference room or apartment.

For these reasons, Audio Ease has created Indoor. Available in VST, AU, and both AAX DSP and Native formats, Indoor features impulses recorded using a nine-microphone system in various rooms at different locations, designed to be useful for film mixing. With an intuitive GUI and elaborate controls for selecting the balance of different microphones, Indoor is arguably the most comprehensive tool to date for placing dry sounds into onscreen acoustic environments.

INSIDE INDOOR

The Indoor GUI features a large window, effectively broken into two sections. On the left is a narrow control panel featuring more traditional knobs that are common in plug-ins. On the right is a large, graphic representation of the location that has been modeled. When loading each of the 10 locations, a 3D model of the structure,

with all of its rooms is displayed. Locations include several homes, furnished and unfurnished, three vehicles, as well as a restaurant, auto workshop and hotel.

During the recording process, the engineers would move a speaker to six or seven unique places within a structure, and then move the mic array to record impulses from different spots in the building or space. In the 3-D visual model, the user can see all speaker and mic locations, then place a virtual speaker and virtual mic to gain access to that combination's corresponding impulse response.

For example, the speaker can be placed in the kitchen with the mic right in front of it, or the microphone can be moved upstairs to the bedroom, radically changing the sound, despite the fact that the sound source remained in the same space. When setting the Flat/Natural control to Natural, the level is even compensated to correlate to the additional distance between the mic and sound source.

In the 3-D map, the user can open and close virtual doors to explore the sonic differences. This makes the SUV location very useful and interesting, as the mic or sound source can be placed inside or outside of the vehicle, in the front seat, back seat or trunk, with the doors open or closed. In fact, they even included impulses recorded through the car's stereo so that audio can be futzed through it and captured from any mic position, inside or outside of the car.

All of this is expanded when addressing the control panel on the left. When operating Indoor in Direct mode, dry, unprocessed signal is combined with reverberations to create the overall sound. This is useful when using Indoor as an insert on an audio track. In this mode, another representation of the speaker and microphone appear, but this time with a circular control that can be used to either point the speaker directly at the microphone, or rotate it 360 degrees, giving you access to modeled but very realistic-sounding off-axis sounds.

IN USE ON A FILM

I received Indoor at a perfect time, as I was working on a documentary, a relatively straightforward, dialog-heavy series, and a more experimental, artistic short film. These projects presented different situations

TRY THIS

I have always been a fan of using a funky room mic when tracking drums. At a studio where I used to work, there was a loading dock with a garage door for load-in to Studio A. Drums would bleed from the studio into that sound lock, and if you recorded it, you had this great trashy sound that would add something to a mix. Try running drums or guitars through the Auto Workshop in Indoor. That model, in particular, has some great, nasty room sounds that will add some character that you won't find in any other reverb.

for exploring the various facets of Indoor. All of the projects featured reasonably well-recorded production sound, in every case recorded with a combination of lavalier mics and boom mics. Certain scenes contained nice, tight shots in relatively dry-sounding acoustic environments, allowing the boom mic to be used as the primary sound source. Naturally, in other cases, the boom was too ambient because of the width of the shot, or the character of the location.

In scenes where the boom wound up sounding too ambient, switching to the lavaliers cleaned and tightened things up, but in every case, certain movements of the actors caused their clothing to rub against the mics, making those recordings unusable. If the boom was clean and tight enough on that particular line where clothing rub occurred, it made an effective substitute. However, the tonality was never a perfect match. A big part of this was the fact that lavaliers consistently sounded much dryer than the boom mic, as the boom picked up a lot more of the natural acoustics of the environment.

This has always been a problem that I've attempted to solve by adding a mono reverb, inserted on the lavalier track, and then tweaking 'verb parameters and wet-to-dry ratio until the lavalier sounded more similar to the boom. Coming up with anything close enough to pass acceptably as a match always took far too long. When inserting a mono Indoor on the track, I could look at the space on screen, quickly find a room that looked similar in the software, and by turning off the "Direct" mode, a wet-to-dry ratio was revealed, allowing me to fine-tune the balance to match the width of the shot.

The whole process was so much more efficient and intuitive than anything I'd done in the past. On top of that, the processed sound was consistently a near-perfect match to the boom. When using other processors for this type of fix, a combination of equalization and reverb was usually necessary, and the results were often satisfactory, at best. With Indoor, I rarely had to use any more than the tone controls provided within the plug-in to achieve far superior sounds.

When doing a mix for the series, the goal was a stereo track that would translate well to release in different markets and different online formats. For that reason, there was nothing too adventurous panning-wise, and most of the dialog stayed pinned to the center. Despite that, when mixing a scene in a large, empty restaurant, I played with some stereo ambience using Indoor. I approached things similarly to the mono example, using the reverb to help lavaliers occupy the same space as the boom.

However, in this case, I snuck a little bit of the boom into Indoor, instantiated on a separate stereo Aux track. Placing the speaker and microphone in the dining area of the Indoor restaurant model, the sound was a perfect psychological match for the space seen onscreen. Even in subtle amounts, it added this warmth and richness that had a night and day effect on the feeling that you were in that restaurant with those characters. The difference was remarkable. Lines where the lavaliers were the preferred recording opened up nicely into the stereo Indoor instance. Again, with very little effort, the lavaliers became a proper sonic analog to the boom.

I really got the opportunity to explore the far reaches of Indoor when

PRODUCT SUMMARY

COMPANY: Audio Ease

PRODUCT: Indoor

WEBSITE: www.audioease.com

PRICE: \$795

PROS: Fresh take on a reverb GUI, great-sounding impulses.

CONS: Automation following Steadicam or dolly shots comes up a little short.

working on an indie short film. One great example of the power of the software came about in a scene where a real estate agent was showing a swanky Los Angeles apartment to another character. The long natural reverb tail of the agent's high heels in the empty space sat all over the dialog in a distracting way. The lavalier had far less of the shoe sound but sounded extremely dry by comparison. However, despite walking around the apartment, the lavalier had no noticeable

clothing rub, so it proved to be the superior recording.

In this case, it was a no-holds-barred mix, so I was free to experiment with panning of the dialog. The scene was all Steadicam, so the camera moved about the characters, and the characters moved across the screen when the camera was parked. There was just a lot of movement, in general. I started out by automating panning of the voices, relative to the viewer's point of view, and things started to take shape. Next, I fed the mono signal into a 5.1 Aux with a surround instance of the Indoor plug-in. The empty house model had a few rooms that seemed to be a good fit.

Immediately, the panned sound entering the surround space sounded good. From there, however, working in Direct mode, I automated the speaker relative to microphone to mimic the character moves and camera moves. The result was hauntingly realistic. The scene was already a little creepy, with an unsettling performance from the main character. Indoor really drove it home, as its realism really made you feel like you were trapped in that apartment. It was this perfect uneasy feeling.

In general, automation was impressively smooth. As advertised, there were never any clicks, hiccups or glitches when moving the mic in real-time during an automation pass. That said, you could click from one mic position to the next, and it would cleanly jump there, but I never found a way to glide from one point to the next. For example, if a character was talking while walking from the hallway into a room, they could either be placed in the hallway, or in the room, but never smoothly in between. The only way to pull it off was to use multiple instances and fade one out while fading the other one in. Aside from that, rotating the angle control, opening doors, jumping to a different point at a scene change—all could be done perfectly smoothly. This encouraged a lot of experimentation, which resulted in interesting sounds.

A MUST HAVE

I have spent a lot of time wishing for a tool exactly like this, a true post-production reverb. That said I had never imagined the elaborate graphics or the role they would play in quickly finding a sound, let alone the ability to powerfully pan sounds into that environment. Considering that power, the plug-in is also remarkably CPU-efficient, and I could run many instances without a significant processing load. Despite the lack of 9.1 Dolby Atmos support in Pro Tools, Audio Ease found a clever way to pair a 7.1 track with a stereo track to produce two extra VOG channels for Atmos use. This is a plug-in with a perfect combination of ease of use and superior sound. If you work in audio post-production, you must try this. ■

Brandon T. Hickey is a professional recording engineer specializing in sound for film and studio work.

RTW CONTINUOUS LOUDNESS CONTROL

Software Delivers Real-Time Processing for Program Regulation



RTW's software conforms to a variety of standards, including EBU R128, ATSC A/85 and TR-B32.

HOW IT WORKS

RTW's Continuous Loudness Control software is designed to regulate program loudness to conform to a variety of broadcast standards for average loudness, including EBU R128 (Europe), ATSC A/85 (U.S.) and TR-B32 (Japan). Using a proprietary look-ahead algorithm developed in conjunction with the IRT (Institut für Rundfunktechnik; also known as the Broadcast Technology Institute in Munich), CLC can process live audio or files to a "target" loudness level with or without altering the original Loudness Range (LRA). CLC runs under Mac or Windows and can be used stand-alone or as a plug-in for most DAWs. CLC's unique algorithm "learns" a program's dynamic character and predicts subsequent levels, enabling the software to operate in real time as well as offline.

I ran CLC on my Mac Pro as a stand-alone application and also as a plug-in for Digital Performer and Pro Tools. Installation was easy, though it requires the use of an iLok. CLC's main window shows Input and Output values for Integrated Loud-

We all have experienced watching TV when a commercial break starts and you lunge for the remote because audio for the commercial is way louder than the program you were watching. That happens because the program has a wide dynamic range, while the commercial is compressed. They may have the same peak level, but the compressed audio is perceived as louder.

Several years ago, in an effort to solve this irritating issue, the International Telecommunications Union developed a new audio scale known as LKFS (Loudness K-weighted relative to Full Scale), which employs a K-weighted filter to yield measurements reflecting how loud a person perceives a given passage of audio. The European Broadcast Union calls this measurement LUFS (Loudness Units Full Scale).

Concurrently, the EBU developed a set of rules defining maximum audio levels for broadcast based on this scale; in 2012 Congress approved the CALM Act establishing similar rules for broadcast in the United States. These standards define average loudness for broadcast in Europe (-23 LUFS) and the U.S. (-24 LUFS). If your audio exceeds this average level, it will be turned down to the requisite level upon broadcast.

ness, Loudness Range, Short Term Max, Momentary Max and True Peak levels. The Loudness Controller graph on the left shows the relationship between loudness input and output, while the LRA Controller graph on the right displays the relationship between Loudness Range input and output. The center section features a Loudness Gain bar graph, an LRA reduction bar graph and an activity indicator for the True Peak limiter. I found the bar graphs and TP indicator extremely useful in evaluating the software's influence on processed audio. RTW presumes that the user has familiarity with Loudness Units, so you won't find any tutorial information regarding LUFS, LU or LRA in the manual.

TRY THIS

RTW's Continuous Loudness Control has the ability to process audio to a target loudness level in real time. First, click the Device tab in the main window and then click on the tool icon to open the Settings page. Clicking on the Audio tab will enable you to set the number of I/O channels and the channel mode (Stereo, 3.0, 5.0 or 5.1). Under Device Setup, set CLC to the audio interface you'd like to use. You can then set the number of active inputs and outputs (as defined by your interface), sample rate from 44.1 to 192 kHz, and buffer size from 0.4 to 45 mS. Click OK to accept the settings and close the Settings page. CLC will now stream audio through your interface from an external source such as a mixer, with the output being loudness-corrected.

CLC processes audio in three distinct modes. Dynamic mode uses RTW's proprietary time-variable processing of loudness and loudness range, with target values for each. Static mode simply shifts the gain level up or down but leaves the dynamics unchanged unless you decide otherwise. Semi-dynamic mode functions somewhat like a traditional compressor, permitting dynamics to be reduced by a percentage (it would be nice if we could see that value as a ratio).

My first use of CLC was to process audio for a 60-second commercial spot with background music and a voice-over. I plugged CLC into the master channel of a Digital Performer session and pulled up a preset for ATSC A/85. Opening up the CLC menu revealed some of the process settings, most noticeably Target Loudness and Maximum LRA.

The ATSC A/85 preset targets audio to -24 LUFS and allows a loudness range of 12 LU. This worked very well in managing the overall loudness, but we felt that the music before and after the voice-over was slightly low. Setting the Max LRA to 8 LU solved the issue, raising the perceived loudness of the music while maintaining the target output level. The same settings worked perfectly on a radio spot for a local NPR station. All the while, the sound quality remained largely unchanged—though at severe settings it was possible to create artifacts such as pumping.

Next up was using CLC as a stand-alone application for file, batch and live processing capabilities. When you open CLC as a stand-alone app, the software defaults to Device mode, the purpose of which is to process audio live via your audio interface. This is the mode where CLC flexes its unique muscle (see the "Try This" sidebar).

Playback mode permits CLC to import a file and process it to a target loudness level. This is not a "playlist function"—it's intended as a way to preview the effects of CLC and adjust settings if needed. I found this to be a useful way to audition and tweak settings for Device mode. I could import a test file, apply CLC in Playback mode, make adjustments if necessary, and then save my settings as a custom preset. Then in Device mode, I could load that custom preset and apply it to live streamed audio.

In File mode, CLC imports an audio file, analyzes it and then creates a loudness-corrected version. Results in this mode on a Mozart piece were fantastic: I was able to set a target of -18 LUFS, correct the Integrated Loudness within a half-LU and tame the LRA within 0.2 of 12—and the audio didn't sound processed at all. Impressive.

I also used File mode to create a preset for processing a series of show cues, the levels of which varied all over the place and required a fair amount of babysitting on the mixing desk during a live show. Batch mode allowed me to load in all of the files (CLC reads just about any file for-

PRODUCT SUMMARY

COMPANY: RTW

PRODUCT: CLC Continuous Loudness Control

WEBSITE: www.rtw.com

PRICE: \$899.99 MSRP

PROS: Operates as a plug-in or stand-alone in real time; accommodates a variety of international broadcast loudness standards; provides live, file-based and playback modes

CONS: Not for the casual user. Manual needs a better translation.

mat), then analyze and process them into a new folder. The original files remained unchanged. I chose to write the corrected versions as WAV files, but you have the option of maintaining the original file format or converting to any of several formats, including BWF, FLAC or AIFF. I was then able to burn the loudness-corrected files to a CD for playback during the show. The levels between cues were way more consistent than when using the original files.

INDISPENSABLE

Continuous Loudness Control is a very powerful tool squarely aimed at the broadcast market, but really any studio that creates audio for broad-

cast would find it indispensable. It can be used to correct audio that was mixed without consideration for broadcast loudness standards, as well as for targeting a loudness standard while a production is still in progress. RTW's presets are incredibly useful, and I found myself relying upon them more often than trying to DIY settings. As far as we know, CLC is the only software able to perform loudness correction in real time with minimal latency, making it invaluable for live streaming on TV, radio, the Internet or even in corporate applications. ■

Steve La Cerra is a New York-based audio and live sound engineer.

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Tech // reviews

MANLEY FORCE MICROPHONE PREAMPLIFIER

High-End, 4-Channel Tube Gain



The Manley Force features settings for High/Low gain, 120Hz HPF, Polarity, +48VDC phantom and a 7-segment LED meter.

There are quite a few 4-channel microphone preamps on the market, most of which are solid-state. Some of them feature inserts, tone shaping and even A/D conversion, and at least one features blending of solid-state and tube circuit paths. But there aren't many dedicated to the deceptively simple task of amplifying a microphone using a tube-based signal path. That's where the Manley Force enters.

The Force is a 4-channel vacuum tube microphone preamp based on the company's proprietary CORE circuitry, which was designed for high headroom, extended frequency response and low noise. Housed in a two-rackspace chassis, each channel offers a mic input with a hand-wound Manley IRON transformer, plus a front panel DI. Controls per channel include High/Low gain, 120Hz HPF, Polarity, +48VDC phantom, 7-segment LED meter, and a conductive plastic pot for level control. Rear panel XLR audio I/O connectors are gold-plated, as are the ¼-inch DI jacks.

HIGHLIGHT REEL

A few highlights of the Force's design bear mentioning: The level control is actually an attenuator. Its default position is fully clockwise (40dB gain), so the best S/N performance is achieved by setting the gain switch to Low and running the attenuator as close to clockwise as possible. When set to High, the gain switch adds 10 dB of amplification. An internal jumper can be moved to increase

maximum gain to 60 dB, yielding a slight increase in the noise floor (see the "Try This" sidebar).

Four Sovtek 12AX7WAs are used (one per channel) in Class-A operation, and unlike some "toob" preamps, they are run from 300-volt rails for increased headroom—and indeed the Force flexes plenty of headroom. The LED meter indicates output level; when the red LED illuminates at +24 dBu, the preamp still has about 8 dB before clipping.

Audio circuitry for the Force is neatly laid out on a single large circuit board, and the power supply is mounted vertically on the right side panel to separate it from the audio section. As I've come to expect from Manley, build quality is high, with 1-percent resistors and WIMA caps in critical positions of the audio path. The front panel (beautifully finished in Manley's trademark gray/blue) is almost a quarter-inch thick, and will have no problem supporting the weight of the chassis when screwed into a rack.

TRY THIS

With the unit on a flat surface and the rear panel closest to you, remove the two screws that pass through the top of the rear panel; one screw on either side of the top panel, and three screws that pass through the left side panel. Use your fingernails or a plastic screwdriver to lift off the top panel. There is one gain jumper per channel, located approximately 10 o'clock from each tube. The jumper's default position is 50 dB. Remove it and relocate it to the 60 dB pins. The channel will now provide a maximum gain of 60 dB. You can change any or all four of the jumpers.

FIRE IT UP

When engaging the Force's front panel power switch, the power indicator blinks and the audio outputs are muted for about 30 seconds while the unit warms. When the LED lights steadily, audio is unmuted and the unit is ready for use.

The clean layout of the front panel made it very easy to operate. I allowed the Force to warm up for about 30 minutes before using it for the first time on a session recording drums. The kit was recorded using a Sennheiser e602II on kick, Audix i5 for snare, and a pair of DPA 2011s overhead. All of these mics were run through the Force to a Metric Halo LIO8. Bottom end extension on the kick drum was markedly improved compared to my usual kick preamp and made me go “mmm,” in a good way. Ditto for the snare that now had personality and increased impact, and cymbals, which sounded exceptionally clear.

On another drum session I used a pair of Groove Tubes MD2a tube condenser mics overhead with the same kick and snare mics. It's been a long time since I've used the MD2a mics, and my memory of capturing a beautiful kit sound with them were accurate: the combination of the MD2a and Force was wonderful, providing plenty of low end (no close tom mics required), excellent imaging and detail, and a crisp, solid snare. It was glorious. Listening to only the overheads, you'd swear that the hat and snare were close-miked.

My next session using the Force was a singer/songwriter who played acoustic guitar and sang at the same time. I used a pair of Audio-Technica AT4050 mics, both set to figure-8 and arranged in a sort of Blumlein configuration—not as a means of recording stereo but as a means of taking advantage of the nulls in the figure-8 patterns so that the vocal mic rejected the guitar, and the guitar mic rejected the vocal. It was quite effective. In this context, the combination of the Force and AT4050s produced a very “finished” sounding vocal; it didn't need EQ, and the vocal sat atop the guitar in the mix quite nicely.

Using the Force with an AKG C12VR on male lead vocal for a pop song produced a crisp, present, full sound. When the singer got loud, there was absolutely no hint of strain on the Force—it just kept getting louder. This preamp has headroom for days. On the opposite end of the spectrum, the Force was dead quiet when used in conjunction with a Neumann TLM103 for a softly picked acoustic guitar.

PLENTY OF CLEAN GAIN

I also used the Force with RCA 44BX and RCA 74B ribbon micro-

PRODUCT SUMMARY

COMPANY: Manley Laboratories

PRODUCT: Force Four Channel Microphone Preamplifier

WEBSITE: www.manley.com

PRICE: \$2,500 MSRP

PROS: Excellent sound, high-quality audio path; DIs on all channels; easy to use.

CONS: Insufficient gain for some low-output ribbon microphones; no inserts.

phones. The inherently low output of these mics made it difficult to achieve sufficient recording level into my DAW, even with High gain engaged and the attenuator at 0 (max gain). I decided to take advantage of the Force's internal gain setting, so I popped the hood and moved the jumpers on two channels to “60 dB.” This worked very well, generating a reasonable (though certainly not hot) level into the DAW using the RCA mics while still giving me two channels at the stock gain setting for lower noise when using hotter mics. The background noise level was slightly higher but only noticeable when tracks were soloed. This is a very useful feature. Recording a male vocal using the Force (!) and an RCA 74B preserved all of

that mic's trademark murkiness, providing a timbre that takes you back to the classic days of radio.

Unlike some preamps, the gain switch setting applies to the Force's front panel DIs. Acoustic guitar via the DI was clean, bright and clear, and made the pickup sound less brittle than other DIs. Synths sounded great through the Force DIs: clean, quiet and dare I say “warm” (sorry). It easily handled hot outputs, so open that at-

tenuator and let it rip. I found that inputs to many interfaces gave up way before the Force. There's no switch to engage the DI, but when inserting a 1/4-inch connector you can hear a relay automatically switch to the DI, so you won't have any concerns regarding which input (mic or DI) is active.

CLASS ACT

The Force distinguishes itself by being the only 4-channel mic pre smack in the middle of the price range that dedicates its topology to tube amplification, sans tone controls or A/D conversion. Some people might be bothered by the lack of inserts, but if I'm buying a mic pre, I want my money going into the preamp, not features that I'm unlikely to use.

The DIs are more than just an afterthought, and the ability to internally adjust the gain setting comes in handy for use with ribbons or low-output dynamic mics such as the Shure SM7B. Add to that great build quality, stunning looks and ease-of-use, and Manley has another winner. ■

In addition to being the Sound Reinforcement Editor for Mix magazine, Steve La Cerra is the front-of-house engineer and tour manager for Blue Öyster Cult.

Four Sovtek 12AX7WAs are used (one per channel) in Class-A operation, and unlike some “toob” preamps, they are run from 300-volt rails for increased headroom—and indeed the Force flexes plenty of headroom.

Continued from p. 10

Audio-Technica released its new and upgraded ATM350a microphone systems. Options include the AT8492D Drum Mounting System (5-inch Gooseneck); AT8492PL Magnetic Piano Mounting System (9-inch Gooseneck); AT8492U Universal Clip-on Mounting System (5-inch Gooseneck); AT8492UL Universal Clip-on Mounting System (9-inch Gooseneck) and AT8492W Woodwind Mounting System (5-inch Gooseneck).

The Abbey Road Vinyl plug-in from Waves features the ability to move the location of the tone arm across the record, changing the frequency response and distortion like in the real world. You can also add vinyl noise and crackle, apply a gradual slow-down/stop turntable effect, and add wow and flutter effects for extra analog warmth.

Focusrite announced the Red 8Pre interface with eight Air-enabled preamps and 64x64 I/O, plus the new RedNet Control 2.0 with the ability to control up to 600 RedNet devices in total, representing up to 9,600 Dante audio channels.

The Astel and Kern AK300 portable, high-end recorder features twin balanced inputs, preamps with phantom power, and support for 32-bit/384KHz PCM up to double-rate, 5.6MHz DSD. Also onboard are 64GB internal flash storage and a single microSD card slot for up to 200GB of additional storage memory. Multiple units can be strapped together for multichannel live capture.

Ocean Way Audio debuted the HR3.5 Reference Monitor featuring a two-way dual-horn system with a 1-inch HF and 8-inch MF drivers, mechanically time-aligned with twin 12-inch sub-bass drivers per channel. Three built-in amplifiers feature analog and digital inputs, 96kHz/24-bit sampling, and tri-amped 3,400 watts per channel of pure power.

Neutron is a new plug-in from iZotope featuring Track Assisting with automatic instrument detection for vocals, dialog, guitar/instruments, bass, and drums. Processors include a static or dynamic EQ, Compressor with modern and vintage modes, a three-mode Transient Shaper, Exiter, and Limiter.

Antelope is offering new hardware-based FPGA effects for its range of I/Os. Models include NEU-W492 and NEU-W495 equalizers, and four new 4K series models including VEQ-4K Orange, VEQ-4K Pink, VEQ-4K Black and VEQ-4K Brown.

Genelec displayed its 8351 three-way Smart Active Monitor powered by Class-D amplifiers for the bass (150 W) and mid-range (120 W) drivers, with a discrete (90 W) Genelec-designed Class-A/B amplifier for the tweeter.

Bose had its new ShowMatch DeltaQ array loudspeakers in the booth featuring three models (5/10/20-degree vertical) offering a compact two-way design including four improved Bose EMB2S compression drivers and two proprietary Bose 8-inch neodymium woofers.

Soundelux shared the news of the purchase of the Soundelux name for featured products. New at the show, the Soundelux U195 cardioid FET P48 microphone featuring a new K67 capsule while maintaining the famously innovative "FAT" switch low-frequency control and its unparalleled massive output transformer.

QSC introduced the TouchMix-30 Pro 32-channel digital mixer with 32 mixing channels (24 Mic/Line, 6 Line, Stereo USB), 16 outputs, and signal management for a wide range of applications. Other features include a large (10-inch) multi-touch touchscreen, anti-feedback and room tuning wizards, two real-time analyzers, touch-and-route patch matrix, and eight subgroups with 6-band full parametric EQ.

SSL showed its Nucleus2 controller featuring talkback, SSL console-grade mic preamps, and a new USB sound card. Also onboard are high-quality motorized faders, metal chassis, big weighty jog wheel, and heavy-duty transport buttons.

Independent Audio will now represent Jünger Audio's broadcast tools, along with the CONEQ, a patented technology for the measurement and equalization of loudspeakers. Also in the booth was Thermionic Culture's new Swift 2-channel tube equalizer, DACS Audio's Clarity Headlite 3 headphone amplifier and FREQue II 2-channel ring modulator, and Sonifex AVN-GMCS PTPv2 Grandmaster Clock with GPS Receiver and AVN-TB Range of Talkback Intercoms Using Audio Over IP, RAVENNA/AES 67.

ATC showed a new and affordable speaker, the SCM12 Pro. Features include a 25mm/1-inch soft-dome tweeter and ATC's 150mm/6-inch proprietary CLD drive unit. Cone construction is courtesy of another proprietary ATC technology that rep-



ATC SCM12 Pro



SSL Nucleus2 controller



Telefunken direct boxes



Bose ShowMatch DeltaQ

resents another advance in driver design. Power comes via the 150 W/channel P1 Pro dual-mono power amplifier.

Apogee unveiled three premium Thunderbolt audio I/O boxes for Mac: the Element 24, Element 46 and Element 88, each with a different number of analog and digital I/O. Element introduces a new control ecosystem that features an advanced blend of software and hardware options.

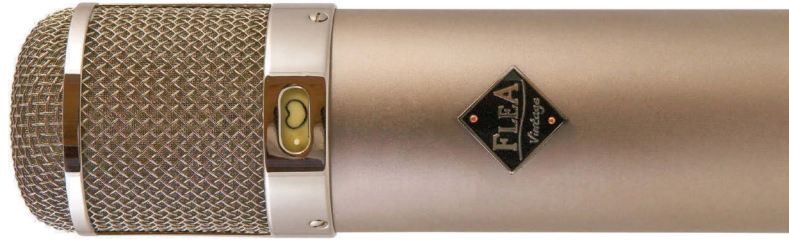
Telefunken's TDA-1 (mono) and TDA-2 (dual) active FET direct boxes employ discrete Class-A FET circuitry coupled with a high-quality transformer providing the perfect balance between clean, high-headroom performance and warm, saturated tone. ■

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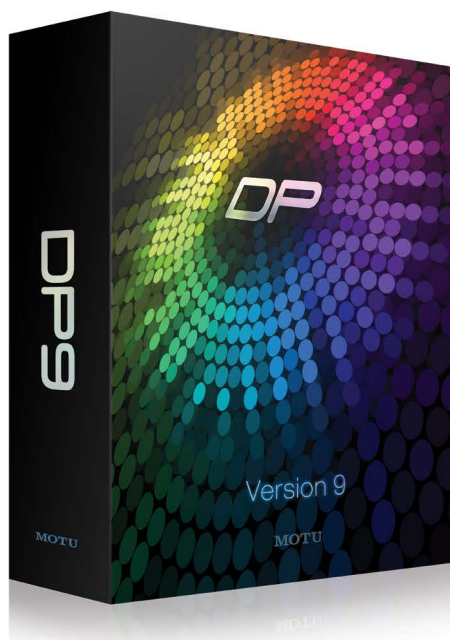
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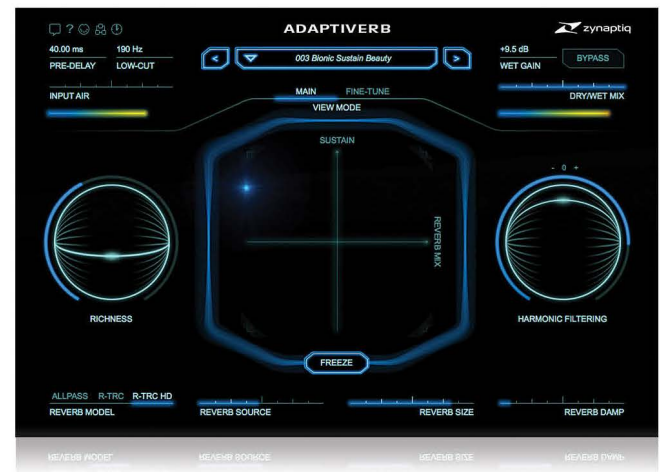
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Neumann TLM 103

Large-diaphragm cardioid microphone

The TLM 103 combines a capsule drawn from the legendary U87 with tried-and-true transformerless circuitry to deliver classic Neumann sound to any project studio, professional facility or performance venue. Incredibly low self-noise, robust feedback suppression and solid construction make the TLM 103 a must-have mic for any situation.

Focal Trio6 Be

450W 3-way studio reference monitor

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Fresh and Futuristic



By Kevin Becka

The 2016 AES just wrapped up, and I saw some great new gear. Pro Tools 12.6 is rocking new clip-based processing, among other updates, ATC's SCM 12 is the company's most affordable monitor to date, and Mojave's exciting and tubey MA-1000 travels upmarket at \$2,495. But these are all names, and gear we're familiar with; what's really new in audio? I found out at an out-of-the-way group of booths tucked upstairs and down the hall at the Los Angeles Convention Center. The Audio for Virtual and Augmented Reality exhibits (AR/VR) is where the fresh and futuristic gear, concepts and workflows were hiding.

If you're not familiar, AR was ashamedly brought to the news cycle with the Pokémon Go app that has blown up all over the world. Even Norway's PM was caught playing during a yawn-worthy debate in parliament. On the other side, VR is the immersive, computer-simulated environment created when you put on a headset and headphones and interact with a virtual world, event or game. This is the killer app that has Steven Spielberg, Live Nation, Facebook, CNN, HBO and NBC Sports partnering with companies like NextVR, Jaunt, and the Virtual Reality Company, while Chinese and U.S. investors pour big dollars into the growing technology.

What are the new names and gear being developed for this jump into the future? Some you already know: Dolby, DTS and Sennheiser are in with Atmos, Headphone X and Ambeo VR products, but there are others who are taking the process above and beyond. Gaudio, Visisonics, Dysonics and Aurelia Soundworks all had impressive demos at the show, and they are not messing about.

Gaudio (www.gaudiolab.com) has developed binaural rendering technology that has been adopted as an international standard named MPEG-H 3D Audio Binaural Rendering. Gaudio's tech team won over ISO/IEC MPEG after competing against global tech giants. It's all about making the experience more immersive by playing with Head Related Transfer Function, the loudness and frequency gap that happens when sound travels around your head and enters the ear through the complex shape of the external ear or pinna.

I learned more about HRTF and how it works in VR from my old friend Michel Henein at the Visisonics booth. He explained the company's technology for immersive audio as the difference between object-based and scene-based panning. For example, without some serious DSP, you can't easily create believable audio in real-time where you, the viewer, are moving in a complex scene. For example, where you are freely moving in an environment where

one wall is carpeted, another glass, the ceiling is 40 feet above you and you're standing in water. This requires scene-based panning where complex acoustics are rendered quickly as you move around. Visisonics' move into VR for games, film and more came from the development of its Realspace Audio Panoramic Camera that has five HD cameras and 64 microphones embedded around an 8-inch sphere. The device was originally developed as a tool for industry. For example, Tesla uses it to pinpoint air leaks inside a car as it sits in a wind tunnel, the Naval Research Lab uses it for submarine research, and you can isolate a conversation in a noisy, crowded environment (Ethan Hunt has two of these I'm sure).

I saw the array working in the booth, all rendered flat using Visisonics' Realspace Acoustical Analysis Tool, where I could see the booth and surrounding environment, including me, in 3-D. Whenever I spoke to Michel, or he spoke to me, I could see a splash of light localized around our mouths. This was happening for every sound source around us in 360 degrees, which I could see on the screen. All this comes about because the audio and video are synched using an internal FPGA processor, which is later collected and sent to a laptop using a USB 3 cable.

Next door at the Aurelia Soundworks booth it was less about the tech and more about spreading the news about the company's process outline and projects. It sells an A-to-Z production process involving sonic capture, optimization of assets, post-production sound design and soundscape composition, then Periphonic 3D audio mixing in a custom 360-degree Sound Dome. Then it delivers stable and consistent results for almost any audio or surround format. Aurelia's clients include NBC, for whom it produced the Blindspot season teaser for YouTube; Paramount, where it did sound design and a 360 mix for Zoolander No. 2 for the Jaunt VR platform; and Inside Syria for ABC News, among many others.

Dysonics uses its RondoMic, a high-fidelity 360-degree mic array that captures any environment in a native binaural format. Like Aurelia, Dysonics also has an end-to-end service for capture, processing and delivery of VR audio. In addition, it offers a RondoMotion headphone motion tracker that works with any head-worn stereo transducer allowing users to interact with sound relative to their head movement.

New gear, new processes and new delivery formats mean new jobs and directions in audio. Unlike 3-D TV and 5.1 audio, which never really caught fire for consumers, VR and enhanced audio for AR have real possibilities because they're driven by a killer app—immersive, and affordable interactive video. You may think it's not ready... but you may not have to wait as long as you think! ■

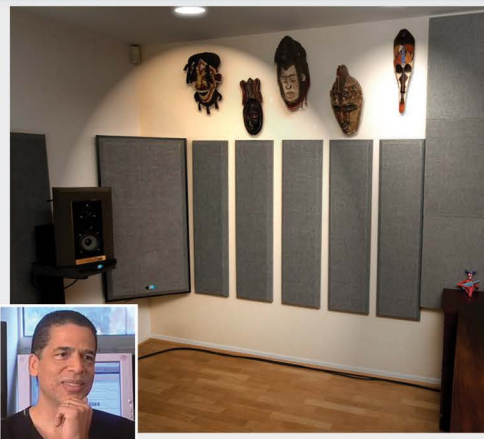
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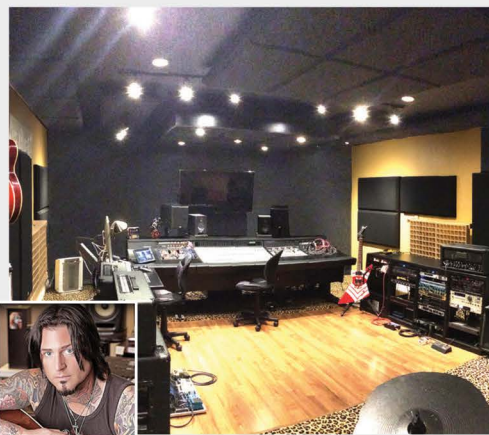


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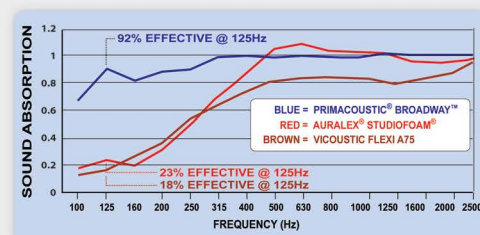
"Not only does my room sound amazing, it's also really beautiful!!!" ~ **John Rzeznik**

Performer/artist/producer - Goo Goo Dolls.

"Not only does my room sound amazing, it's also really beautiful!!!"

~ **John Rzeznik**

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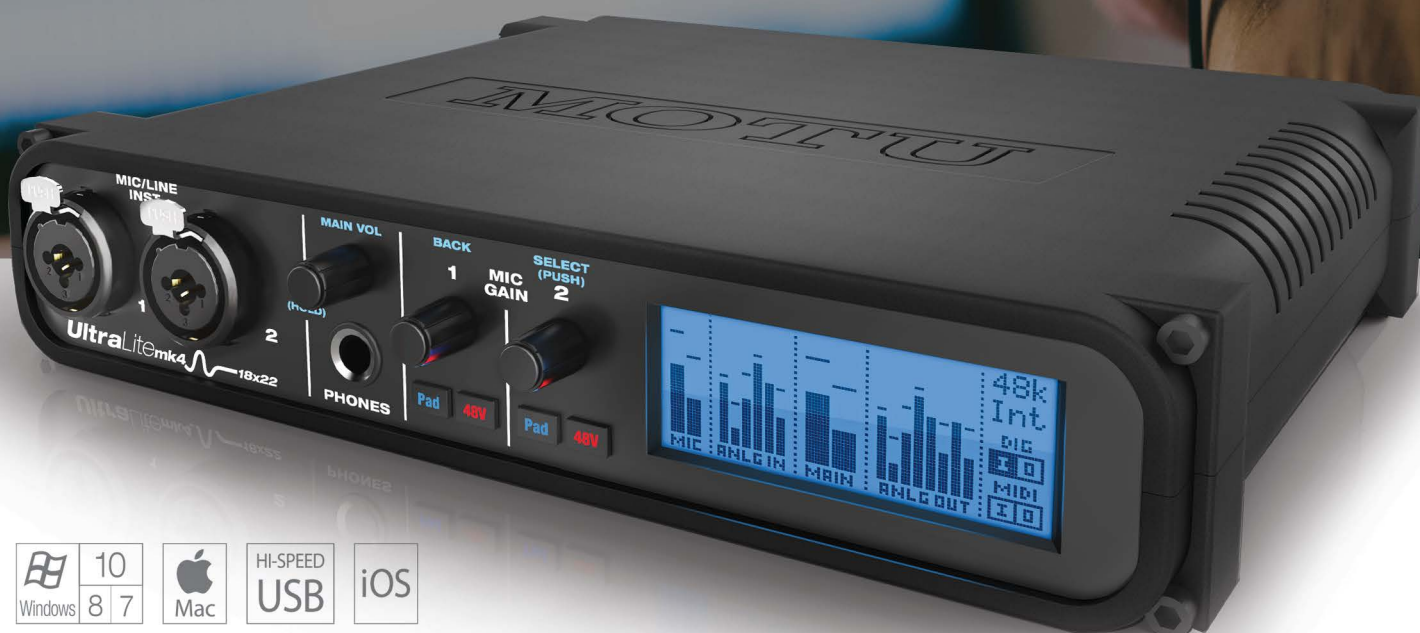
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