TAKING STOCK OF WOODSTOCK—The world's most famous festival, Woodstock, took place 50 years ago this month, and for those who weren't there (or were and don't remember it), Rhino is releasing three versions of its *Woodstock – Back to the Garden – 50th Anniversary Experience* box set, including a 38-disc edition with all 432 tracks (267 previously unreleased) performed by every artist on the bill, including John Sebastian, seen here. Go behind the scenes of the 14-year audio restoration project that made the collection possible, with our coverage starting on page 18.

HENRY DILTZ/COURTESY OF RHINO

Audio's Place in the Rising Global AV Market

BY CLIVE YOUNG

NEW YORK, NY—If it seems like the pro AV industry has been particularly busy in recent times, that's not a vibe or a feeling; it's a quantifiable fact. According to AVIXA—the Audiovisual and Integrated Experience Association, formerly known as InfoComm—the industry is in the midst of an up-swing, and what's more, things are just getting started.

Globally, the pro AV industry as a whole was at $231 billion in 2018 and is expected to close out 2019 around $247 billion—but it's expected to hit $325 billion by 2024, the result of a near 5.7 percent compound annual growth rate (CAGR). That's just one of

Tools for the Personal Studio

BY STEVE HARVEY

Ask any group of audio professionals or recording enthusiasts if there is a piece of hardware or software they have recently acquired for their personal space that has helped improve the quality of their productions and you are likely to get a different answer from each person. Responses solicited via social media for this report cover the gamut and should provide some pointers for anyone looking for the magic bullet that will help them take their productions to the next level.

Truth be told, a personal studio, whether in the home or elsewhere, no longer needs to include even a modest collection of hardware. As demonstrated by recording artists such as Jacob Col-lier, and Billie Eilish and her brother Finneas, virtually all you need to produce a major release is a laptop computer loaded with your software of choice—in all their cases, Apple Logic Pro X—an interface and some form of monitoring.

John Krivit, past-president of the AES, adjunct faculty at Bridgewater State University and director of education at pro retailer Professional Audio Design, points to Sonarworks Reference 4—software that calibrates speakers and headphones to deliver the same

Focusrite Acquires ADAM Audio

5

The Focusrite Group has acquired professional studio monitor loudspeakers distributor Pro Audio—comprising Berlin-based ADAM Audio and its overseas subsidiaries—for $20.2 million.

Summerfest Raises the Roof

40

Many concert acts have raised the roof at the 23,500-seat American Family Insurance Amphitheater, the flagship venue of Milwaukee's Summerfest, but this year it happened literally, as architects and audio pros raised a 607,000-pound, half-acre section of the roof 26 feet higher.

Sennheiser Makes Major Moves

BY PSN STAFF

GERMANY—It was a busy July for Sennheiser, as the company released numbers for its fiscal year 2018, made a high-profile corporate acquisition to bolster its AMBEO 3D sound technology, and underwent an executive shakeup at its Georg Neumann GmbH subsidiary.

The Sennheiser Group generated turnover of $802.6 million in fiscal year 2018, which corresponds to an increase of $48.6 million compared to 2017. EBIT amounted to $23.9 million. Sennheiser increased its research and development investment to $68.3 million in 2018—4.5 percent more than the previous year.

The professional division generated turnover of $375.7 million in fis-

The CEOs of Dear Reality GmbH (from left): Uwe Cremering, Achim Fell and Christian Sander.

cal year 2018. This corresponds to an increase of $15.7 million, or 4.3 percent more than the previous year. The consumer division generated turnover of $427 million in the past fiscal year, an increase of $33 million, or 8.4 percent more than 2017.
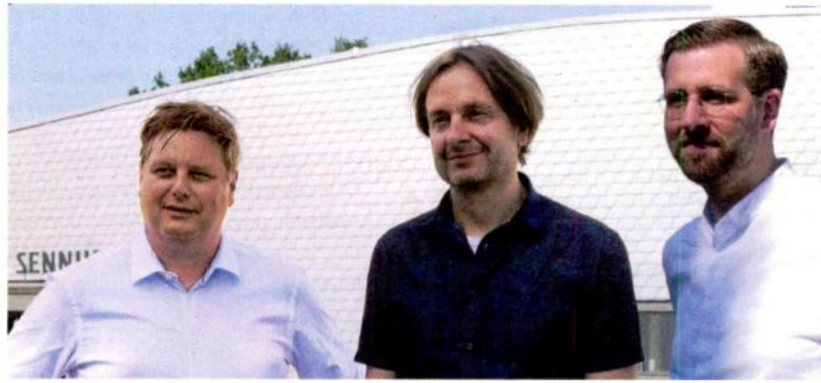
In the Americas region, turnover increased by $20.2 million, or 10.3 percent, year on year to $217.3 million. The performance of the U.S. dollar, which significantly depreciated in value against the euro over the course of the year, had a limiting effect.

In mid-July, Sennheiser acquired Dear Reality GmbH, taking on a majority share in the VR/AR software company, which creates immersive audio controllers and spatial audio algorithms. Uwe Cremering, responsible for AMBEO Immersive Audio at

Sennheiser, will become Dear Reality's third CEO, alongside founders Achim Fell and Christian Sander.

Sennheiser had been an investor and partner with the developer for the last 18 months; the acquisition is expected to provide Sennheiser with more 3D audio professionals to help develop new AMBEO products and workflows. Dear Reality will continue to operate as a separate company based in Düsseldorf. The latest Dear Reality software is dearVR Spatial Connect, which allows sound mixers to create immersive 3D audio content in VR.

Even as it was incorporating a new company into the Sennheiser Group, another was undergoing landmark changes. Wolfgang Fraissinet, a key figure in the Georg Neumann GmbH brand for nearly three decades, an-

nounced he would be leaving his position as president, marketing and finance. Until the position has been filled, the Neumann management team will report directly to the COO of Sennheiser, Peter Claussen, who is also president research and development of Georg Neumann GmbH.

Fraissinet started his career with Georg Neumann GmbH in 1990, shortly before the company was acquired by Sennheiser in 1991. During this period, Fraissinet was part of the team that helped to integrate the Neumann business into Sennheiser, with a focus on the microphone portfolio. In 1992, he became head of marketing and sales, a position in which he professionalized the company's international marketing and PR activities, raising awareness of the Neumann brand and anchoring it in the premium recording segment.

In 2000, Fraissinet became president, marketing and sales, of Georg Neumann GmbH. When Neumann took over the Klein+Hummel monitoring loudspeaker business in 2010, he was instrumental in establishing the monitor line in the studio market. He also introduced a new CI/CD for Neumann.Berlin, culminating in a move to new headquarters in Berlin in 2015.

Dear Reality
www.dearvr.com

Sennheiser
www.sennheiser.com

briefs

Audix's Houck Retires

WILSONVILLE, OR—Gene Houck, director of sales at microphone manufacturer Audix (www.audix.com), retired at the end of June. Houck joined Audix in December 2000, where he began boosting the company's retail and pro audio sales, going on to develop the company's role within the house of worship market. Houck knew the markets well and between his existing connections and personal knowledge of the challenges they faced, he built relationships with contractors who specialized in house of worship installations, and additionally arranged endorsements with noted CCM artists Casting Crowns, Phil Keaggy and Lincoln Brewster. Houck will be succeeded by David Marsh, formerly with Audio-Technica. During his 16-year tenure with the Japanese company, Marsh rose from regional sales manager to director of sales for the professional markets in the United States and Canada.

Audioboom Adds On

NEW YORK, NY—Podcast company Audioboom (www.audioboom.com) has added two podcast recording studios in its New York City office, aiming to expand its operation and support growth of its original content network and coproduction partnerships. With the new studios, the company's production facility is expanded to more than 1,000 square feet, including a new green room.

Focusrite Group Acquires ADAM Audio

HIGH WYCOMBE, UK—The Focusrite Group has acquired professional studio monitor loudspeakers distributor Pro Audio—which comprises Berlin-based ADAM Audio and its overseas subsidiaries—for $20.2 million.

ADAM Audio will continue to operate from its main offices in Berlin, Germany, under the leadership of managing director Christian Hellinger. A corporate statement from Focusrite emphasizes that the monitor company will remain autonomous.

The acquisition is the first for Focusrite Group since it went public in 2014; the conglomerate now comprises Focusrite, Focusrite Pro, ADAM Audio, Novation and Ampify.

Tim Carroll, CEO of the Focusrite Group, noted, "We need to ensure they [ADAM Audio] receive all the support they require to continue raising the sonic bar. That our two companies are so aligned from a cultural perspective reassures me that, as we increasingly work together, great things will happen. With so much expertise between us in acoustics, sound reproduction, DSP, and con-

Tim Carroll, CEO, Focusrite Group (left), and ADAM Audio managing director Christian Hellinger.

trol, the opportunities are abundant to refine recording and production workflows together."

Between the brands, the Focusrite Group already offered interfaces, instruments and musiccreation software. As Focusrite founder and chairman Phil Dudderidge noted, "I am delighted that we have an important new addition to our family of brands. For the Focusrite Group, the creation and recording of music

is everything. With a vision to create the most holistic creative experience for recording professionals and musicians alike, choosing the right high-precision studio monitor brand is key. Together with ADAM Audio we can achieve so much more, removing the technical barriers that frustrate artists seeking to record and reveal their true sound."

The Focusrite Group
www.focusriteplc.com

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These days, a "personal studio"
can be anything from a proper
recording facility to a smart-
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sound even better? A plethora
of recording pros from across
the industry weigh in with their
advice and insights.

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Craig Anderton deep dives into
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what it means for audio pros.

Paul Tapper, CEO of NUGEN
Audio, shares how a Ph.D. in
pure mathematics, a background
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the right place at the right time
brought NUGEN to life.

Peter Janis, former CEO of Radial
Engineering, discusses ways to
get creative when it comes to
creating demand for your pro
audio product.

Jacques Sonyieux talks with Will
Turpin of Collective Soul about
the band's 10th album, *Blood*;
staying inspired after 25 years;
and exploring one's humanity.

fromtheEDITOR

CLIVE YOUNG
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Live Sound Gets Environmentally Sound

August is the height of the summer, and for many sound reinforcement pros, it's also the height of the business year, as it's packed with concerts and events, whether at your village green or inside a massive stadium. In these divisive times, thank goodness live music is still one of the things that can bring people from all walks of life together to share an upbeat, positive experience.

Adding to those good vibes, it turns out that live shows are good for your health. A research study released last year by London's O2 Arena and Patrick Fagan, an expert in behavioral science and associate lecturer at Goldsmith's University, found that people who watched just 20 minutes of a gig experienced a 21 percent increase in feelings of well-being. The report went on to say that "additional scholarly research directly links high levels of well-being with a lifespan increase of nine years, pointing to a direct link between gig-going and longevity." All of which means live sound pros are going to live forever (your mileage may vary).

If concert tours are good for the heart and the mind, however, they are less beneficial for the environment. In recent years, many major touring acts have bought carbon credits as a way to offset carbon dioxide released into the atmosphere by their productions. It's a laudable decision, but still, some industry professionals estimate a full 85 percent of the carbon footprint created by a concert actually comes from the fans who drive there—a heady amount once you get into the realm of shed, arena and stadium tours, but one that some acts are willing to account for in their efforts to mount ecologically responsible tours.

In June, the Dave Matthews Band was named a Goodwill Ambassador for the United Nations Environment Programme in recognition of how the group and its nonprofit partner Reverb have worked together since 2005 to bring an environmentally responsible bent to virtually every aspect of the group's business, particularly its touring activities. Reverb estimates that over the course of 15 years, 20 tours and 578 concerts with the DMB, they've eliminated 121,000,000 pounds of CO_2; eliminated 478,000 single-use plastic bottles at shows; raised $2 million from fans for environmental causes; used 477,000 gallons of locally produced biodiesel in their tour fleet vehicles; and lots more.

Reverb designs a sustainability program for every stop on the band's North American tours, looking to fuel trucks and buses with biodiesel, source food from local farms for catering, reduce use of single-use plastic items, compost and recycle backstage, and offset tour carbon emissions by helping fund the creation of projects like solar and wind energy. DMB is hardly the only band Reverb works with; this summer, the nonprofit is involved with tours by Dead & Company, Shawn Mendes, Pink, Fleetwood Mac, Heart, Guster, John Mayer, Phish and others.

Live sound pros don't have to be on a national tour to help make a difference. One obvious move for regional and local live sound companies is to create tighter truck packs composed of smaller, lighter audio equipment. The increasing prominence of compact line arrays and modern networking systems that use simple Cat 5 cables certainly aid that effort, and ultimately less gear and less weight means less gas consumption and vehicle wear.

Likewise, if you're in the market for new equipment, it's not a bad idea to look at the practices of the manufacturers you're buying from; keep an eye out for terms like "energy efficiency" and "responsible manufacturing," as well as manufacturers who have made a commitment to sustainability by obtaining ISO 14001 certification (an environmental management system), sourcing green building materials and/or using alternative energy sources.

Simple efforts like these are all incremental, but across an industry, they add up, in turn helping create a better world for the people going to concerts next August—and all the Augusts to come.

Scientists Capture Queen Using Quantum Physics

BY STEVE HARVEY

WASHINGTON, D.C.—A group at the National Institute for Standards and Technology (NIST) in Boulder, CO, took a detour from a six-year study of atom-based communications to construct an "atomic recording studio" that demonstrates the intersection of quantum physics and music.

"It is quite amazing that over the past decade we have learned to control ensembles of atoms to such an extent that they can be used to record waveforms," write the team—Christopher L. Holloway, Matthew T. Simons, Abdulaziz H. Haddab, Carl J. Williams and Maxwell W. Holloway—in a paper published recently by the American Institute of Physics (AIP).

Using an acoustic and an electric guitar, a microphone, Audacity software and their quantum system, the team was able to record and play back solo and real-time multitrack performances. They reportedly also captured a stereo recording of Queen's "Under Pressure" to demonstrate the ability of the system to simultaneously detect the vocal and instrumental parts and record them separately.

The nascent atomic communications technology uses the properties of Rydberg atoms to encode radio waves in a similar manner to cellphone communications. Rydberg atoms incorporate electrons that can be excited to very high energy levels. Changes in the quantum state of those atoms can be detected by lasers, picked up by a photodetector and sent as an electrical signal into

a computer for recording or a loudspeaker for playback—in other words, those quantum changes are heard as audio signals.

"This Rydberg atom-based sensor can act as a compact receiver/antenna, enabling quantum-based receivers to be used in communication applications to detect and receive modulated signals," according to the team's paper. By using two different atomic species, cesium and rubidium, in the same vapor cell together with lasers of two different wavelengths, the team recorded two guitars and the stereo Queen track to show that a single receiver can pick up two channels simultaneously. This could potentially improve security in future communications systems, according to the team.

"In this approach, we use the output of the guitar to amplitude-modulate (AM) a continuous wave carrier," the paper explains. "While the results in this paper used AM to transit, detect, and record a musical instrument, frequency modulation (FM) of a carrier could also be used. In fact, the AM and FM features of a [signal generator] have been used to transmit and receive AM and FM radio in stereo."

As for the audio quality, there is some noise, but the NIST team wanted to show that there was plenty of bandwidth to capture a musical instrument. "A Rydberg atom receiver has a bandwidth of about 1 MHz to 5 MHz," the team reports. "Since music is limited to 20 kHz in frequency, the Rydberg atom-based recorder can
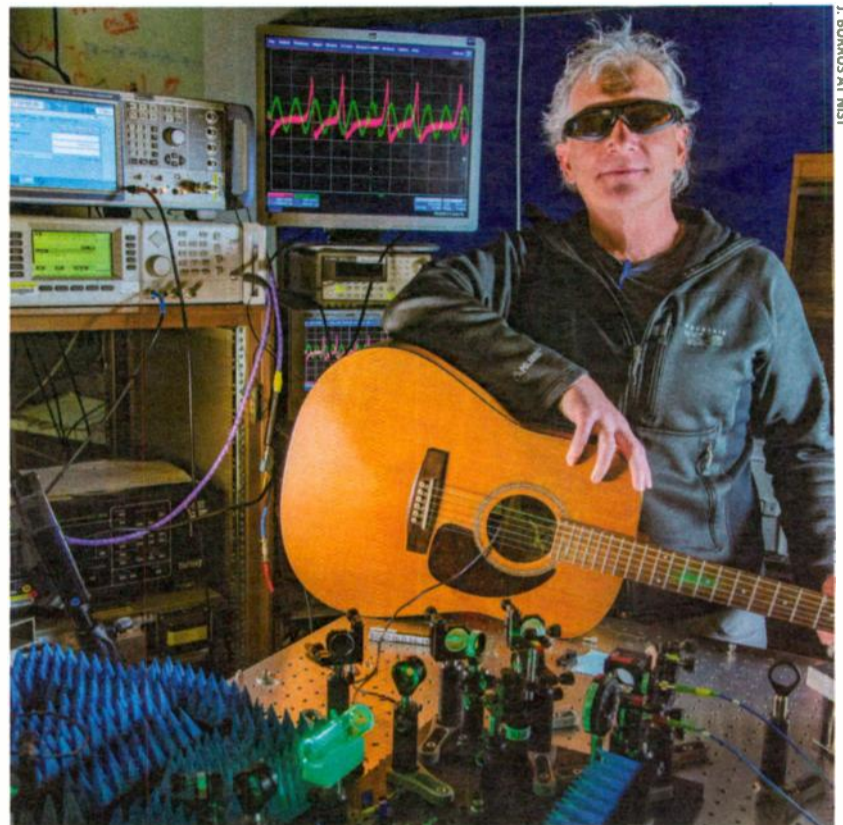
C.L. Holloway in his atomic-recording studio. The stereo recording of Queen's "Under Pressure" with an atom-based receiver shows the simultaneous detection of the vocal and instrumental parts of a song by two atomic species. This experiment illustrates that the atom receiver can receive multi-path communication signals simultaneously.

capture the full musical range of the instrument with high fidelity."

While the team's research could lead to the development of atom-based antennas capable of picking up very weak signals transmitted in deep space communications, they also hope that their atomic recording project will spark the imagination of the next generation of scientists. They write that they hope "this 'entertain-

ing' example of an application of the sometimes esoteric field of quantum physics may entice individuals to study and apply quantum science to a whole new generation of quantum devices and thereby help create the future quantum-based workforce needed to accelerate the field."

National Institute for Standards and Technology
www.nist.gov

Jack Renner, Grammy-Winning Engineer, Dead at 84

BY CLIVE YOUNG

PORTSMOUTH, RI—Jack Renner, 11-time Grammy winner and co-founder of audiophile classical music label Telarc, died of cancer in his Rhode Island home on June 19. He was 84.

Born in Barnesville, OH, Renner took up the trumpet at age 10 and attended Ohio State. While teaching music in Cleveland in the 1960s, he learned music engineering and started a side business recording local choruses and the like to create private-press vanity albums.

Renner teamed with Robert Woods, a vocalist who sang at regional churches, to found Telarc in 1977. Intending for it to be an audiophile label, they employed direct-to-disc recording methods from the get-go with their first release, *Direct from*
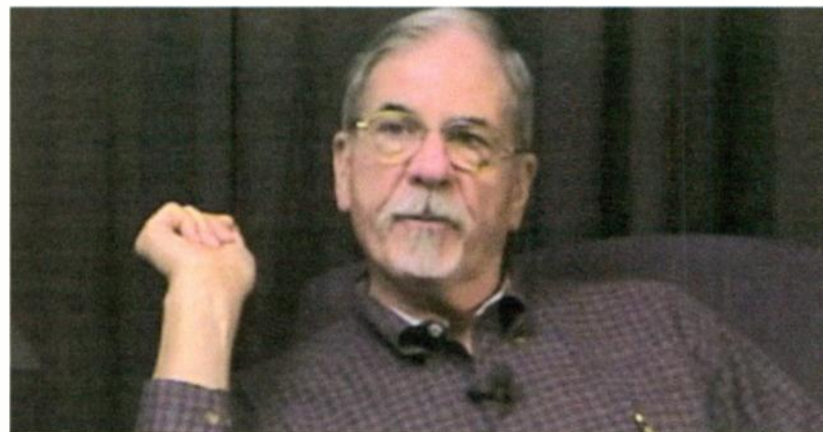
Telarc founder and Grammy-winning engineer Jack Renner in 2011.

Cleveland by Lorin Maazel and the Cleveland Orchestra.

The label made its mark the following year as an early adopter of digital recording when it released an album by Frederick Fennell and the

Cleveland Symphonic Winds, said to be the first symphonic music digital recording to be released in the United States. Similarly, Telarc jumped on the compact disc bandwagon early, releasing its first CD in 1983, just a year

after the format's commercial release.

Renner, as the label's chief engineer, won his first Grammy Award, for Best Engineered Classical Recording, two years later, for capturing the Atlanta Symphony Orchestra performing Berlioz. He would go on to win 10 more Grammys over the years. Telarc, which expanded into jazz releases in the mid-'80s, also received dozens of Grammy Awards. Renner shared the engineering knowledge that went into those and countless other releases as an audio teacher for 30 years at the Cleveland Institute of Music.

Telarc merged with indie label Heads Up in 1996. Renner retired from the music business in 2005, after both labels were acquired by Concord Music Group. He is survived by his third wife, Barbara Pease Renner, and three children.

Niko Bolas on Mixing Posthumous Prince Album

HOLLYWOOD, CA—*Originals*, a 15-track album featuring 14 previously unreleased recordings that illuminates the role Prince played in other artists' careers, was mastered by engineer Niko Bolas at Bernie Grundman Mastering.

In partnership with Warner Bros. Records and Tidal, the Prince Estate released *Originals* via all download and streaming partners and on CD on June 21. Limited edition deluxe CD+2LP and 180 gram 2LP formats will follow on July 19.

The tracks were selected collaboratively by Troy Carter, on behalf of the Prince Estate, and Jay-Z. Several of the songs became major hits for the artists who recorded them, including Sheila E's "The Glamorous Life," The Bangles' "Manic Monday," The Time's "Jungle Love" and Martika's "Love Thy Will Be Done."

"When the tapes arrived from Minneapolis at Iron Mountain's storage facility in L.A., Greg Parkin, director, digital solutions, hired me to build a control room so that the assets were secure and never left the building," says Bolas, who worked closely with estate archivist Michael Howe. "I was responsible for the mix-

Pictured in the cutting room are mastering engineer Bernie Grundman (left) and mix engineer Niko Bolas.

es for review, which went very well, before mastering the album at Bernie Grundman's in Hollywood."

Grundman mastered numerous Prince albums, including his debut, which was recorded and mixed by Tommy Vicari at Record Plant recording studios in Sausalito, CA. "He didn't want anyone giving him any direction. That's why he didn't want to hang out with a lot of the people at the record company, because they were always telling him what he should do to make a hit record. For all the albums we mastered, he'd be here in L.A. for one day and

then he'd go back to Minneapolis. We would then have telephone conversations and send reference disks back and forth. He didn't want to stay around and have that kind of pressure and influence."

Some of the tapes were finished releases, Bolas reports. "We remixed them with Prince's vocals, the guide vocals. We soon learned that whoever the artist was who had the original single tried to use his phrasing exactly."

Bolas, who knows most of the original engineers, continues, "The first thing I did was call David Leonard, Susan Rogers and Peggy Mc-

Creary. I asked all three of them, 'What did you do? What do I do, and how can I honor this?' They all told me what equipment they had in the control room at the time and what was going on.

"The greatest thing for me was when Peggy McCreary sat down and listened to one of my mixes. She said, 'It's a great mix, but it's not what he would like. You have to sing the words and dance to it, and that's all he would want.' Once I reframed my brain around that, it was actually really easy to do because everything's recorded so well. It was already there."

Bernie Grundman Mastering
www.bgmastering.com

Steely Dan Gear to Be Auctioned

BY CLIVE YOUNG

BEVERLY HILLS, CA—Studio equipment owned by the late Walter Becker of Steely Dan will be auctioned Oct. 18-19 by Julien's Auctions in Beverly Hills, CA. Darren Julien, president and CEO, told *Pro Sound News* that the event will include "a marvelous selection of high-end studio gear owned and used by Walter Becker including compressors, EQs, preamps, mixers, interfaces and more."

Steely Dan was legendary for its meticulously recorded albums—the results of perfectionist tendencies shared with producer Gary Katz and engineer Roger Nichols, who won four Grammy Awards in the category of Best Engineer Non-Classical for his work with the duo.

Gear to be auctioned will include Becker's 1978 3M Digital Audio Mastering system. "In addition to over 800 effects units, there will be a selection of high-end stereo equipment and hundreds of amplifiers used both on stage and in the studio," said Julien. Notable guitars, including the 1957 Fender Duo Sonic photographed with Becker in the liner notes of *Aja*, will also hit the block.

Julien's Auctions
www.juliensauctions.com

GearFest 2019 Draws Record Crowds

FORT WAYNE, IN—Sweetwater's GearFest has been around for 18 years, and since the annual music and pro audio festival and trade show is open to the public, it has become a can't-miss event on many people's calendars. More than 17,000 people descended on Sweetwater's Fort Wayne headquarters in mid-June, marking the largest GearFest attendance yet and an increase of 13 percent over 2018. Nearly 500 vendors and manufacturers of musical instruments, music technology equipment, and pro audio gear were on hand.

"It is humbling and rewarding to see how GearFest has grown over the past 18 years," remarked Sweetwater founder and CEO Chuck Surack. "We are always excited to bring our friends together to share our passion for music. One of my favorite parts of the weekend is personally greeting thousands of our customers at the front door as they arrive. I'm always blown away by their enthusiasm."

GearFest this year presented 81 live workshops and seminars hosted by 72 pros, from noted producer-engineer Sylvia Massey to legendary guitarists Steve Vai and Eric Johnson, PRS Guitars founder Paul Reed Smith, bassist Billy Sheehan, and

Crowds checked out the vendor tents, food trucks and pavilions during GearFest.

country star Ricky Skaggs.

More than 28 hours of workshops and sessions were streamed live online, with 250,000 people watching from afar. Most of those videos are available on Sweetwater's Facebook page and YouTube channel.

"There is just no other event like this," said GearFest executive director Bob Bailey. "GearFest has become a place not only for the vendors to get to meet face-to-face with their customers, which they rarely get to do, it's also become a place where the

manufacturers look forward to publicly launching new gear."

"We value our relationships with both our customers and the manufacturers, so it's an honor to get to bring them together for this event," added Surack. "Time and time again we hear how unique GearFest is for everyone involved. To be a part of that is just an honor."

Next year's GearFest is scheduled for June 26 and 27, 2020.
Sweetwater Sound
www.sweetwater.com

Meyer Sound Rolls into Roskilde

DENMARK—Marking the second year of a five-year partnership between Berkeley, CA-based Meyer Sound and Northern Europe's largest and longest-running music event, this year's Roskilde Festival took place in early July, garnering crowds of 130,000 daily that flocked to see 180 acts on eight stages, including Cardi B, Bob Dylan, Travis Scott, Janelle Monáe, Robert Plant and Wu-Tang Clan.

The partnership focuses on education initiatives, R&D, and large-scale festival management, with the event itself serving as both a technology showcase and a laboratory for research on sound propagation and management techniques.

Nearly 1,000 Meyer Sound loud-

Technical crews from Meyer Sound, Bright Group and Roskilde Festival worked together to tackle sound across the event's eight stages.

speakers, supplied by European AVL integrator Bright Group, were deployed across all festival stages and performance spaces, from the 1,000-capacity Gloria stage to the 60,000-capacity Orange main stage.

The Roskilde stages were powered by entire Meyer Sound line, including Lina, Leopard, Leo and Lyon arrays and 750-LFC, 900-LFC and 1100-LFC low-frequency control elements, with VLFC very low-frequency control elements. Numerous point source loudspeakers including UPA-1P and the brand-new Ultra-X40—which was also used as main field monitors at FOH—provided delay and front-fill support, while MJF-210s served as stage monitors.

Network processing was handled by Galileo Galaxy processors.

New technical approaches this year ranged from enhanced AVB control to new P.A. configurations, such as a new subwoofer array at the Orange stage. "We were able to apply our learnings from last year to make meaningful strides going into year two. Last year, we had the normal end-fire subwoofer array flown," says Dennis Tholema, Meyer Sound senior technical European support. "This year, it's a gradient end-fired subwoofer array, which is upward-staggered and down-steered to be able to get the maximum cancellation on the stage and backstage. We achieved a reduction of around 17 dB, so it was very quiet on stage."

With the festival over, all involved are already looking ahead to 2020, which will be a milestone. "This year is Meyer Sound's 40th anniversary and next year is Roskilde's 50th anniversary," says Meyer Sound executive vice president Helen Meyer. "So we're very, very excited about building on everything this year, making it even better next year, and helping Roskilde celebrate their 50th in great style."
Meyer Sound
www.meyersound.com

ABC Takes On Primo Maggio Roma 2019

ROME, ITALY—Italian national public broadcaster RAI aired the 29th annual Primo Maggio Roma concert live from Rome's Piazza San Giovanni on May 1. The event featured 31 acts including Daniele Silvestri, Ghali and Subsonica, and attracted more than 500,000 attendees.

Local production company ABC provided live sound for the event. With the help of Italian pro audio distributor Exhibo, ABC fielded eight Allen & Heath dLive systems, five IP8 Controllers, an SQ, DX Remote Audio Expanders and additional Dante, SuperMADI and gigaACE cards.

Primo Maggio took place with a rotating dual-stage setup, allowing for one act to line check while another performed, minimizing the changeover time between acts. Each stage had its own dLive S5000, IP8 remote controller and DM48 MixRack handling FOH duties, while an additional C1500 and DM32 handled all talkbacks, comms, video feeds and wireless mics for the RAI presenters.

Monitors used a setup similar to FOH, delivering more than 40 IEM and wedge mixes with two dLive S7000s (fitted with Dante for virtual soundcheck) and two DM64 MixRacks for each side of the stage. A C3500 paired with a DM32 tackled the communication requirements between stage, the presenters and FOH, while an

Eight Allen & Heath dLive consoles handled this year's Primo Maggio event in Rome.

SQ-6 combined outputs from the S7000s into the shared side-fill monitors.

Two further S7000 surfaces, fitted with Dante, were deployed on broadcast duties and paired with two DM64 MixRacks (for each side of the stage), two IP8 controllers and an SSL console, which was used for combining signals to the on-air transmission.

Roberto Marchesi, pro audio manager at Exhibo, said, "At Primo Maggio, the dLive systems weren't there just as mixing consoles. They truly formed the core of the whole audio distribution system, thanks to their ample patching, tie-line and audio networking capabilities. Whether it was routing ambient microphones, digital splits, shout lines or video contributions, it was extremely easy to zoom in to the I/O screen and patch it on the fly. It made the setup and stage changes a breeze."
Allen & Heath
www.allen-heath.com

Producer Phillipe Zdar, Dead at 50

BY PSN EUROPE STAFF

PARIS, FRANCE—Producer and half of French dance outfit Cassius, Phillipe Cerboneschi (best known as Zdar), died following an accidental fall from a building in Paris on June 19, his agent Sebastien Farran confirmed. He was 50 years old.

Zdar formed Cassius in 1996 with Hubert Blanc-Francard (aka Boom Bass). In addition to creating their own music, Cassius produced records for an array of high-profile artists, including Franz Ferdinand, Hot Chip, Beastie Boys, Phoenix and many others. The pair's latest album, *Dreems*, was released June 21.

Figures from across the music industry paid tribute to Zdar on Twitter. Franz Ferdinand's Alex Kapranos said, "Totally devastated by the loss of my friend Phillipe Zdar. Can't really process it at the moment. Just feel awful."

DJ and producer Calvin Harris tweeted, "Awful news about Phillipe Zdar, what an unbelievably lovely man with an incredible legacy." Phoenix's Rostam posted, "Every

Cassius at Festival RockAdel in September 2012.

single mix on *Wolfgang Amadeus Phoenix* is a masterpiece—loud, exciting, wide as hell and never, ever harsh."

In May, *PSNEurope* interviewed Hot Chip frontman Alexis Taylor about the making of the band's new album, *A Bath Full of Ecstasy*, which was co-produced by Zdar. Taylor described Zdar as "a positive force," adding, "He united the whole band and provided an environment and space for us to work with him that made it very comfortable for us to all get involved, play simultaneously and improvise."

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soundRECORDING ||||

Woodstock 50: Back to the Tapes

BY STEVE HARVEY

NORTH HOLLYWOOD, CA— "It's the world's most famous concert, but you've never really heard it," says Brian Kehew as he opens a Pro Tools session for one of the songs included on the new Rhino project *Woodstock – Back to the Garden – 50th Anniversary Collections*. Various multidisc versions are available from Rhino, including a near-complete reconstruction of the festival in a limited edition 38-disc, 432-track boxed set that presents every artist performance from Aug. 15 to 18, 1969, in chronological order.

No previous presentation of the event—not Michael Wadleigh's Oscar-winning 1970 film or subsequent official soundtrack albums—has come close to fully documenting the music festival. Rhino's deluxe collection adds 267 previously unheard tracks—nearly 20 hours—to the historical record, and includes not only songs but also announcements and onstage conversation captured

The new Woodstock box set is available in three configurations, including a massive 38-disc, 432-track edition.

by the open mics, some of which are included on the alternate packages. The $800 deluxe package, called *The Definitive 50th Anniversary Archive*, also includes a Blu-ray of the director's cut of Wadleigh's *Woodstock* documentary.

The 162-track, 10-CD set *Woodstock – Back to the Garden – 50th Anniversary Experience* will retail for

about $160. A third version, *50th Anniversary Collection*, features 42 tracks on five 180-gram LPs or three CDs.

The 50th anniversary releases were produced by Andy Zax and Steve Woolard, with sound produced by Zax with Kehew, who mixed the project. Mike Switzke assisted with one band's tuning issues. Dave Schultz at D2 in Los Angeles mastered everything.

Zax's vision was very clear, says Kehew: to include as much as possible in a vérité style, warts and all. That meant losing the edits, flanging, echo and fake applause of previous releases, while keeping the feedback, buzzes and hums. "It's what the audience or anyone on stage would have heard," says Kehew, who reduced, but didn't remove, the worst distractions using Pro Tools or iZotope. It also meant including certain artists' Woodstock performances that had been replaced on previous releases by recordings

made at the Troubadour and the Fillmore East.

Zax and Kehew began the project around 2005, working toward a 40th anniversary release, but hit the limits of available technology and then ran out of time. As Kehew discovered when he listened to the source tapes, which were recorded to 8-track Scully machines backstage by engineers Eddie Kramer and Lee Osborne, this was never going to be a straightforward project.

"There is a 'first song' issue for almost everybody because it's always a fresh setup and there's no soundcheck," says Kehew. While the stage crew gradually sorted things out as the festival progressed, with 32 separate artist performances captured, Kehew had some work to do.

Track 1 of each tape was audience and track 8 was camera sync tone, leaving six tracks for the artist. "For a band like The Who, six tracks means drums, bass, guitar and three vocals. You're covered," says Kehew. But for larger bands like Blood, Sweat & Tears, or the Grateful Dead with its two drummers, instruments and vocals were combined via Shure vocal mixers, so Kehew was often unable to easily separate and pan them. The solution was to transfer the relevant recordings into Pro Tools and perform micro-surgery to isolate the elements.

Getting Heavy with Will Putney

BY STEVE HARVEY

BELLEVILLE, NJ—Will Putney may be known as a producer, engineer, mixer and guitarist working at the heavier end of the musical spectrum with acts like Body Count, Every Time I Die, The Acacia Strain, and Thy Art Is Murder, but when it comes to recording the heavy stuff, for him, it's all about the drum sound.

Most of his projects are produced at Graphic Nature Audio, his own 5,000-square-foot facility. While it features five control rooms, the centerpiece is—surprise—a large drum room. "The ceiling is about 18 feet. When we were looking for a spot, we were walking into buildings and warehouses with a snare drum and laptop, seeing what the rooms sounded like. This place instantly sounded good. It wouldn't have been the sole deciding factor when we were looking, but the fact that it was good right away made for a very easy, hassle-free drum room setup."

Putney started out with producer Machine—otherwise known as Gene Freeman—at his Machine Shop re-

cording studio. "I worked out of his studio for a couple of years, then we moved to this spot about nine years ago. We shared it for a year or two, then he moved to Texas and I took over, so this has been solely my place for six years or so," Putney says. "When he left, we expanded, built some rooms and finished the drum room. Now it's officially my spot."

The sound of the drums is obviously critical to a Putney production. For the style of music he specializes in, he says, he probably uses a lot more room mics than most people. "For metal stuff, I'm usually a bit more miked up on the drum input side, and I've got a pretty gnarly setup of different room mics." Speaking of mics, "I just picked up a Stam Audio SA-47. That has quickly become one of my favorite microphones," he says.

Much of the outboard gear in the main control room might be found in any professional facility. "There's nothing too unconventional," he says, adding, "I'm definitely a Distressor guy." There are a few other items of outboard he also enjoys

using. "I just picked up a Curve Bender [from Chandler]. I love that thing. It may be my favorite mix EQ ever."

He recently expanded his mixing setup. "I was using a Shadow Hills Equinox and a Dangerous 2-Bus but recently moved to all-Dangerous summing. I have two stages of summing, before and after the bus compression."

These days, mix recalls and other last-minute demands constantly pull producers from one project to another. In a hybrid workflow, that means having to reset hardware, but Putney and his team have it covered: "We make recall videos of our analog gear. I can recall eight compressors, 12 EQs and a summing mixer in five minutes."

Two years ago, he installed a pair of Amphion Two18 nearfields, replacing two sets of monitors that, between them, just weren't cutting it. "I was having trouble placing low

The centerpiece of Will Putney's Graphic Nature Audio recording facility is a large drum room with an 18-foot ceiling.

end and low mids in my mixes," he reports. "The Amphions took care of that for me, big time."

While most of Putney's projects are produced at Graphic Nature Audio, he also works elsewhere— on one condition. "Without a good drum room, I'm never interested," he says.

Despite all that focus on the drums, Putney has become known for his guitar tone, not just in the studio but also as a guitarist with Fit for an Autopsy and END—so much so that

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STUDIOshowcase IIII

The Bubble Grows Bigger in Austin

BY STEVE HARVEY

AUSTIN, TX—Austin officially adopted its "Live Music Capital of the World" motto in 1991 for good reason, as it has a reported 100 venues hosting performances on any given night. The city's active music scene has long overshadowed the local recording business, but in the Hyde Park neighborhood south of downtown Austin, one recording studio is hoping to turn that around.

The new control room at The Bubble, centered around an API 1608 console with expander and in-wall Urei 813 main monitors originally from Ocean Way, is outfitted in wood recycled from elsewhere in the 1923 farmhouse that houses the facility.

"It's a city so focused on live music that the recording industry almost plays second fiddle," says Alex Lyon, co-owner, with Chris "Frenchie" Smith, of The Bubble. "We'd like to change that. We hope to make Austin take it more seriously and step up the game for the whole community."

Smith launched The Bubble in 1998 in a downtown Austin warehouse shortly before his band, Sixteen Deluxe, started to wind down, says Lyon, who relocated there in 2002. "I ran into a friend from New York in a bar here who was working at The Bubble. I was looking for a place to call home," he says. He partnered with Smith and they've worked together ever since.

In 2005, Lyon bought a property in Hyde Park and turned the building behind his new home into a studio. The conversion was overseen by renowned Austin-based Mark Genfan's Acoustic Spaces sound design consultancy.

With the birth of Lyon's twin daughters in 2013, he decided to forgo the 14-hour days in the studio and transition into mastering, calling in Genfan to design and build a ground-up facility on the property. "The mastering is a standalone business," says Lyon, although he's happy to offer Bubble's recording clients a package deal. "I didn't really know what I was getting in to and it took a while to figure it out, but I'm pretty happy with it." And the hours are better, he says.

The Bubble is located at a busy intersection, and with the twins growing up, Lyon thought it best to relocate his family. "So we got Mark on board and started the process of turning a 1923 house that hadn't been updated much into a 2019 recording studio," he says.

The planning and permitting process was long and arduous. Then, in December 2018, Genfan and his wife, Alisin, were found dead after their pickup truck was swept off the road by a flash flood.

"I was fortunate in that I had his plans and I was using the crew that he always used for buildouts, so they knew what he would want and how

to finish some of the things that were left unfinished. But it was tragic; I was tight with Mark," says Lyon.

Unfortunately, the electrical wiring and plumbing, little changed since 1923, had to be completely replaced. In Texas, interior walls in that era often were finished with shiplap, a weathertight, overlapping board construction originally used on, obviously, ships. "All that wood you see in the control room is from this house; we reused it," he says. Noting that the living room and an upstairs bedroom were combined into the double-height live room, he adds, "That wood in the live room is sourced from demolished houses and barns here. It has a vibe and sounds really good."

The new facility is now The Bubble's main room. As for the original studio out back, "That will be a B control room, probably with just a computer rig, and upstairs will be an apartment," says Lyon.

You might think he would be sick of construction, but he says, "I'd really like to get a reverb chamber built. It's not going to happen anytime soon, but it's on the five-year plan," though he wishes Genfan was still around to build it.

The Bubble was one of the first customers for API's 1608 mixing console when it became available. That desk has been moved to the new A room and extended to 32 inputs, but not without another glitch. "I called Vintage King and

they told me that API had just announced their Model II and they weren't making the expander anymore. I checked on eBay, found one and bought it."

He continues, "We like the preamps, in that world between Neve and SSL, and the idea of the 500 series modules, so that you can customize it, in a way. But the biggest thing is that if something breaks, you can call API and they will fix it."

The new room is dominated by a large pair of in-wall Urei 813 main monitors. "I got those off eBay as well. They came from Ocean Way" in Los Angeles. "They were rear speakers [from a quad system], so they're not that beat up," Lyon reports. Pelonis PSS110-P and Yamaha NS-10 nearfields are also available on site.

Pro Tools HDX is the workstation of choice at The Bubble, though there was an in-house 24-track machine for a while. "We don't do 2-inch anymore. People can't afford tape, and it's not quite as good as it used to be." However, says Lyon, "In the mastering room, I have two Mara Machines—a half-inch and a quarter-inch. I did a blues session recently and ran the quarter-inch at 15 ips. That did the trick."

All the outboard equipment was moved from the original studio into the new room. "Since I started focusing on mastering, a lot of my equipment purchases have been for
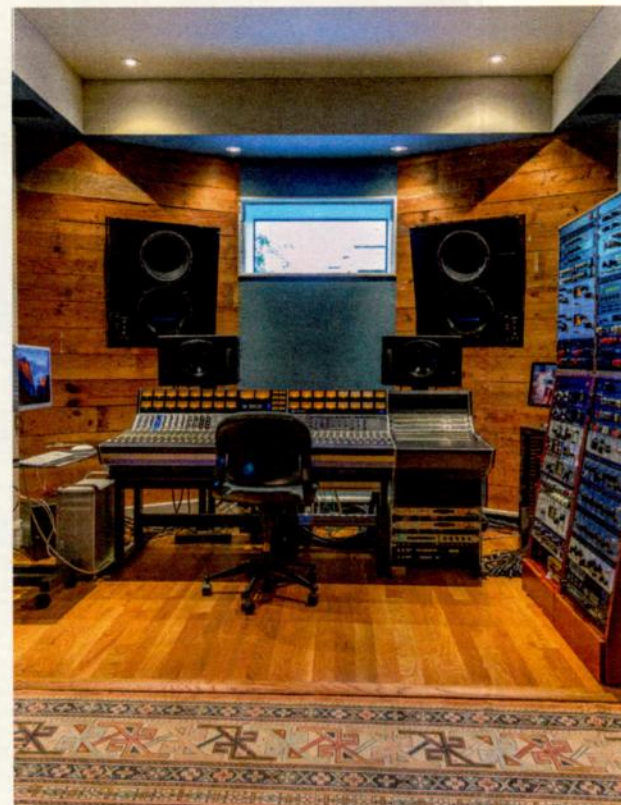
that room," he says. "But in here, we have Neve 1073s, a lot of the new Pulse Techniques Pultecs, lots of Chandler and Ureis. The Retro 175 is a great piece, and we're big into Eventide for effects. Some of my favorite things are still the dbx 160s and LA-3As."

The mic locker is stocked with Neumann tubes and condensers, including U 67, UM 57, FET 47 and KM84 models. "We've got the new Telefunken 251, which is a beautiful mic," adds Lyon. There are Coles and AEA ribbons in addition to the expected Sennheiser 421, Beyer M201 and Shure SM57 and 58 dynamic mics. "And we have some old, funky EV 635A mics," he says.

Some major artists have passed through The Bubble, including Built to Spill, Explosions in the Sky, Lemmy Kilmister, Meat Puppets, Jet, the Dandy Warhols, And You Will Know Us by the Trail of Dead, The Datsuns, Clem Burke of Blondie, and Britt Daniel of Spoon. Smith has a longstanding relationship with The Toadies, so they're in occasionally as well.

"But our bread and butter—and who we prefer to work with—are the new people just coming up," says Lyon. "That's where the excitement is, helping guide them."

This is, after all, the live music capital of the world. "So there are tons of local bands," he says.

The Bubble
www.bubblerecording.com

The Mark Genfan-designed mastering facility at The Bubble is housed in a separate building on the same property.

The New Mac Pro

BY CRAIG ANDERTON

Has "the computer for the rest of us" become "the computer for an elite minority of us?"

About a year ago, the rumors started to fly regarding Apple switching away from Intel chips to ARM-based ones, along with anticipation about the upcoming Mac Pro. At the time, I wrote, "Apple is a consumer electronics company, not a computer company. We don't use consumer machines: they're today's equivalent of yesteryear's mainframes. I may be very wrong, but I don't see any reason for Apple to jettison Intel's powerful chips in their most powerful computers. Creating silicon at that level for a fairly insignificant product line (single-digits revenue share) doesn't seem worth it."

And after describing potential scenarios for how Apple would proceed with the Mac Pro, I added, "The best option for pro audio is that Apple follows through with its 2019 modular computers, which are so good, they reignite the Mac Pro line. They continue to use powerful Intel CPUs even while the consumer devices become more ARM-oriented ... and given that pro machines are big investments, Apple makes them expandable so they can have a longer lifespan. They need to get the design right only once, and the computers can coast for years yet still keep people happy."

The new Mac Pro has been announced, and as usual, people are cheering like fanboys, or wringing their hands, or saying how Apple got it all wrong, or how Apple made another genius move, or ... you know, the usual pundit stuff. But yes, Apple is still using Intel chips for its pro line and yes, Apple is asking pros to make big investments in something that will, at least in theory, have a longer lifespan. We could just say "case closed" and move on—but look past the obvious, and the new Mac Pro is telling us how Apple's next moves may affect pro audio.

The high price will exclude the enthusiast Mac owners who kept Apple afloat in the late 1990s, prior to Microsoft's $150 million investment in Apple. Realistically, though, the enthusiasts haven't mattered much to Apple's computer sales since the iPhone became a dominant platform. Professionals are a different story, because for those beholden to the tyranny of rendering, a $6,000 starting price is of little consequence—the machine's computing power will save enough time to cover the premium price. For Mac users working with video and animation, the new Mac Pro is a dream come true. And those whining about Apple forgetting about "the little people" have short memories: In the early '90s, the Macintosh IIfx cost around $10,000—for a 68030 running at 40 MHz, with a maximum 128 MB of RAM.

But for someone running Logic Pro X, is the Mac Pro worth $6,000? Maybe—assuming it doesn't run into the issues that plagued the 2013 Mac Pro. It's like a sports car: You may not be able to get on I-95 and wind it up to 120 mph, but when you need to accelerate around an S-curve, you can. If you have the $6K (remember, that's the starting price), go for it—but if the Mac Pro is overkill, what's the alternative?

tracks LOOK AT THE RECORDING SCENE

ARTIST: KILLSWITCH ENGAGE
ALBUM: ATONEMENT
LABEL: METAL BLADE RECORDS
PERSONNEL:
Produced by: Adam Dutkiewicz
Engineered by: Adam Dutkiewicz, Daniel Castleman (assistant)
Mix Engineer: Andy Sneap
Studios: Signature Sound (San Diego, CA), Wicked Good Studios (San Diego), Mainline Recording Studios (Westfield, MA)
Mastered by: Andy Sneap
EQUIPMENT NOTES: 32-channel API 1608 console, Genelec 1031A and 8050BPM, Avid Pro Tools

ARTIST: BIG CHEESE
ALBUM: GOLDEN
LABEL: MOUNTAIN RANGE RECORDS
PERSONNEL:
Produced by: Oliver Ignatius
Engineered by: Oliver Ignatius
Studio: Holy Fang Studios (New York)
Mastered by: Holy Fang Studios
EQUIPMENT NOTES: Soundcraft console, Neumann KH 120, Avid Pro Tools, MCI JH-24

ARTIST: THE JACKS
ALBUM: THE JACKS
LABEL: EDGEOUT

RECORDS/UME
PERSONNEL:
Produced by: Matt Wallace
Engineered by: Will Kennedy
Mix Engineer: Andrew Scheps
Studios: Sunset Sound Recorders (Los Angeles, CA), Studio Delux (Van Nuys, CA)
Mastered by: Brian Lucey at Magic Garden Mastering (Los Angeles)
EQUIPMENT NOTES: AMS Neve 8088, Avid Pro Tools

ARTIST: LEA LOVE
ALBUM: WAY I AM [EP]
LABEL: MENSCH HOUSE RECORDS
PERSONNEL:
Produced by: Chaz Rox
Engineered by: Chaz Rox
Mix Engineer: Ruff Sounds
Studio: Rox Shop (San Pedro, CA)
Mastered by: Rox Shop
EQUIPMENT NOTES: KRK Rokit 8 monitors, Apple Logic Pro X

ARTIST: SCOVILLE UNIT
ALBUM: SCOVILLE UNIT
LABEL: ERNEST JENNING RECORD CO.
PERSONNEL:
Produced by: Gandhar Savur
Engineered by: Matt Teacher, Mike Lawson
Studio: Sine Studios (Philadelphia, PA)
Mastered by: Frank Arkwright at Abbey Road Studios (London, UK)
EQUIPMENT NOTES: Sony MXP 3036 console, SSL E, Genelec 1030A monitors, Avid Pro Tools

ARTIST: ECCE SHNAK
ALBUM: METAMORPHEJAWNS
LABEL: RECORDS, MAN RECORDS
PERSONNEL:
Produced by: Jeff Lucci
Engineered by: John Agnello
Studios: Bangford Studios (Philadelphia, PA), Kaleidoscope Sound (Union City, NJ)
Mastered by: Sarah Register and Greg Calbi at Sterling Sound (Edgewater, NJ)
EQUIPMENT NOTES: API Legacy Plus 48-input console; JBL LSR2328p, Neumann KH120, Adams A7X, Dynaudio BM 5A and 15A monitors; Apple Logic Pro X, Avid Pro Tools 10

ARTIST: DAUGHTER OF SWORDS
ALBUM: DAWNBREAKER
LABEL: NONESUCH RECORDS
PERSONNEL:
Produced by: Alexandra Sauser-Monnig, Nick Sanborn
Engineered by: Nick Sanborn
Studio: CD Alley 2 (Durham, NC)
Mastered by: Zach Hanson
EQUIPMENT NOTES: SSL X-Desk, Focal Alpha 65, Apple Logic Pro, Otari MX-5050

ARTIST: JACK SPANN
ALBUM: PROPAGANDA MAN
LABEL: BIG BOO RECORDS
PERSONNEL:
Produced by: Jack Spann, Gary Tanin
Engineered by: Jack Spann, Gary Tanin

Mix Engineer: Gary Tanin
Studios: Tree House (Highland, NY), Daystorm Music (Milwaukee, WI)
Mastered by: Gary Tanin at Daystorm Music (Milwaukee)
EQUIPMENT NOTES: LYNX Aurora, Dangerous Music D-Box, Yamaha NS-10M with JBL SB-1 subwoofer, Klipsch Heresy, Auratones, Avid Pro Tools

ARTIST: BETH BOMBARA
ALBUM: EVERGREEN
LABEL: LEMP ELECTRIC
PERSONNEL:
Produced by: John Calvin Abney, Kit Hamon
Engineered by: Daniel Mehrmann
Mix Engineer: Jason Cupp
Studios: Jettison Studios (New Athens, IL), Jason Cupp's studio (St. Louis, MO)
Mastered by: Daniel Mehrmann at Jettison Studios
EQUIPMENT NOTES: Chandler Limited Mini Mixer, Focal Twin6 Be with Focal Sub6, Genelec M040, Avid Pro Tools

ARTIST: JOHN VAN DEUSEN
ALBUM: (I AM) ORIGAMI PT. 3 – A CATACOMB HYMN
LABEL: TOOTH & NAIL RECORDS
PERSONNEL:
Produced by: Andy D. Park
Engineered by: Andy D. Park
Studios: Ranch Land Studios (Cisco, TX), The Crumb (Seattle, WA)
Mastered by: Ed Brooks at Resonant Mastering (Seattle, WA)
EQUIPMENT NOTES: AMS Neve Genesys, API The Box, Yamaha NS-10 and ATC SCM 25a monitors, Avid Pro Tools

Refurbishing for the Future

BY LARRY JAFFEE

NASHVILLE, TN—Cutting lathes are an integral piece of equipment that determines whether or not a vinyl record in 2019 can be manufactured using a new stamper. The problem is that no manufacturer in the world has made one since the early 1980s, which is why lathes are a hot commodity whenever one surfaces for auction.

That's why Eric Conn of Nashville-based Independent Mastering jumped when he spotted an online listing in 2014 for three main components—the bathtub, sled and original platter—of a Scully fixed-pitch model 501 lathe that appears to be from the early 1940s. Three thousand dollars later, the components were his—but the purchase was really just the first step on a four-year odyssey to rebuild the lathe into a functioning machine. "They came out of a warehouse in New Jersey," said Conn. "I knew what I was getting into."

Conn had been mastering audio for vinyl, CD and streaming distribution for 22 years, but the acquisition (or construction) of a lathe would support an additional revenue stream for Independent Mastering, a business Conn runs with recording/mixing/mastering veteran Don Cobb. The two partners' collective credits include a who's who of popular music, including Willie Nelson, Neil Young, James Taylor, the Pointer Sisters, Quincy Jones, Garth Brooks, Sheryl Crow, Alison Krauss, Sheryl Crow, George Strait and Trisha Yearwood, among numerous other artists.

That background helped as they got started on the project, but the duo still had much to learn. "I found the [lathe] community helpful to source some of what was needed," Conn said, citing expert help from California, New York and Switzerland. In particular, he received assistance from Los Angeles lathe guru Len Horowitz of the History of Recorded Sound.

Key pieces were still missing, including a vacuum system for the platter, electronics, microscope, light and a table. Some parts needed to be recreated by machine shops, but Conn found other parts on eBay, including useful pieces culled from other lathe manufacturers, such as Westrex

After four years and $30,000, Eric Conn finished building his FrankenScully lathe.

and Neumann. "I'm a mastering engineer, not a machinist," Conn demurred, yet he ended up building the lathe's drive system himself.

Conn ultimately spent $25,000 to $30,000 getting all the ingredients to rebuild the lathe. It's not lost on him that he could have spared himself a lot of heartache if he'd just bought a lathe and skipped the DIY project: first in 2005 and then again in 2010, Conn contemplated buying an intact lathe for sale locally in Nashville, but he didn't have the cash flow either time to support such a purchase.

Nonetheless, perseverance paid off when the lathe was finally complet-ed in the summer of 2018. The first project Conn cut was a rockabilly record for musician Paul Burch.

With the project now complete, Conn refers to the lathe as FrankenScully, though he also half-jokes that Herman Melville's *Moby Dick* character Ahab, the whale hunter, was also an inspiration during the arduous journey to a functioning machine. While Conn termed the effort "therapeutic," he noted that anyone contemplating such a lathe-building endeavor must never lose his or her "curiosity and must never give up."

Independent Mastering
www.independentmastering.com

Woodstock

Take Creedence Clearwater Revival, for instance. Though they are one of the better-recorded Woodstock bands, their opener, "Born on the Bayou," is a mess, with instruments switching tracks mid-song. The snare drum starts, quietly, on the guitar track. Later in the song, the drums fade in on their own track. "I'm going to leave the guitar panned, because it's the riff, so it's more important than the quiet snare drum," says Kehew. "Because the drums fade in, I'll keep them low and sneak them in gently, so no one notices. You start with a song that sounds sort of okay and it then gets pretty good."

The tape of Arlo Guthrie's "Coming Into Los Angeles" starts without the vocal, and it appears that someone briefly raised and lowered the level of successive tracks searching for it. The solution? The mono board mix recorded at front-of-house. "I used it as the vocal track. I put it in the mix and made it sit as close as possible to the existing vocal that we had, then blended them."

Kehew tried to find fixes wherever the recording detracted from a performance. "We can get some help using modern tools," he says. For example, in Pro Tools, duplicate the drum track, roll off the high end and compress it for more tom-tom or kick thump. "Or if I need the snare to stick out more, EQ a channel to have the stick frequency spike a little."

Keith Moon's drums disappear for eight seconds in The Who's first song, so Kehew copied eight seconds of drums across. "It's cheating, but it's not bad cheating. It sounds bad with a hole," he says.

For a couple of artists' performances, he sought assistance from Abbey Road Studios' James Clarke, who has developed a demixing process similar to certain commercial products. "Ravi Shankar's tape is missing, but there is a mono mix, done well, back in the day. But we didn't want one of the first performances to be mono," Kehew says, so he had Clarke separate the sitar, tanpura and tabla. "We get a usable stereo track and it has the same tonality," he reports.

For songs that didn't require surgery, Kehew simply mixed them straight off his Scully machine on the vintage Quad Eight Pacifica console at his Timeless Recording facility in North Hollywood. Having mixed much of the material both on the desk and in the box over the years, he can compare the approaches. "In the computer, it becomes more precise and less exciting, always. I find there's a visceral excitement that translates to the finished project if I mix by hand."

The project's sound, per Zax's vision, is very literal, says Kehew. "It's not fancy or beautiful. We have a very bandwidth-limited, mid-rangey sound. There's low end and high end; it's just not pretty. And we went for wider panning for clarity's sake" using photos from Woodstock for positional accuracy. Overall, he says, "You can hear a lot of dynamics. We didn't squash things much, and I never used a stereo bus compressor."

Jimi Hendrix's dawn rendition of the national anthem at Woodstock has become iconic, but another event potentially could have replaced it in popular culture. Artists were asked to pause periodically while the cameramen loaded new film; in one break, during The Who's set, Pete Townshend takes umbrage when social activist Abbie Hoffman grabs his mic and starts declaiming. "Had it been captured on film, it might have been the moment of Woodstock, not 'The Star-Spangled Banner.' It would be some Yippie getting hit over the head with a guitar and falling into the audience," laughs Kehew.

When the band restarts, Townshend's guitar is out of tune and they grind to a halt. It's all on the new release. Warts and all.

Brian Kehew
www.briankehew.com

Rhino Entertainment
www.rhino.com

Anderton

Your choice is a laptop (MacBook, MacBook Air or MacBook Pro), Mac mini or all-in-one iMac. The iMac Pro starts at $4,999 so it's not exactly inexpensive, and you're paying for graphics power that's not essential for audio. It also may not have the monitor you want (and, of course, doesn't have a touchscreen). A laptop is—at least for me—not really suitable as a primary studio computer because I need to hang so many peripherals on it. However, the Mac mini can be more powerful than many people realize, if you're willing to pay for it. Upgrading the $1,299 i7-based version to 64 GB RAM and a 1 TB internal SSD brings the price to $2,899, but then again, you have four Thunderbolt ports for hosting multiple displays, PCIe docks, expansion, etc. The Mac mini can be a very powerful machine for audio applications.

As a result, I doubt Apple will do a downgraded Mac Pro in the $2K to $3K range. Windows has been dominating that price point, and as of May 2019, has an 87 percent market share in desktop/laptop operating systems, according to *www.netmarketshare.com*. Apple will retain its high-end users, and continue to play Porsche compared to Windows' Volkswagen ... while offering a luxury Volkswagen in the form of a Mac mini. Despite the naysayers, Apple still has something for everyone.

Craig Anderton's new book series, *The Musician's Guide to Home Recording*, is available from Hal Leonard in softcover. Visit www.craiganderton. com for more info.

Putney

eventually STL Tones contacted him about replicating some signature guitar setups in a plug-in. While intrigued, it took him time to warm to the idea—that, and an audition of sorts.

Putney had only ever heard one amplifier simulation that he enjoyed, he says, so when STL Tones told him they'd hired the software engineer behind it, Federico Berti, it caught his attention. "I think he's the best in the world," says Putney.

Yet he was still hesitant. "I thought, I'm going to give you an amp I know super well, run a million tests and send you every variation of file and setting, thousands of variations of tones, with and without speaker cab. If it's cool, we'll move forward. And he nailed it. It was the first time I was ever convinced that software could be as good as if I pulled the amps up right now."

The result is the STL Tonality Will Putney Plug-In Suite, which captures the distinctive tones that Putney conjures from the guitar and bass amp collection at his facility. The software suite offers a choice of five amps, three pedals (distortion, delay and reverb), Putney's collection of cabinets, a master EQ section, and a mixer for blending different amp and cab combinations.

An avowed "hybrid guy" who tracks and mixes in Apple Logic Pro, he says, "I have a lot of stuff to give me good tones on the way in, and on the mixing side, I mix through gear and summing mixers. But I do the bulk of my work in the computer. It's just more efficient for me. I'm not really a console guy."

Putney prefers a natural production style more reminiscent of the genre's early days. "I try to make these heavy productions a bit more organic. Records can very quickly become sterile and overproduced. I leave them a little more raw and a little less sampled," he says. "I don't use templates and setups, and I don't follow a standard for each record. I find what's cool about the band and emphasize that in the project."

Sticking to that strategy made 2018 his favorite year so far, he says. "I got to make more records last year that felt more original." That's not to diss any previous projects, he stresses, "But it was more the taste I liked, and the type of bands I like. It was a good year for me being creatively satisfied and not just making records to service other people."

STL Tones
www.stltones.com

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Pros on Prepping Films for the Home

BY STEVE HARVEY
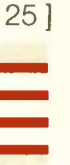
briefs

Alchemy Builds SFX for *Fosse/Verdon*

WESTCHESTER, NY—Working under the direction of supervising sound editors Daniel Timmons and Tony Volante, Foley artist Leslie Bloome and his team at Alchemy Post Sound (www.alchemypostsound.com) performed and recorded hundreds of custom sound effects for FX's limited series *Fosse/Verdon*, which received 17 Emmy nominations in July.

Live Media Group Triples Fleet

LOS ANGELES, CA—Live Media Group Holdings (www.livemediagroupholdings.com) has acquired TNDV: Television, Harb Production Services and Coastal Media Group, creating a consolidated company that launches with 18 mid-sized remote production hybrid units, plus additional smaller standalone production uplink units based in California and Tennessee.

Lawo Provides New NEP Truck's IP Infrastructure

RASTATT, GERMANY—M15, the latest in NEP's lineup of next-generation regional sports broadcast mobile units, features an IP infrastructure based on Lawo (www.lawo.com) solutions including a Lawo V__ matrix IP routing and processing platform, six PowerCores providing MADI, AES and analog audio gateways to AES67, and Lawo's System Monitoring and Realtime Telemetry (SMART) system.

McCoy Deploys DPA for *Paddleton*

LOS ANGELES, CA—Sound supervisor Daniel S. McCoy, CAS, owner and operator of ToneMesa, integrated DPA Microphones' (www.dpamicrophones.com) d:screet CORE 4061 miniature mic and d:dicate 4017 and 4018 shotguns and Wisycom RF equipment into his production workflow to record the improvisational acting at the heart of the Netflix original film *Paddleton*, featuring Ray Romano and Mark Duplass.

HOLLYWOOD, CA—A recent joint meeting of the SMPTE Hollywood and AES Los Angeles sections took a deep dive into translating theatrical movie soundtracks for home listening. Produced by Lon Neumann, principal, Immersive Audio Alliance, the program, *Preparing Movie Soundtracks for the Home Environment: It's Complicated!*, included presentations from Floyd Toole, Ph.D., JBL vice president, acoustical engineering (retired); Brian Vessa, executive director of audio mastering, Sony Pictures; and Scott Kramer, Netflix's manager of sound technology.

Neumann kicked off the proceedings with a primer on the recommendations for the correct configuration and alignment of a critical listening environment, including the ATSC

Sharing their insights on prepping film soundtracks for home environments were (from left): Floyd Toole, Ph.D., JBL vice president, acoustical engineering (retired); Lon Neumann, principal, Immersive Audio Alliance; Brian Vessa, executive director of audio mastering, Sony Pictures; and Scott Kramer, Netflix's manager of sound technology.

A/85:2013 document. "It's still the best collection of useful guidance on this topic," said Neumann.

One issue associated with mixing cinema content for home listening is the difference in monitoring calibration levels between the two environ-

Making AI-Generated Production Music

BY STEVE HARVEY

SANTA MONICA, CA—In a study conducted earlier this year, audio effectiveness measurement platform Veritonic quizzed consumers to determine whether they could tell the difference between music created by a human and that generated by an AI. Spoiler alert: they couldn't.

"It's the man-versus-machine debate," says Scott Simonelli, CEO of Veritonic, which conducted the analysis for its client, AI music creation company Amper Music. Veritonic, founded four years ago, works with diverse brands, he says, from Brighthouse Financial and E-Trade through Visa and Pepsi to Pandora and NPR.

Simonelli explains, "We're trying to look at this and say, Amper is creating audio based on its technology and AI. Is it possible to quantify if that audio is different than audio created by humans? Can we put statistically significant data behind that? Is it performing on par or better than music written by humans?"

Panelists were presented with two versions of a video—one with stock music, the other with Amper's AI-generated music—from brands including *USA Today*, Discovery, NASA and MLB. Through its proprietary platform, Veritonic tracked panelists' emotional responses, predisposition to watch videos from the selected brands and preferences for the music without telling them in advance

Amper's AI-generated music is making inroads into the production music market.

that any of it was created using AI, to eliminate bias.

"For the source material, we had a team look through relevant and noteworthy content that had music but didn't also have dialogue or other audio on top of it," says Amper Music CEO Drew Silverstein. The team then wrote a description of the stock music in each piece of selected content to feed into Amper's engine, which is driven by criteria such as genre, mood, instrumentation and tempo.

"We input that into Amper and had it create a piece of music from scratch that followed the descriptors and was tailored to the length of the video. We took that output and married it to the video. At that point, Amper's role in the process was com-

plete," he says.

While Amper will create a unique piece of music from scratch with every request, the team accepted the first attempt. "We gave it one shot," says Silverstein. "So much of Amper's premise is that the experience of working with the platform should be faster and more economical than an alternative process. For that to matter, the music must be equally good, if not better." The object of Veritonic's research was to test that premise, he says.

There are two steps to Amper's process, says Silverstein: composition and performance. "On the composition side, we're building data sets that describe music on a music theory level, an emotional level and a genre lev-

Making the Most of *Spider-Man*'s Sound

CULVER CITY, CA—Since it opened in early July, *Spider-Man: Far from Home* has taken in roughly $850 million internationally. That sounds like a hit, and as it happens, the hit's sound was completed by Sony Pictures Post Production Services.

Supervising sound editor & sound designer Steven Ticknor, re-recording mixer and supervising sound editor & sound designer Tony Lamberti, and re-recording mixer Kevin O'Connell led a team of sound artists in delivering soundscapes to match the film's action.

Ticknor, Lamberti and O'Connell, who previously collaborated on 2017's *Spider-Man: Homecoming*, faced new sound challenges. "*Spider-Man* movies always present wonderful opportunities to get creative with sound," says Ticknor. "Every member of our team was inspired to do his or her best, because it's Spider-Man ... one of the most popular superheroes on the planet."

"With every *Spider-Man* film, the audience arrives expecting to be taken on a thrill ride," adds O'Connell. "Our role was to maintain the intensity, and ensure every sound makes an impact and propels the story forward. We had a great rapport with [director] Jon Watts. He kept pushing us to make it better."

The sound team took on the chal-

Spider-Man: Far from Home was mixed in the Cary Grant Theater on the Sony Pictures Studios lot, where the sixth annual Mix Presents Sound For Film & TV event will take place Sept. 28, 2019.

lenge of creating sound treatments to support new (to the franchise) character Mysterio, a fighter with powerful weapons. "Virtually every second that Mysterio is on screen, he's fully complemented with sound," notes Lamberti. "As he's battling the Elemental Creatures, you have the whoosh of his flight suit and the stinging laser strikes of his weapon interacting with the frightening sounds made by the creatures. When composer Michael Giacchino's music comes in on top of that, it's amazing, a true 'wow' moment."

Speaking of the Elemental Creatures, each required a set of signature sounds related to its connection to

either fire, water, earth or wind. Ticknor recalls Watts describing what he wanted to hear when Hydron makes his first appearance, rising with terrifying effect from the ocean. "Jon showed us a video of a deluge system used by NASA to cool launch pads when rockets lift off," Ticknor recalls. "It was capable of releasing 450,000 gallons of water in a matter of seconds. To create the same effect for Hydron, we blended dozens of water recordings augmented by sound design software. One member of my crew, Chris Diebold, recorded himself making a cannonball plunge into a swimming pool to add to the mix."

Final mixing was completed

in the Cary Grant Theater on the Sony Pictures Studios lot in Culver City, with O'Connell and Lamberti working natively in Dolby Atmos. *Spider-Man: Far from Home* was the first film mixed in the Grant Theater following its recent upgrade to support immersive sound. "The Dolby Atmos format adds depth and richness to the soundtrack; it draws the audience in and allows them to hear details they might otherwise have missed," says O'Connell. "The sound effects, music and dialogue feel alive. It's thrilling."

Sony Pictures Post Production Services
www.sonypicturesstudios.com/postproduction.php

AI

el. We use those data sets to compose a piece of music that reflects what those genre and mood inputs are."

That data is turned into audio using Amper's human-performed instrument sample library. "We've now got one of the world's largest sample libraries, almost 5,000 instruments strong. We use those audio samples to transform a 60-second piece of music into an audio file that might contain 100,000 audio clips that we hope sounds like a professional recording," he says.

Amper has been building that library since the company was founded five years ago. "It's more or less an around-the-clock effort, costing millions and millions of dollars," says Silverstein, who hopes to eventually sample every instrument played in every way possible. "We haven't yet hit the more obscure parts of the music canon, but what's helpful is that when we

capture brilliant musicians performing on instruments in an elite way, that human element of the performance is translated into the music."

Responding to Veritonic's survey attributes such as "authentic," "inspiring," "likeable," "modern," "optimistic" and "unique," panelists scored the music remarkably evenly. They scored Amper and stock music accompanying the videos similarly across emotional response attributes and for purchase intent and showed no strong preference for either type of music.

Subsequently asked if any of the music was AI-generated, the percentage of panelists who believed that the human-produced stock music was machine-made was about the same as the number who believed that Amper's music was. Those two percentages combined were roughly equal to the number of respondents who believed both choices were machine-made, and about the same as the percentage who responded that neither were AI-generated.

"When I read the data as even,"

says Silverstein, "I interpreted that as people guessing. It means that it's so unclear which is which that really they're just flipping a coin."

"I wish I could tell you our data was always that flat," says Simonelli. "Not one thing was an outlier. That's compelling. I can't think of a study we've done where things were this tightly scored."

But the hope was that the two types of music would score evenly. "The reality is that if one were better or worse, I would be worried," Simonelli says. "When you would have been worried is if [AI-generated music] underperformed, if it was perceived as 'off' or weird," in the same way that AI-generated faces may be perceived as not quite right—the "uncanny valley" effect. But Veritonic's panelists uniformly found Amper's AI music indiscernible from its human-made counterpart. "It's the best outcome you could have hoped for," he says.

Public perception of AI-generated music appears to be shifting. Early attempts at AI music could be de-

scribed as clunky at best, but improvements in AI technology and the data behind the music-making algorithms now appear to be delivering an authenticity that is more widely appreciated.

"The thing that was delightfully surprising from my perspective was the question we didn't necessarily know was going to be asked: If you knew the music was composed by a machine, would it change your perception of the brand? Most people said no," says Silverstein.

Of the people who thought that the use of AI music would affect their perception, more than not said it would make them think positively of the brand, Silverstein reports. "Especially given the conversations that have happened publicly, it's lovely to see that. The default perception is starting to evolve. People are starting to realize this can be a positive thing."

Amper Music
www.ampermusic.com

Veritonic
www.veritonic.com

Home Environment

ments, which vary significantly in physical volume. Consequently, said Neumann, cinema mixing spaces are calibrated at 85 dBSPL, while A/85 recommends 76 or 78 dB for smaller spaces, depending on the exact dimensions. "We hear differently at different levels, and we know that consumers are going to be listening at substantially lower levels," he said.

Neumann also talked about the importance of metadata in Dolby encoding, especially the dialnorm settings. He added, "Dynamic range control keeps people happy when it's working as intended. It's in the metadata, so it's there to be used, if you want—but you don't have to use it."

NUTS AND BOLTS

Toole talked about the "nuts and bolts of audio," as he described them. "My focus has been sound quality, because without high-quality sound, nothing can be truly pleasurable," he said, launching into a review of some of the metrics behind room acoustics and loudspeaker performance.

Any industry needs standards, he said, and two standards—SMPTE 202M and ISO 2969—were created for cinema audio. The X Curve, describing the target response of the cinema B-chain, is part of those standards. A lot of science went into the development of the X Curve, and subsequent research demonstrates that theaters largely conform to it.

"But things change," Toole said, noting that content created for cinemas is now routinely watched on handheld devices and in the home. "There's an enormous audience not addressed by the movie standard. This is the difficulty; it needs to be addressed."

Demonstrating the correlation between frequency response in large and small rooms, he noted that any differences are explainable by physics. "The difference between them at high frequencies is totally air absorption," he said, adding that cinemas have much higher reverberation times, so the bass is going to rise. To arrive at the flat X Curve target, "You've got to turn the bass down," he continued, arguing instead that "a little too much bass is one of those forgivable sins."

Two ears and a brain are wonderful at extracting the essence of truth from complicated circumstances, said Toole, and they seem to extract and recognize something important in the direct, first-arrived sound, whatever

the listening environment. "It should be neutral, flat and smooth. The X Curve method does not do this. Standardization is essential, but compatibility with all of the audience would seem to be a worthwhile objective. We're simply not there yet."

THEATRICAL MIXES IN THE HOME

Vessa went into great detail about why a theatrical mix is not suitable for home consumption, ran down the gear and process he uses for home mixes, noted the challenges of reproducing immersive sound in home environments, described remixing and upmixing for the immersive home theater, and offered a sample soundtrack delivery workflow.

The objective of the home theater process is to translate mixing intent into a smaller space with lower playback volume and a smaller visual image, he said. It's nice to be able to fine-tune a mix for the home; it's a creative process, not an automated one. For a new movie, this should be part of the production process, using the mixer who worked on the theatrical version and who is intimately familiar with every aspect of it, said Vessa.

Subtle changes are going to have little impact in the home, he said, "so

don't be shy." It's not unusual for him to upmix elements to add immersive impact while retaining the original intent—a value-add, he said.

FREEDOM AND RESPONSIBILITY

Netflix is now the 800-pound gorilla in the world of media creation. Kramer began by stressing the company's core values: freedom and responsibility. "Our goal is to inspire

people rather than manage them," he said. "We trust our teams to do what they think is best for Netflix."

That extends to the directors, showrunners and creatives Netflix works with, he said. "We believe they will feel a responsibility, not to us, per se, but to their fans, to deliver a sound mix, in this case, that will translate really well in the home."

What most content has in common on the Netflix platform is dialogue, said Kramer. People adjust for comfortable dialogue, he added, noting that Netflix really has only two key nearfield mixing specs: loudness is -27 LKFS +/-2 LU dialogue gated, and peaks may not exceed 12 dBFS, so as not to create distortion in the decoder. The rest of the Netflix spec refers to organization of the content.

There is no theatrical sound spec: "You do whatever you need to do.

> ["We believe [production teams] will feel a responsibility, not to us, per se, but to their fans, to deliver a sound mix, in this case, that will translate really well in the home."]
>
> *Scott Kramer, Netflix*

There's total freedom," said Kramer.

There are few enforced rules, but Netflix publishes guidance and best practices for sound mixes, he continued. Immersive audio is preferred as a top-level audio master. Dolby Atmos in a 9.1.6 configuration is encouraged, enabling mixers to use the proscenium effect to pull things off the screen and widen the front soundstage. A minimum 7.1.4 is required for QC, he added.

If there is no theatrical release, then a small to medium nearfield mix stage, "like a large living room," is optimal, he said. There is no reason to set up an additional nearfield array around the console; the in-wall speakers in most TV mix rooms work just fine, he said.

Netflix has no X Curve engaged when reviewing mixes from around the world, "so we can hear everything that's streaming," he said, "and not lose any of those high frequencies."

Overall, he summarized, the recommendation is to spend the budget with more days mixing in smaller rooms to perfect the experience. That said, a growing number of Netflix films are destined for theatrical release, where it makes sense to mix in a large room, followed by a week or so in a smaller room for the nearfield mix. "But in many cases, mix the nearfield first and then theatrical later," said Kramer. "This is something we're starting to think about if there's no big theatrical release."

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www.aes.org

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7:00 PM **Sound Reel Showcase**

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innovations: the manufacturer's view

Simultaneous Simplicity and Sophistication

CLEAR-COM FREESPEAK II DIGITAL WIRELESS INTERCOM SYSTEMS

BY SIMON BROWNE

For more than five decades, Clear-Com has focused on harnessing the latest technologies to facilitate clear and reliable communication solutions. It pioneered many of the intercom technologies that are commonplace today, including partyline systems, digital wireless systems, IP-based systems, mobile intercoms and many more.

Choosing a particular innovation for this article has been rather like choosing your favorite child. But if pushed, I would single out FreeSpeak, our digital wireless intercom system, as a product that has made a significant impact on the industry.

WHERE DID WE START?

FreeSpeak was introduced around 2002 by Drake Electronics, which was soon to be cooperating with Clear-Com while both companies were owned by Vitec Group. We were receiving a lot of feedback from users who wanted to stay connected to multiple destinations while they moved around, so we started thinking about how to create an intercom key panel on a beltpack.

Digital wireless was in its infancy, and we used DECT telecom technology in a different way, putting key panel audio and data over a digital radio interface. Beltpack users would be able to walk between antennas seamlessly. A menu screen showed the callers, and users could set their own key labels. We built in a role-based selection system to enable users to grab any free beltpack and load their own keys—truly innovative back in 2002.

FreeSpeak was essentially the first multi-zone roaming digital wireless system. It worked very well, but we learned a lot from its initial operation. For instance, we had built FreeSpeak into a high-density matrix system, which was effective in Europe, where there was good bandwidth, but didn't work so well in the United States, where radio bandwidth was narrower. Second, our competitors in the United States featured base stations connected to smaller wired partyline systems, so for the U.S. market, we built a base station version called Cellcom.

By this time, Drake had been absorbed into Clear-Com, and Clear-Com had been taken over by HME. Merging our product inventories and quality manufacturing knowledge was a great success. From HME, we learned that our system needed to be a lot more rugged; I don't think we had fully appreciated how people treated the beltpacks!

We also began to improve the range and capacity of the system with an enhancement to the radio performance despite

Clear-Com's FreeSpeak II beltpack in use at KPIX in San Francisco.

regional bandwidth issues. On the technical side, we fixed a lot of radio issues with tighter input filters, which significantly reduced the amount of radio interference. FreeSpeak II was born.

Wireless intercom usage grew, and while we initially focused on extending the range of the FreeSpeak II beltpacks, paradoxically, we also needed to enable users to limit the range with smaller cells, and add DECT synchronization so that multiple teams in the same space could avoid overlapping with other systems.

Similarly, so many people wanted to equip such large teams with beltpacks that the 1.9 GHz bandwidth was often overloaded. To solve this, we added 2.4 GHz to the mix, enabling users to add up to 40 beltpacks on the different bandwidth, thus easily extending the system. A matrix-based system with multiple radio cards offers great flexibility here—the same system could have some users on DECT, some on 2.4 GHz. The 2.4 GHz bandwidth is also popular in areas where DECT is harder to regulate.

WHERE ARE WE NOW?

Technology doesn't stand still, and we continue to develop new functionality for changing environments. Recently we added

Clear-Com's FreeSpeak II beltpack.

packet loss concealment. Where you get multipath in radio systems, in fringe areas, it can sometimes drop packets of data. This newly added feature identifies pre and post data to recover packets and improve audio quality. It is particularly useful in venues with overarching roofs or lots of reflections. Better codecs have also been added that are much more tolerant to loss of data. For IP-centric managed installations, we have added AES67 IP audio connectivity to the transceivers.

Another focus of ours is diagnostics. While it's not a headline-grabbing function, it gives crucial insight to staff who manage the wireless systems on site, providing visual information to track the system's operation.

WHAT'S NEXT?

While we feel that FreeSpeak II has earned its place as a true innovation, we continue to listen to customers and partners in the field for insight into how it is actually being used and how it can be improved. We know that radio spaces are becoming more congested, and people also want to increase the capacity of their systems. We are developing solutions to solve these issues.

A pleasing paradox of FreeSpeak II is its simultaneous simplicity and sophistication. People can pick up a beltpack and understand very quickly how to use it, but it is also a sophisticated multitasker when it needs to be. We are looking at new ways to provide even more functionality for those who want it.

The need for mobility is where FreeSpeak started, and there is even greater demand for it today in terms of larger teams and greater capacity. Improving digital intercoms in large arenas will also be addressed to combat the existing wireless "noise" from pico-cell telephony, Wi-Fi and so on. We'll be looking at these issues in upcoming versions and look forward to sharing some new features with our customers and the wider industry later this year.

Simon Browne is vice president, product management, at Clear-Com.

Clear-Com
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ASTON STEALTH MICROPHONE ■ FOCAL TRIO11 BE STUDIO MONITORS

ASTON STEALTH MICROPHONE

Aston's Stealth ($499 list, $399 street) is a moving coil, dynamic, cardioid-only, end-address mic that can handle the high SPLs of drums, electric guitar amps and screaming vocalists. Optionally, an auto-detect circuit senses 48 V phantom power and engages an active class-A preamp with 50 dB of boost (an industry first). A purple ring illuminates near the Stealth's base when active, although this light is defeatable with a push button on the mic's base if you need to go "stealth" on a dark stage or TV shoot.

In either passive or active mode, Stealth has four voicing settings: Vocal 1, Vocal 2, Guitar and Dark. These voicings are the result of four unique analog signal paths—neither DSP nor simple EQ boosts. From Aston, "The voice settings are not EQ filters. They are contour networks, meaning the bulk of the signal does not pass through any sort of filter circuitry. The whole signal is slightly attenuated, with some frequencies being added back in at a higher level. This results in much lower phase distortion than conventional filter designs." The tonal balances of these settings were chosen by an evaluation group of 92 engineers, who blind-tested their way into these source-idealized settings that offer versatility far beyond those four specific sources. Imagine a paintbrush with a rotatable four-way head and optional paint injection—labels don't matter; pick whatever combination suits the job and start painting!

The Stealth capsule is mounted in a stainless steel Faraday cage, a metal mesh enclosure that distributes electromagnetic fields across the cage and reduces RF interference. This structure is suspended within the chassis by three Sorbothane hemispheres (the synthetic polymer Sorbothane is an efficient acoustic vibration damper), which isolates the assembly from the outside world and eliminates the need for a shockmount. The mic is stand-mounted via a unique quick-clip design that relies on precision machining of a slim 4 mm hard plastic shaft *(continued on page 33)*

Aston Stealth Microphone.

BY ROB TAVAGLIONE

Rob Tavaglione owns and operates Charlotte's Catalyst Recording and has been a longtime studio contributor. twitter.com/robtavaglione

FOCAL TRIO11 BE MONITORS

French manufacturer Focal is widely recognized as a world leader in speaker technology, with a footprint that covers not only studio monitors, but audiophile speakers, car speakers and headphones. With that in mind, I'm quite aware that I've been the odd man out in my assessment of its popular SM9s, the flagship model prior to these Trio11 units. They are expertly built, high-quality monitors that get everything right, but have a frequency balance that somehow doesn't work for me. I always thought it was the uniquely crisp tone of the beryllium tweeter, or perhaps the crossover to the tweet; it's hard to find the words to explain it, and truthfully, I never could find an explanation.

Now I've had plenty of time with Focal's new flagship studio monitor, the Trio11 Be, and I've completely reversed my opinion. These are the best-sounding monitors I've ever heard in my room, and they defied my biased expectations in a number of ways.

OUT OF THE BOX

The aesthetics and design of the Trio11s are familiar and an extension of Focal's line, featuring 21 mm and 30 mm MDF cabinetry with Focal's trademark dark red burr ash veneer finish, rigid "W" composite sandwich cones on the 5 1/8-inch woofer and 10-inch subwoofer (they're not called midrange and woofer due to the Trio11's 2-way or 3-way modes), a faux granite look on the woofer(s) cones, and the very same 1-inch pure beryllium inverted dome tweeter as in the SM9s.

A circular plate and enclosure mounts the small woofer and tweeter. This plate can rotate a full 360 degrees in 90-degree increments to accommodate vertical or horizontal mounting. The small woofer is ported, greatly contributing to accuracy and fidelity, according to Focal.

Three internal amps drive the Trio11s, with 300 watts going to the large woofer, 150 to the small (both with class-G power) and 100 watts to the tweeter with class-AB power. This prevalence of power makes for high-headroom operation and high SPL—118 dB at about 1 meter.

Overall bandwidth is a wide 30 Hz to 40 kHz at +/-3 dB. This response is tailorable to your control room with onboard analog EQ (not DSP), with a low shelf at 250 Hz, a LMF bell at 160 (with a Q of 1.0) and a high shelf at 4.5 kHz.

IN SESSION

When they arrived, I was extremely careful to not damage these big, beautiful monitors; I followed Focal's unpacking instructions to a tee. I tried the Trio11s first in the control room of a friend who uses Focal's Solo6 Be monitors. The Trio11 and Solo6 monitors have a somewhat similar tone and balance, clearly showing they're from the same line, but the Trio11s offer a larger, more forceful and more complete presentation.

After trying them in my friend's control room, I moved the Trio11s to my studio for additional testing—I was lucky my friend offered to help because each monitor weighs over 80 pounds, well beyond my ability to handle solo. We placed the monitors on my control furniture's shelf, inserting a set of four IsoAcoustics ISO-Pucks under each monitor to

Focal's Trio11 BE studio monitors were real-world tested inside Charlotte's Catalyst Recording.

isolate their considerable weight and energy from the furniture. I rather optimistically placed the Trio11s in the prime position, without any monitors nearby to muck up the soundstage with unnecessary diffraction, and got right back to work, knowing full well the transition from my very different-sounding usual Neumann KH310s would be a little difficult at first, but believing I'd adjust shortly.

My first impression was that these were definitely not SM9s; the high end seemed smoother and more understated, and the tweeter didn't have the 10-12 kHz emphasis I remembered. The midrange balance seemed exceedingly neutral, lacking any emphasis, dips or hollowness, even as the lack of high-mid hype (which the KH310s provide a bit of) seemed unfamiliar. After bypassing my subwoofer, the bottom end was attention-grabbing in its own way in that it had a consistency and level of detail I wasn't used to.

I decided I needed to break in not only the Trio11s but also my perception of them, so I let them run for a couple of days during studio cleanup/maintenance, as I ran down much of my recent workload through them.

During this phase, I noticed the oddest thing: I was getting nice, even coverage all throughout my room, with good intelligibility of the mids/highs and even bass coverage that was mode- and null-free compared to my usual setup with subwoofer. I soon realized I was getting a little low-mid murkiness from my furniture, and highs were dampened a bit much (out of necessity in my residential basement studio), so I set the Trio11's LMF for -2 dB and the high shelf for +1 dB, and that's where they stayed for the duration of my review.

During this time, I was able to use the Trio11s on a wide variety of musical styles (punk rock, R&B, rap, bluegrass, rock, gospel and jazz) as I tracked, edited, mixed and mastered in my busy room. Once I got used to their frequency response, I started to notice other traits, like the completely unrestrained dynamics. The only time I've heard this much headroom is in a proper mastering room with Dunlavys: the Trio11's ability to rise up and deliver crescendos is quite impressive. You don't realize how much headroom you typically lack until you hear it delivered with ease. Okay, I managed to get the Trio11s to their operational limit, but only via an EDM track with ridiculous deep synth bass—the woofers had started to slightly distort and chatter as the power LED went from green to flashes of red. With normal program material, they go louder than you can stand, unlike the Trio6 Bes, which get respectfully loud, but not as loud as situations occasionally require.

Noise is not an issue with Trio11 monitors. Self-noise is seemingly nonexistent, unlike many monitors that use DSP and get a little hissy or have inadequate power filtering. Port noise was also not noticeable, despite front panel-mounted porting and the large amount of air being pushed around by that large woofer. Focal says this design makes for better performance if mounted close to walls/boundaries and it is major aspect of the Trio11s fidelity.

Focal's much-touted Focus Mode (engaged with a footswitch, not provided) is useful, but not as much as one might think. For the limited-bandwidth playback and the information it provides, I'd rather use Avantones/Auratones, with their full-range driver and lack of a crossover. The Trio11s sound great in Focus Mode and are only lacking bottom end, so they're not informative enough for me. But the Focus Mode is great during long vocal editing sessions, where a midrange focus and a little rest from low frequency is quite welcome.

I was surprised by one aspect of working exclusively on Trio11s that I didn't expect at all. I thought my clients would get excited about these large monitors on my meter bridge and get hyper-focused on them. On the contrary, once I explained what they were hearing, they settled in without further distraction. There wasn't as much second-guessing of my mix moves; there was less dissent in the room and they seemed to be hearing better back on their couch. I think the Trio11s sounded so good that the client was able to take them for granted, and that's a very good thing.

One other observation bears mentioning. My room's ceiling is fairly low, just 8.5 feet, and I'm not able to achieve uniform dispersion even with the ample absorption, diffusion and bass trapping I employ. With the Trio11's, I got more even dispersion, a wider sweet spot and much better results than with my KH310s, which have a tweeter waveguide designed for low-ceiling environs. Without such a waveguide, the Focal tweeter still managed to cover my room better, and (needless to say) the bass response was more consistent throughout the room than with my sub. The Trio11s are the only monitor I've heard in my room with enough bass response, headroom and power to loudly drive the big bottom that my rock, EDM and rap clients require.

THE FINAL MIX

Indeed, $8K is a lot of cash for a pair of Trio11s, but to these ears, they sound as complete, full and accurate as my previous benchmarks—PMCs and ATCs—at a lower cost. No-compromise monitoring requires ample power, large drivers and clever design, which the Trio11 monitors deliver in spades. There may be a better monitor in this class, but I've never heard it. Fans of the SM9 (and Trio6 Be) would be wise to check out these Trio11s, because they impressed the hell out of me and I was not previously a fan.

Focal

www.focal.com

Aston

that simply pops in and out of the mic body. The base of the body houses a four-position rotary switch for selecting among the four voicings.

Performance is rated at 20 Hz to 20 kHz with +/-3 dB variation, self-noise at 10 dB A-weighted; sensitivity ranges from 1 mV/Pa in passive mode to 150 mV/Pa in active mode (averaged across all four voicings, as there are volume differences among them); and a maximum SPL of 140 dB yields 0.5 percent THD.

IN SESSION

Stealth can handle a number of snare drum tasks with excellence. Snare top, passive revealed an output level a little lower than a SM57 placed in the same spot, with good balance in the Dark and (brighter) Vocal 1 modes and a touch of below 1 kHz midrange color for personality. There were nice results underneath on the wires, too, but Stealth's size made for a tight fit. Even better was Stealth in the "snare-o'head" position (4 feet above, aimed straight down, Dark, active); there, its tight pattern rejected enough cymbals for some useful punchy tones and more air than you get up close. I found the active mode to be plenty hot, requiring almost no preamp gain or a pad in many cases.

It seems that I record tambourine overdubs constantly, using anything from a ribbon to a dynamic to a condenser mic, and I am never completely happy with the results. Here, I absolutely loved the Stealth in Dark Mode and passive, where the tone was simply perfect—no EQ and even without compression, it sat in the mix politely and beautifully.

I tried the Stealth on a couple of acoustic guitar tracks and found it very nice active and in Guitar Mode, with plenty of detail and a refined top end, but the midrange wasn't quite to my liking (nor were the Vocal modes). There was just a little too much midrange color and personality, but that's perhaps a personal preference; Stealth is quite capable on stringed instruments with low self-noise, ample active gain and directionality to reject heavy-breathing wheezers (and it's possibly useful on overly bright guitars in Dark mode).

Conversely, I really liked Stealth on just about anything I could run through a guitar amp: electric guitars, acoustic guitars, electric mandolin (through a cranked JCM800 nonetheless!), Fender Rhodes, harmonica, synthesizer, you name it. Every one of them sounded absolutely great with the Stealth (Guitar mode, passive).

That little bit of midrange color I obsessed over was helpful with definition and clarity on all of the above.

It's on vocals that I wish I had much more time to explore the myriad possibilities. Suffice to say, I found plenty of useful tones, once again across the entire spectrum. For straight-up, typical LDC-type vocals, I found myself on Vocal 1 or 2 modes, with the active boost necessary to sweeten the top, increase sensitivity and create that "condenser-ness." I found Vocal 2 typically too bright, but a welcome option, even if Guitar was too mid-emphasized and Dark a bit too murky.

I especially liked the Guitar setting (active) on rap ad-lib vocals, where the focused mids and genteel high end were ideal for aggressive HPFing and FX processing. For loud-as-hell screamers, the passive mode brought that traditional dynamic mic sound that is "tone du jour" today, in either the Vocal 1 or in the Dark mode for the scratchiest and thinnest vocalists.

Despite the wealth of versatility and wildly useful tones, the Stealth isn't exactly easy to put to use. First of all, end-address designs aren't convenient to get in certain positions, and Stealth is large—similar to a RE20, 320 or SM7—so you'll need ample room. Stealth's stand adapter connects and disconnects neatly, but it is only just up to the task of holding the mic in a horizontal position (it is 1.5 pounds, after all). I had to tighten
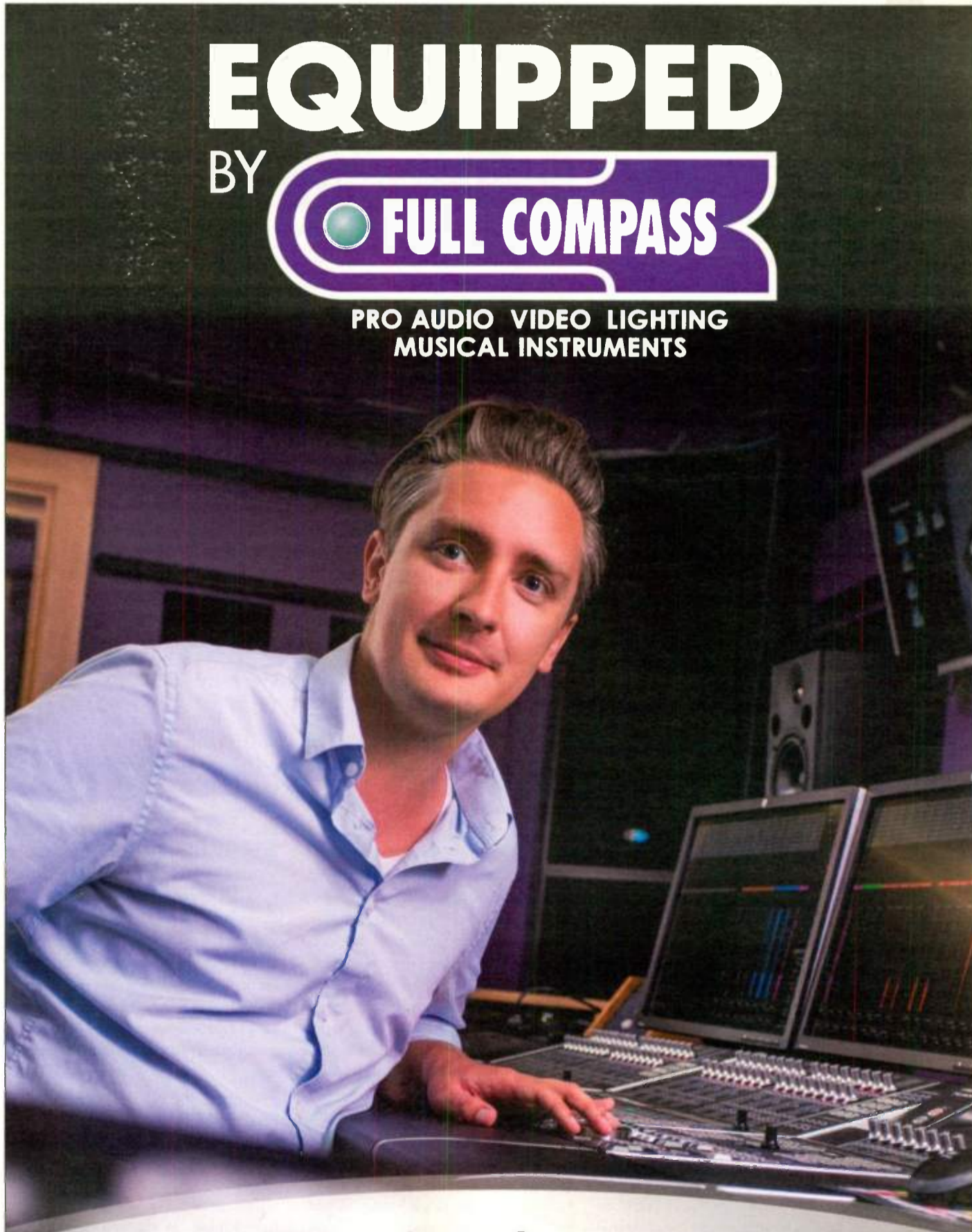
THE METALLIANCE REPORT:
Modern Loudness

BY GEORGE MASSENBURG

The stakes are high in the production of popular music. The difference between a God and a Cod is one tiny stroke, but one of them is venerated and the other is eaten. Music production is often about a plethora of subtle differences—some profoundly important, some not—and a dB or two (or 10 ... or more) in the final mix of the song often has seemed to mean a lot.

The potential for possible improvements to an artist's mix has made mastering essential—a process that often makes the difference in how music mixes are judged.

In the early 2000s, we started hearing about "the loudness wars"—a nickname that emerged to describe the threatening pervasiveness of overly-loud, distorted, "flattened" recorded music—a form that was evaporating subtlety or fine detail. I don't remember exactly when it was—maybe it was 2008—but I recall hearing whispers that the loudness wars were nearly over, influenced by an unlikely source: broadcast television.

In 2008, legislation was proposed for new controls on loudness for con-

The METAlliance includes (l-r) Ed Cherney, Chuck Ainlay, Al Schmitt, George Massenburg, Elliot Scheiner and Frank Filipetti.

mastering engineer evaluates loudness on a meter (there are many) and mastering is the last opportunity to hit that mark.

A number of large companies, notably Apple and Spotify, have voluntarily signed on to do their part in ending the loudness wars, but each with their own measurement standards and loudness targets; Apple's "Sound Check" and "Mastered

> [I remember hearing that "the loudness wars" in music production and delivery were soon to be over.]

sumer broadcast television sound. Yes, that meant government-mandated "loudness normalization" for television—a process where the loudness of a mix would be measured by a loudness meter, often calibrated in dB LUFS, and then raised or lowered as required by law.

When loudness became a de facto standard in television broadcast in the United States (A85) and in Europe (BS1770), and control measures over it were slowly implemented for TV, I again remember hearing that it meant the loudness wars in music production and delivery were soon to be over.

The war isn't over.

Today, the FCC officially supervises loudness in television broadcasts—and it is working, for the most part—but it is not at all clear how the music distribution business could be policed so that it would be obligated by law to limit loudness. The concept of loudness normalization applies to music production and mastering; a

for iTunes" specs call for -16.5 dB LUFS, while Spotify calls for -14 dB LUFS. Similarly, even more corporate entities have piled on, but again, each with its own standards.

Apparently this isn't enough.

In pop music production and delivery, there's been a broad and unanticipated range of responses to—and limited acceptance of—loudness normalization standards and their implementation on commercial music for streaming and download. The most experienced mastering engineers "got it" right away; many proceeded to educate and inform their clients and to implement basic loudness controls. Some mastering pros have deepened their understanding of pop music production methodologies and workflow so as to better explain and demonstrate the importance and impact of loudness normalization to their clients.

But to many others, loudness normalization seemed to imply an arbitrary external control over one's

work from disorganized, detached, uninformed, disinterested, remote players. At the same time, there's also deep suspicion of all music delivery services. In the West, two of the most popular platforms for listening to music online, Spotify and YouTube, have implemented their own loudness measurements and loudness targets. There are more and more download and streaming services, and most appear to have inconsistent standards in their deployment of loudness normalization, notably in the measurement of loudness standards and the implementation of loudness controls of music files. Basically, no one knows what to do except to "turn it up!"

The least predictable (but not entirely surprising) resistance to externally mandated loudness controls seems to come from new, emerging "producers" and "mastering engineers." In this new production paradigm/workflow—one mostly lacking a traditional professional infrastructure of managers or "gatekeepers"—these new "mastering" practitioners interact only with their respective artists. Many decisions in these relationships are invariably one-sided.

And that's the disconnect: It's not an overreach to say that artists are preternaturally insecure. After all, their job, if you will, is to absorb the heartbeat of the current culture ... to translate this matrix of influences, not limited to affairs of the heart and politics, and blend in ideas, often abstract and ephemeral, then render it all musically. Does "accountability" have a place in the artistic zeitgeist? Does actual technical competence? What about an artist doing technical advocacy?

This is what happens: An artist is reviewing their ref mix just back from a "mastering engineer," and listens to a first pass of mastering. Then, comparing it to a favorite CD, the artist wonders aloud to their mastering and/or mix person(s), "Why is my track so much ... quieter?"

The loudness wars have left artists and especially producers terrified of losing the gig, but when they ask a question like that, the mixing/mastering cabal's response must not be to simply turn it up. It must be to insist on conclusive, collaborative loudness measurements—and to provide the artist with the opportunity to hear their work as measured against others that they might use as a loudness reference.

In fact, this is really our only choice: We ourselves are responsible for understanding and supervising all of the issues in the loudness discussion. No one else is going to do it.

And just one more thing while you're at it: Wouldja PLEASE stop crushing digital mix busses? Absolutely nothing is gained by it.

Grammy and TEC Award-winner George Massenburg is a producer, recording engineer and designer of audio equipment who has participated in the creation of more than 400 albums. He has won Grammys as both a producer and as an engineer, and in 1998, was awarded a Grammy for Technical Achievement for a lifetime of contributions to the art and science of recording. Massenburg's discography includes seven Little Feat albums; seven Earth, Wind & Fire albums; 13 Linda Ronstadt albums; and albums with Journey, James Taylor, Jennifer Warnes, Herbie Hancock and Ricky Skaggs, among others. He also created that mainstay of the recording process, the Parametric Equalizer.

METAlliance
www.metalliance.com

Steinberg SpectraLayers Pro 6

SpectraLayers Pro 6 audio editing software allows users to visualize audio in the spectral domain (in 2D and 3D) and to manipulate its spectral data in different ways. The software enables precision audio editing within the spectral domain in a manner comparable to the editing capabilities of photo editing software, with tools such as modification, selection, measurement and drawing.

New features in v6 include ARA 2 support. In addition to the standalone application, version 6 offers an ARA plug-in that integrates into every ARA 2-compatible DAW, such as Nuendo and Cubase, to be used as a native editor. SpectraLayers Pro 6 also includes visible fade masks and allows users to select from the many available fade types.

The software offers nine revamped selection tools, including the Transient Selector. The Move tool helps users transform audio intuitively, grabbing layers to activate and move or scale them. The update also provides external editor integration.

Antelope Audio Synergy Core FX Platform

Antelope Audio has introduced the Synergy Core signal processing platform for its Discrete 4 and Discrete 8 audio interfaces, resulting in the units being renamed Discrete 4 Synergy Core and Discrete 8 Synergy Core. Each of the Thunderbolt/USB interfaces includes discrete mic preamps (4 and 8, respectively) and provides AD/DA conversion, capturing and monitoring audio at up to 192 kHz/24-bit resolution, with 121 dB dynamic range on the Discrete 4 and 130 dB on the Discrete 8. Dual DSP chips and an FPGA processor work together to host Antelope's vintage-inspired effects plug-ins (plus any third-party effects joining the Synergy Core platform), freeing up an audio production-purposed host computer's CPU.

The Discrete 4 Synergy Core offers four discrete mic preamps, 14 inputs and 16 outputs, expandable via ADAT In Out and S/PDIF In Out on Toslink. The rack-mountable Discrete 8 Synergy Core sports eight console-grade discrete mic preamps, 26 inputs and 30 outputs, expandable via dual ADAT and S/PDIF In Out on Toslink, plus a footswitch jack.

Focusrite Scarlett Gen3 Interfaces

Focusrite has updated its Scarlett range of USB interfaces, introducing the third generation of the line with six units: Solo, 2i2, 4i4, 8i6, 18i8 or 18i20. All feature new Scarlett mic preamps based on 24-bit/192 kHz converters, and the Air effect of Focusrite's original ISA mic preamp, which is designed to endow vocals and acoustic music with a more spacious sound.

The 4i4 and 8i6 add more line I/O compared to the second generation 2i4 and 6i6 models. New Solo and 2i2 Studio Packs are also available, with Scarlett HP60 MkIII headphone and CM25 MkIII condenser microphone included.

The units provide low USB latency, allowing users to record and monitor in real time with numerous plug-ins in place. The interfaces sport Type-C USB connection via a supplied USB-C to USB-A cable. Other features include additional line level inputs for flexible recording setups, balanced TRS outputs to eliminate speaker hum, and a Quick Start tool to aid initial setup and driver installation.

Apple Logic Pro X

The recent update of Logic Pro X (10.4.5) optimizes the professional music production software for Apple's redesigned Mac Pro computer, which is scheduled to ship in the fall. The Logic Pro X update is available now.

Making full use of the Mac Pro hardware, Logic Pro X 10.4.5 will support up to 56 processing threads, and reportedly can run up to five times the number of real-time plug-ins. The new software also increases the available track and channel count for all users, supporting up to 1,000 audio tracks and 1,000 software instrument tracks.

Additionally, Logic Pro X now supports 1,000 auxiliary channel strips, 1,000 external MIDI tracks and 12 sends per channel strip. Responsiveness of the Mixer and Event List when working with large sessions is said to have been improved, and projects with numerous Flex Time edits and tempo changes should perform more efficiently with the update.

Waves Abbey Road Studio 3 Plug-In

Created in collaboration with Abbey Road Studios, Waves Audio's Abbey Road Studio 3 plug-in re-creates the acoustic response of Abbey Road Studio 3 for immersive use on headphones, allowing users to hear and mix their own work in a virtual replica of the mix room that has been used to mix the likes of Radiohead, Amy Winehouse, Kanye West, The Beatles, Pink Floyd, Frank Ocean, and Florence + the Machine.

Users of the plug-in, which is powered by Waves' Nx technology for immersive 3D audio, will reportedly be able to hear the same clarity of stereo and surround image, and accurate sustain via a pair of headphones. The tool's designers suggest it can be used for predicting how headphone mixes will translate to speaker systems of all types and likewise will help users mix the low end on headphones. The plug-in provides 5.1 and 7.1 surround sound.

KEF America LSX Monitor Accessories

Accessories available for KEF's LSX monitors include the S1 Floor Stand, B1 Wall Bracket and P1 Desk Pad. The S1 Floor Stand, available in black or white, features an aluminum structure with a fillable pillar that provides a stable base for the speaker. Integrated cable management provides a clean aesthetic. While not aimed at studio pros, the black or silver B1 Wall Bracket is an accessory intended to match the "plug-and-play" nature of the LSX. It features cable management, an integrated mounting system and an adjustable dais to enable rotation. Offered in a black or silver finish, the P1 Desk Pad provides a 10° upward tilt. The accessories are set to ship in August.

KEF recently added Apple AirPlay 2 support to its LSX line, so LSX owners will be able to stream music, videos and games from any Apple device including iPhone, iPad or Mac to the speakers.
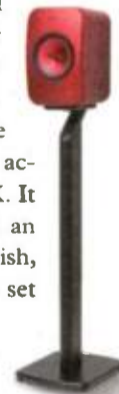
United Plugins FireCobra

Independent software developers FireSonic, JMG Music, and SounDevice Digital have teamed up to create a plug-in collective called United Plugins. One of the first offerings is FireCobra, an intelligent mix enhancer for macOS and Windows.

FireCobra aims to combine the accuracy of the digital world with the live randomness of analog as it analyzes an audio signal in an effort to make it punchier, more powerful, and generally better sounding. Users apply the plug-in to a DAW track and tweak its three algorithms: Intensify, Smack and Analogize. Intensify is designed to make audio sound tighter and fuller. Smack creates harmonic distortion inspired by analog devices to make the treated audio sound more authentic and audible in the mix. Analogize adds an analog warm valve feel based on classic analog saturation simulation.

ProCo W.I.E.M.S.

The W.I.E.M.S. compact wireless in-ear monitor system from ProCo Sound features a simple design, with no external antennas and a seamless plug-and-pair setup. The W.I.E.M.S wireless IEM system can be used in a variety of applications, including live sound, broadcast and film, as well as in educational and other install-based instances.

This low-latency (less than 5.6 milliseconds) solution has 24-bit audio quality with a 48 kHz sampling rate and transmits from a balanced, line level output. The system has four user-selectable channels and features a 3.5 mm headphone jack, allowing users to plug in their preferred earpiece. The receiver automatically pairs to the transmitter, which uses the 5.8 GHz frequency band, keeping it isolated from the crowded 2.4 GHz band. With an XLR cable, the transmitter works through any Dante-enabled wall plate or drop-snake.

LEA Professional IoT Amplifiers

Connect 354, Connect 704, Connect 354D and Connect 704D are the first models in LEA Professional's new Connect Series line of IOT-enabled professional amplifiers, intended for the installation market.

Via the units' built-in AWS IoT Core, systems integrators can remotely monitor hundreds of data points—from fan speed and thermal temperature to system faults and more—allowing them to identify potential issues and troubleshoot well in advance of required maintenance.

All four mid-power models are built with fully routable analog inputs, and the 354D and 704D have the addition of Dante and AES67 connectivity. All four models can provide network connection using a built-in Wi-Fi Access Point, by connecting to an existing Wi-Fi network, or by using a LAN Ethernet connection.

Yamaha StagePAS 1K

The StagePAS 1K portable P.A. system features a 1000W Class-D amplifier, an upgrade in power from its predecessors, the StagePAS 600BT and StagePAS 400BT. StagePAS 1K is driven by a high-frequency array speaker packed with 10 small-diameter, 1.5-inch drivers. Yamaha added the company's Twisted Flare Port technology to the subwoofer in an effort to reduce wind noise in the bass reflex port. The array speaker is affixed to the subwoofer cabinet, requiring no cables or speaker stands.

The 5-channel digital mixer, located in the back of the subwoofer, features three channels of mono microphone/line inputs and stereo inputs, with two of the mono input channels fitted with Hi-Z connectivity for direct input of acoustic-electric guitars and other instruments.

Electro-Voice MFX Monitors

Electro-Voice's MFX Multi-Function Monitors MFX-12MC and MFX-15MC are passive 12-inch and 15-inch two-way coaxial monitors intended to complement the X-Line Advance line array models X1, X2, X12-128 and X12-125F, as well as their corresponding installation versions. Inside the monitors sit coaxially aligned HF and LF transducers matched with a new Electro-Voice-engineered Constant-Directivity waveguide and likewise new crossover design. Coverage in monitor orientation is 40° H x 60° V. The dimensions and location of the waveguide interact with the woofer to essentially create a bipole output, aiding coverage control through the midrange frequencies.

Powersoft Mezzo Amplifiers

Mezzo is a line of eight amplifier models specifically created for the AV/IT market. The self-configuring amplifier system sports a compact Class-D technology design.

The eight available models in the Mezzo line consist of four power sizes, each offering an option with "A" (Analog) or "AD" (Analog-Digital), which adds Dante/AES67. The power sizes include smaller option of 320W in 4 x 80W and 2 x 160W variants, and a larger option of 600W in 4 x 150 or 2 x 300W.

The smaller 320W power models are able to deliver 80/160W per channel into 2, 4, 8 or 16 ohms, as well as 100, 70 or 25V. Meanwhile, the larger 600W power sized models can deliver 4 x 150W or 2 x 300W, and can drive two 16 ohm as well as 25, 70 or 100V.

## L-Acoustics A Series Installation Loudspeakers

Following the launch of its A Series scalable medium-throw line source loudspeaker line earlier this year, L-Acoustics announced the upcoming debut of install-specific versions that include installation-appropriate enclosures and rigging accessories. Models in the A Series offer adjustable coverage options, with the A15i Focus reportedly achieving a throw of up to 45 meters and a maximum output of 144 dB. A15i and A10i feature Panflex, allowing the speakers to adapt to various audience geometries.
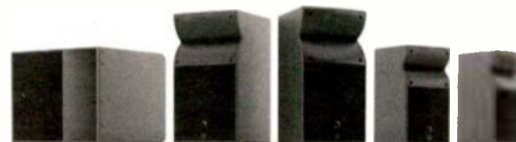
Martin Audio BlacklineX Powered Series

The BlacklineX Powered Series offers new active versions of the BlacklineX Series of portable enclosures. The new series includes the 12-inch XP12 and 15-inch XP15 full range enclosures, along with the 18-inch XP118 subwoofer. The new boxes integrate acoustic, DSP and amplifier technologies into the portable series. BlacklineX Powered offers optional Bluetooth control, streaming and a built-in three-channel mixer, making them suitable for live venues, DJs, corporate events and more.
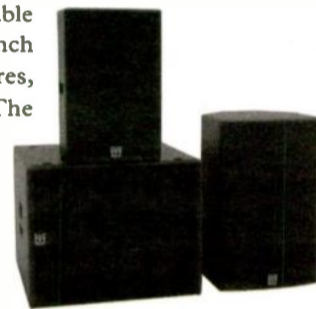
▶ firstlook

QSC TouchMix-30 Update

The v2.0 firmware update for the TouchMix-30 Pro compact digital mixer adds a number of new features and presets requested by users. Chief among the additions is a Custom Fader Banks function that supports the assignment of three fader banks, each for eight channels, that are saved as part of a Mixer Scene. The update also allows the mixer to interface with third-party external control surfaces with motorized faders. QSC has verified operation with iCon Platform M+, Behringer XTouch Compact and PreSonus FaderPort 8 control surfaces.

A slew of presets has been added as well, including 28 new instruments presets (cajon, accordion, harmonica, ukulele, cello, clarinet, various percussions and more). CP Series Compact Powered Loudspeakers Presets are available directly in the mixer, as well as CP8 and CP12 loudspeakers' input gain settings recommendations.

There's more information on all the products featured at prosoundnetwork.com/aug2019.

Saatchi Gallery Multimedia Show Goes Immersive

BY MEL LAMBERT

"Sanctuary" by Doug Foster was one of the artworks installed in the immersive audio presentation *Beyond the Road* at London's Saatchi Gallery.

LONDON, UK—Staged on the top floor of London's Saatchi Gallery, *Beyond the Road* was an immersive exhibition that attempted to merge the worlds of visual art, music and film, offering attendees the opportunity "to lose themselves in a multisensory world led by sound."

The installation was developed by creative producer Colin Nightingale and sound designer/creative director Stephen Dobbie, both part of the core crew at Punchdrunk, in collaboration with electronica composer James Lavelle from the band UNKLE. All sound playback was handled by d&b audiotechnik processors and loudspeakers, while one

key exhibit featured the use of a d&b Soundscape immersive surround sound system. Accompanying 3D holographic displays were realized via a series of HYPERVSN systems fed from a central server that held high-resolution video and graphics files.

The art installation comprised a reconstruction of audio and visual elements from two UNKLE albums— *The Road: Part I* and *The Road: Part II/Lost Highway*—multichannel stems of which were used to create a multisensory experience over the gallery's entire top floor. "Bespoke sound design was created especially for the space by contemporary artists and filmmakers," Dobbie explained to

PSN in an exclusive interview. Guest artists and filmmakers included Danny Boyle, Jonas Burgert, Nathan Coley, Alfonso Cuaron, Toby Dye, Doug Foster, Azzi Glasser and John Stark.

Nightingale and Dobbie become part of the Punchdrunk theater company in 2002, and formed the creative team that worked on such shows as *Sleep No More, New York* (2011-19) and *Sleep No More, Shanghai* (2016-19), *The Drowned Man: A Hollywood Fable* (2013-14) and *Masque of the Red Death* (2007-08).

The basic concept for *Beyond the Road* was conceived about two and a half years ago, Dobbie recalled: "We

Tool On Tour

Alan "Nobby" Hopkinson, longtime FOH engineer for Tool.

LOS ANGELES, CA—It's been more than 4,800 days since Tool released *10,000 Days*, its most recent album, back in 2006, but that hasn't stopped the art rockers from touring in the intervening years. With a new album on the horizon—penciled in to debut on Aug. 30—the group has been crossing the globe this spring to rev up the fanbase, with longtime FOH engineer Alan "Nobby" Hopkinson and an audio system from Eighth Day Sound (Highland Heights, OH) in tow.

As the group still plays arenas, the house system is a mixture of cutting-edge technology and tried-and-true, with a brand new d&b audiotechnik GSL array system conveying Nobby's mix, handled on a trusted herald of the analog mixing age, a Midas XL-4 console. Capturing all the doom on stage is a slew of Heil Sound microphones.

As it turns out, Nobby has used Heil Sound mics for years. On the current run, he is using PR31s and a PR40 on the guitar cabinets, a PR40 and PR30 on the two bass cabinets, PR30s on Leslies (L&R), PR48s and

PR40s on kick and floor toms, and a PR30 for guitarist Adam Jones' Heil Talk Box.

"We were first introduced to the Heil range of mics during the recording of the previous album," said Nobby, "and to keep things as near to form, we took them on the road with us. They have a very natural sound, which really is the bottom line. There's very little coloration, which keeps the sound raw—perfect Tool."

Much as the band has in years past, Tool continues to draw little attention to itself while performing live, letting the music and accompanying

visuals do the talking while the group performs in both the metaphorical and actual shadows. As Nobby put it, "The visual element is always at the heart of this show, with audio being the silk stitching to complete the purse. We try to position audio to facilitate what the video and lighting departments are trying to create; all three departments have worked together for the years that I've been here—some for longer—so we have a pretty good understanding of each other."

Heil Sound
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NSB Stage Box

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The 607,000-pound roof of the 23,500-seat American Family Insurance Amphitheater was raised 26 feet in one snowy day.

Raising the Roof—and Expectations—at Summerfest

BY STEVE HARVEY

MILWAUKEE, WI—For years, plenty of performances during Milwaukee's Summerfest have figuratively raised the roof at the 23,500-seat American Family Insurance Amphitheater in Maier Festival Park. But this year, when fans filed into the venue to see Summerfest headliners like Thomas Rhett, Jason Aldean, Bon Iver, Zac Brown Band, Lionel Richie, The Killers and Jennifer Lopez, they discovered that the roof had literally been raised—from 39 feet to 65 feet.

"The main reason we remodeled the amphitheater was that while the old one was state of the art when we built it 20-some years ago, we needed a building that could handle some of the new touring productions," explains Bob Babisch, vice president of entertainment at Summerfest. The decision to increase clearance above the stage came a few years ago after organizers booked a show they were especially excited to present, only to discover during a conversation between the respective teams that the production wouldn't have enough clearance at the existing roof height.

The ongoing $53 million, two-year, two-phase project included renovations and improvements to production facilities for this year's Summerfest, which featured more than 800 artists performing on 12 stages from June 26 through July 7. Improvements include a new adjustable and removable stage, 19 well-appointed dressing rooms, a tripling of production crew catering facilities and construction of new loading docks that can handle nine trucks at once. Phase two, set for completion and a grand opening at Summerfest 2020, encompasses extensive upgrades to audience amenities.

Eppstein Uhen Architects (EUA) designed the amphitheater in 1985; the structure was completed by Hunzinger Construction in 1987. Both companies are overseeing the current renovations. About half the roof—a section measuring 24,100 square feet (half an acre) and weighing 607,000 pounds, extending 125 feet out from the downstage edge—was raised 26 feet in a single day. That task was followed by four months of construction of the supporting structures.

Having identified the need to raise the roof, says Jason Stuewe, architectural designer at Summerfest, "We made sure that we focused on the acoustics and the quality of the sound in the venue, because we knew that this was one of the better-sounding venues in the country; we get a lot of great, positive feedback from touring acts and sound engineers. The number-one priority of this development was to make sure that we did not negatively affect the acoustics."

In the new layout, the location of the stage in relation to the seating has been changed, he adds, and the P.A. fly points have been moved 20 feet from their previous location.

Over the remaining 5,000 or so seats at the rear of the venue, Stuewe continues, "We left the roof at its existing height to make sure that we could maintain weather protection, allow for additional ventilation and acoustical treatment, and allow the opportunity for some of the energy to leave the building and not bounce around in that space."

Summerfest brought in Sam Berkow, founder and lead designer of SIA Acoustics—A Division of Robert Derector Associates, to create an acoustical design for the new, larger space that would equal or better the performance of the original venue. "Two things happen when you raise the roof," says Berkow. "You increase the cubic volume, so reverberation goes up, and you create longer reflections." Sound now has about twice the distance to travel to reflect off the ceiling, he points out. "It's about 60 milliseconds farther than it was two years ago."

Working with the Summerfest team, EUA, Richard Lenz of RealAcoustix, and longtime Summerfest production provider Clearwing Audio, Berkow developed an acoustical design to address both the increase in reverberation and potentially sound-degrading longer reflections. After an initial analysis of the venue before the roof was raised and the development of simulations of the larger space to study the effect of the new reflective structures and in-creased cubic volume, Berkow also used 3D acoustic simulations that Clearwing created using L-Acoustics' Soundvision software. Based on the data analysis, Berkow advised adding low-frequency absorption on the walls around the stage, plus mid-frequency diffusor and mid/low-frequency absorption panels safely and securely positioned in the steel roof supports.

Lenz and RealAcoustix make a bass trap product, the BassMod 4848 panel, that Berkow has used in his recording studio designs. "They can be tuned at different frequencies, centered on 70, 63 or 57 Hz, and you can vary the width—half-octave, three-quarters-octave," says Berkow. He had Lenz build custom 8-foot-tall weatherized versions to surround the stage area.

Lenz also built custom diffusors for the roof. "We had Clearwing do some simulation plans and sections at frequencies we were concerned about and looked at the dispersion. That's how we picked where to place the panels," he adds.

With Phase 1 of the project completed, Berkow returned for final measurements and analysis at this year's Summerfest. The acid test, of course, is the response of an audience that expects an impactful audio experience for the price of a ticket, he says. "The goal for the modern amplified music performance space is to create an environment that's free from disturbing reflections and provides tonal balance in the reverberance, so you can have impactful bass and articulate vocals that are not strident or difficult to understand," says Berkow.

"You could clearly see in the two shows that I attended that the audience was hanging on every word. With Billie Eilish, the emotional connection was so great. And it was super fun to hear everyone singing along with Snoop Dogg and Lil Wayne."

"After Phase 1, we know what the results are in this venue and this space," says Stuewe. "We're very happy with the way that the design process and efforts and studies were completed ahead of time."

"What is so unusual is that these people care," says Berkow. "I was honored to be a part of their team." But what impressed him most, he says, was the tremendous pride exhibited by everyone, not just the Summerfest team. "I love when people take pride in their town—and there is lots to be proud of in Milwaukee," he says.

SIA Acoustics – A Division of Robert Derector Associates
www.siaacoustics.com

Beyond the Road

had the opportunity to work closely with the composer, James Lavelle, and to develop visual ideas with a number of innovative artists. In essence, we curated the sound and visual elements to reimagine James' music in a new way, while developing combinations we thought would work within the large, open space that was put at our disposal by the Saatchi Gallery. We had three weeks in which to build the performance spaces in the gallery's sound-isolated top floor."

The multi-element exhibition consisted of a number of individual gallery areas that featured synchronized sound and video playback. "After the build, we spent a week remixing the soundtracks in situ for each individual space," Dobbie continued. "A d&b DS100 64-in/64-out processor handles software-controlled routing of discrete audio sources to a total of 75 loudspeaker channels, with some material being sourced from paralleled outputs. Key channels are reserved for the White Room, where we included dynamic panning via Soundscape to place constantly moving sound around the attendees, using object-based En-Scene software to re-create the mix within the geometry of the target gallery space." The White Room featured three films: *The Lost Highway* by Warren du Preez and
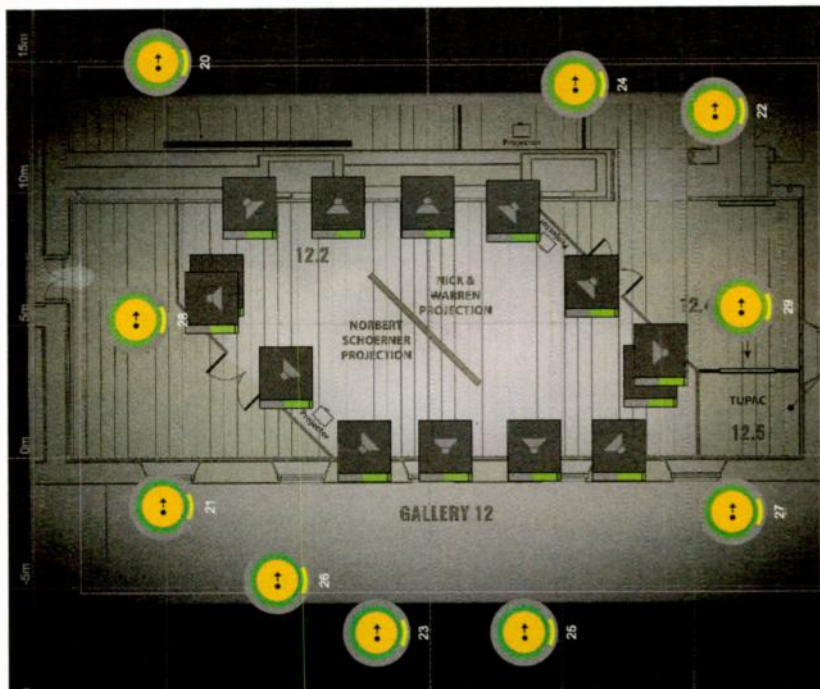
d&b Soundscape software controlled placement of sound objects that move around attendees in the White Room, plus parameters for individual loudspeakers within the Saatchi Gallery.

matrix functionality with OSC automation, with the addition of En-Scene mixing and En-Space room emulation engines for [the White Room], one of the featured spaces. The DS100's 64 matrix outputs are fed via a DS10 Dante-to-AES3 digital network bridge to Model D20 amplifiers that power a selection of E4 and E8 of loudspeakers, as well as E12X-SUB and B6-SUB subwoofers."

In terms of design and configuration of the White Room's loudspeaker layout, "DS100 early-reflection planes and positioning views, amplifier patch and the [Audinate] Dante preset file

> "Once it became obvious that my idea needed to be both a part of the live show and art, we began to see what could be possible with the technology at hand."
>
> *Tupac Martir*

Nick Thornton Jones; *The Road* by Norbert Schoener; and clips from *Roma*, directed by Alfonso Cuaron, and courtesy of Netflix. Room design and color-shifting projection was by BeyondProjects.

Soundscape uses object-based techniques and vector panning to provide programmable horizontal sound fields that can be overlaid with user-selectable ambiences to mimic familiar performance spaces. Several console and show control system manufacturers offer direct control of the DS100 DSP Engine, with positioning settings and object parameters controllable directly from on-surface channels and stored within on-board scene memories.

According to Wayne Powell, d&b audiotechnik's manager of market development, "In some spaces, the project uses a combination of the DS100

were all achieved in ArrayCalc V10 software," Powell stated. "The gallery's sound designers are using a combination of d&b's R1 remote-control software, [Figure 53] QLab and [Cockos Inc.] Reaper playback workstations to achieve a desired soundscape for the space. A network was built from the main control room to several racks incorporated into the design. Use of the DS100 and Dante allowed control and audio data to be sent via this network throughout the entire exhibition floor."

"We are seeking to reinvent how people experience and interact with music, which became an environment that visitors are free to explore," Nightingale said. "The exhibition includes the work of visual designer and multimedia artist Tupac Martir of Satore Studio and Satore Tech. All the visual artists we invited to par-

ticipate have been involved in the creative world of James Lavelle through soundtracks, music videos and album artwork" for the latter's albums.

After years of working together on tours, the creative team began to discuss aesthetics and new technologies. "We started talking about the concept some two years ago," Martir recalled. "Once it became obvious that my idea needed to be both a part of the live show and art, we began to see what could be possible with the technology at hand. Music is the driving force of the exhibition and of the piece, so it is very important for us to allow the music to create the environment." Martir's piece, entitled "Eriya," or "to feel" in the indigenous Mexican language of Huichol, centered around holographic dancers moving around the viewer, using Notch software and HYPERVSN holographic displays.

"Our overarching design philosophy was simple," Dobbie acknowledged. "We believe that 'less is more' to the extent that an audience can feel more with reduced, minimal sound and visuals." Nightingale added, "For us, sound is 90 percent of the experience, and so we wanted to reimagine music in an innovative way, with visuals that complement the artists' ideas."

"We've been dreaming of finding new ways to present music for many years," Dobbie concluded. "We were excited to create a project with sound at its core, pushing technology to its limits in this performer-less experience while engaging with audiences through a holistic approach to what art and culture can be."

Saatchi Gallery
www.saatchigallery.com

d&b audiotechnik
www.dbaudio.com

RRS Rolls with Adam Sandler

LAS VEGAS, NV—Lee Pepper, owner and operator of RRS Audio Productions in Las Vegas, spent the spring crossing the country with his L-Acoustics K2 line source array system on Adam Sandler's 100% Fresher Tour.

"This is the first time that Adam took gear on tour," says Pepper, who has worked with the comedian for three years. In addition to mixing the house, Pepper recorded every performance using his RML Labs SAW Studio multitrack rig, having previously recorded and mixed Sandler's 2018 Netflix comedy special, *100% Fresh*.

"We had left and right main hangs of 32 total K2s, with an outer hang of 12 Kara on each side, plus eight Kiva II for frontfill," says Pepper. Additional Kara
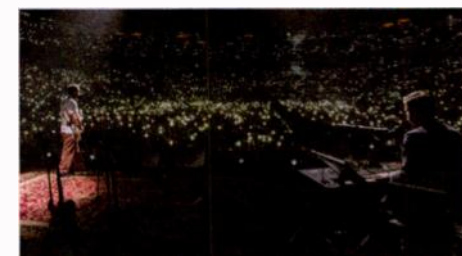
Adam Sandler lights up the crowd at Tampa's Amalie Arena.

boxes provided side-fill for Sandler and his musicians, with short-throw X12 wedges for vocal monitoring. Two LA-RAK II per side, each loaded with three LA12X amplified controllers, powered the main system, with a separate rack driving the monitors.

It turns out Sandler takes a keen interest in his sound. Pepper reports, "He said to me, 'When you do sound, it's much cleaner and clearer. Is it the way you EQ?' I basically take out most of the low-end frequencies, as the show is primarily spoken word. On the very first few tour dates where we didn't use our K2 rig, Adam noticed the difference—'It sounded a little off. What was going on?' He could totally tell."

RRS Audio Productions
www.rrsaudio.com

L-Acoustics
www.l-acoustics.com

Getting Creative to Create Demand

Whether you offer a product or service, simply putting up a shingle outside your door is no way to ensure success. Just look at the restaurant industry: Some estimates suggest that four out of five restaurants fail within the first year, and about the same ratio persists over the next five years. To succeed, you must lay out a plan and work it hard. In my mind, there is no other way.

Radial's original name was Cabletek. We were like a baby Whirlwind, building guitar and mic cables, concert snakes and custom patchbays for studios. Around February 1992, I put together price lists and catalogs detailing the various products and services we offered and mailed them out to every music store, sound company and professional studio in Canada. Then we waited.

I told my partner at the time that we had to be patient, and we had to work the plan. We waited and we waited some more. Nothing happened.

I recall going to a local Chinese restaurant that March, sitting around a table, feeling disillusioned that all of our marketing efforts had been for naught. Then suddenly the fax machine began to light up and sales went from nothing to $15,000 in April and grew steadily from there. Sound companies began to prep for concert season, studios planned rewiring or expansion during the slow summer months, and the brands we were pushing began to take hold at retail. We got busy and our world started to change.

The problem with the Cabletek brand was that it pigeonholed the company. By this point, we had taken on distribution for a number of non-cable products. I remember visiting a shop in Montreal, trying to sell them

microphones, acoustic panels and power amplifiers, and the buyer was confused. He asked, "Why is a cable company trying to sell all this other stuff?" Message received! I changed the company name to C-Tec and created Radial as our in-house cable brand.

In 1996, after we launched the first generation Radial JDI direct box, we were approached by bassist Mark Egan, who had gained acclaim for playing bass with Pat Metheny and Sting. He had heard about Radial

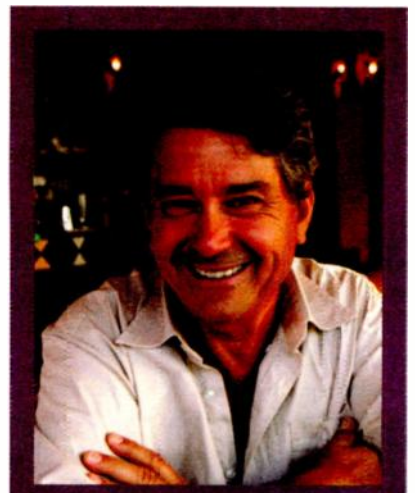> [The Aha Moment was clear: We had to create demand.]

from Bruce Springsteen, who had been using it on tour with the first major rental company to buy our products, Audio Analysts (later acquired by Solotech). Mark was the first artist to endorse Radial.

As part of our marketing campaign, we created a document called the Green Report that compared several concert-quality direct boxes, which we felt proved the Radial JDI was superior. With the report and a few endorsements in hand, I proceeded to visit Clair Brothers to see if I could get them to invest. I met Stan Horine, the buyer, and gave him my best sales pitch. Afterward, I asked him what he thought of the JDI. He said it looked excellent. I then asked how many he would like; he said none. I asked, "Why? It is made better, sounds better and solves noise problems. Why not get some?" He said, "We are a rental company. If people ask for your products, we will order them."

The Aha Moment was clear: We had to create demand.

The first thing we did was decide where to focus our energy. We began in Nashville—not only was it the center of the country music world, it was beginning to gain attention as a great place for music production for all musical genres, attracting bands to rehearse and record. We met with the folks at various rehearsal studios and arranged to have our Radial DIs on hand for evaluation during rehearsals. Next thing you know, Radial DIs began to show up on riders. Eventually, Clair began to order them.

Yesterday, I was paging through my wife's recent copy of *Vanity Fair* magazine and could not fail to notice all the ads. Billion-dollar multinationals spending bucket-loads to get their brands in front of as many eyes as possible. And what do they do? They attach big names like Brad Pitt and Charlize Theron to their brands to create an association that the consumer will believe and trust. I have always been a huge proponent of advertising. However, getting big-name artists like Sting or Bruno Mars to endorse a direct box is most assuredly not in the cards. Heck, most of these big-name players probably don't even know what a direct box is!

Instead, I chose to target big-name engineers and use their association with certain artists to gain market credibility. It wasn't long until we had built up relationships with a number of live and studio engineers, culmi-

nating in Al Schmitt, arguably the most successful recording engineer of all time, accepting a TEC Award on our behalf.

Radial ads featured a mix of artists and engineers from various musical backgrounds. My feeling was that we did not want Radial to be pigeonholed as a DI for bass or country music. There were usually seven artists featured along the left-hand banner, and I would show a variety of products in each ad. At the end of each year, I ran a "thank you" ad that featured a laundry list of artists that used Radial on tour. By creating a sense of community, we also created a winning team—and everyone wants to be part of a winning team.

Aston

it to the point of hand pain and it felt like the adapter was on the verge of breaking before it held firm, and then sometimes it still sagged. That stand adapter leaves a tight fit for the mic cable on the butt end of the mic; some larger cables didn't quite fit, although most were fine.

I had a little trouble changing modes with the rotary mode switch. Aston has wisely added safety features that make it impossible to accidentally bump the switch out of position, but often I would have to rotate the switch repeatedly until I landed on my desired setting. Sure enough,

it seemed to loosen up over repeated use, but I still wish the switch had some texture for traction, or maybe a notch for a small screwdriver.

There are some applications I think Stealth would excel at, even if I didn't get to try them myself. Podcasters often praise SM7 and RE20 mics, but complain of the high gain needed and the subsequent noise floor with their often marginal interfaces. Stealth offers a flexible option in active mode when less gain and more detail is desired, or in passive mode if mouth noises (clicks and pops) are an issue. Some people love MD421s and RE20s on kick drum and bass guitar; here, Stealth could provide that dynamic punch in passive and Dark modes, and present an option with a quite different mid-

range character (sometimes essential in getting low-frequency instruments to cut through crowded mixes).

THE FINAL MIX

Stealth delivers the versatility promised. The internal shockmounts work well, as I never encountered any thumps or low-frequency disturbance. The Faraday cage and pop filter ensured I didn't encounter noise interference or issues with plosives (okay, some metal screamers could use an external pop filter). The active preamp circuitry, too, delivers not only clean, convenient gain, but also an increase in detail and presence. Finally, the four voicing modes achieve not only a wide sonic palette, but also niche specificity, as the Guitar mode delivers a certain amount of magic that

seems to benefit all kinds of guitars and guitar-like things. V1 was my clear favorite, as V2 was too bright and strident for many jobs. The Dark setting isn't as ribbon-y as suggested, but it does offer the best bass response and a rolled-off top end for when a subdued response is required.

Stealth may not be the easiest mic to set up and use in a session, but it sounds great, offers groundbreaking features, can handle almost any assignment under the sun, and costs less than $500. That earns a strong recommendation for utility-seeking first-timers, those growing their mic collections on a budget, and those with big, expensive collections looking for that post-modern advantage of versatility. **Aston Microphones** www.astonmics.com

Biamp Acquires Community, Apart Audio

PHILADELPHIA, PA—AV solutions provider Biamp has acquired Apart Audio and Audioprof Group International, parent company of Community Loudspeakers. Apart Audio (Antwerp, Belgium) and Community Loudspeakers (Philadelphia, PA) will join Biamp as product families within the company's portfolio, with business functions gradually blending to form a single Biamp business. The brands were acquired from 3d Investors of Gent, Belgium.

Biamp president, CEO and co-chairman Rashid Skaf commented, "I am tremendously excited to complete this transaction. Building a comprehensive lineup of speakers has been a priority of mine as we move to position Biamp as a full line provider of professional audiovisual solutions. Acquiring Apart Audio and Community Loudspeakers was my preferred route to accomplishing that quickly with incredibly strong and respected brands."

Founded in 1968 by speaker design pioneer Bruce Howze, Community Loudspeakers is a manufacturer of premium speakers targeting indoor and outdoor applications, including commercial, leisure, stadiums and other large venues. At InfoComm 2019, Community Loudspeakers introduced the L Series LVH-900 Beamforming Venue Horn.

Apart Audio is a competitor in full signal path functional and commercial and leisure audio solutions for small and mid-size venues, including retail, food service, education and small offices. It offers an array of speakers as well as amplifiers, mixers, controllers and paging stations. Apart has business in Europe and entered the North American market in 2018.
Biamp
www.biamp.com

Community Loudspeakers
www.communitypro.com

Global AV

the eye-opening facts to be found in the organization's 2019 AV Industry Outlook and Trends Analysis (IOTA) Global Summary.

While AVIXA published various annual reports in the past, 2016 saw the organization team with insights and intelligence firm IHS Markit to provide a more data-driven overview of the industry, resulting in the IOTA Report. "It's a massive project that starts in November each year," said Sean Wargo, senior director of market intelligence, AVIXA, "and then it's a good six to eight months of work to get the data to its final state so we can … launch the data in June," at the annual InfoComm trade show.

There's plenty of insight to be found. While the Americas have historically been the leader of the pack when it comes to pro AV revenues, 2019 will see a changing of the guard, according to this year's IOTA report, as the APAC countries are expected to take in $90.61 billion in revenues for a CAGR of 7.1 percent. That just edges past the Americas, which are estimated to have a still rather healthy $89.05 billion and a CAGR of 4.7 percent. The gap between revenues will become more pronounced by 2024, however, when APAC is expected to outpace the Americas by more than $15 billion. What's powering that surge? AVIXA expects much of it to come from demand for security, surveillance and life safety solutions in the region—a push that will drive dramatic growth within the streaming media, storage and distribution (SMSD) product segment to the tune of a 10.5 percent CAGR

through 2024.

The Americas won't be left in the dust, however; pro AV growth will remain strong here as well. The report expects the Americas to hit $112 billion in revenue in 2024, with a CAGR of 4.7 percent. Much of that will be fueled by growth in the corporate market, particularly due to a shift away from on-premises solutions to private, public, and hybrid cloud deployments. That doesn't mean that physical installation of AV gear will dry up; on the contrary, AVIXA expects to see considerable growth in markets for environmental systems and performance and entertainment solutions.

Pro audio manufacturers, however, may soon see their best sales figures coming from Europe, the Middle East, and Africa (EMEA) by 2024 with a CAGR of 4.5 percent. Revenue for audio equipment in EMEA is expected to surpass that from the Americas (the current leader) and hit $6.7 billion in 2024.

While it might sound like audio isn't going to be the home run hitter in a pro AV solution provider's lineup, it is in fact the most dependable player on the team, according to Wargo: "[Data-wise], audio is an interesting phenomenon. It's not the part of the budget that gets a lot of attention [compared to] big shiny objects like Direct View LED and other display technologies that are going to be front and center in a sports venue or auditoriums, but across the eight verticals we've surveyed, our research shows that audio is the part of the solution area that is consistently ranked as most likely to be upgraded in the near term—the next 12 to 18 months."

Unlike many of the technologies garnering attention today, the audio market matured a long time ago; as a result, it's often time for those systems to be updated. Both solutions providers and customers want to know and understand the latest audio offerings, and bolstering that finding is, surprisingly enough, registration data from InfoComm. Wargo notes that among audience surveys, "audio" is consistently one of the most frequent topics attendees say they're at the show to learn more about. "While it may not be the biggest chunk of revenues, it's clearly an area of investment and interest among the population at large," he said.

There are other factors to take into consideration as well. "One of the things that's driving that audio investment is IP," he noted. "Honestly, now that we have more reliable, robust solutions for IP-based distribution of audio, I think it's triggering some investment, because you can address the speakers, you can route sound a little more efficiently. Those aspects are part of it."

One of the most surprising audio facts that AVIXA's number crunching has revealed is that audio is a key factor for a pro AV client's true end user: the general public. "What we've found in research is that if you look at the audiences—the consumers who come to events in sports venues or fixed venue auditoriums—the thing that correlates most with their overall satisfaction is the audio quality. Clearly, if you want to move an attendee satisfaction number, you've got to look at the audio experience and how well sound is being conveyed to the audience at large. It's number one in terms of its correlation, so for purveyors of audio technologies and designers of solutions, the most important takeaway is, 'Don't forget the audio.'"
AVIXA
www.avixa.org

Personal Studio Tools

(continued from page 1)

reference-level sound. "I could not be more adamant about Sonarworks Reference 4 being the single most disruptive software for anyone mixing audio in a bedroom, dorm room, basement or other less-than-perfect mix environment," says Krivit, who has long focused on audio education and lowering the barriers to entry into the industry for new talent. "Sure, other programs do this, but not nearly as easily and at such a reasonable cost affordable to all of my students. I am very passionate about Sonarworks and its impact on students on a budget with less-than-perfect mix environments."

For post-production pros, New York-based freelance mixer, sound designer, editor and recording engineer Ron DiCesare, who has done a lot of work for Vice Media in recent years, recommends Soundly. Developed by Peder Jørgensen and sound designer Christian Schaanning, Soundly is a cloud-based audio sound effects database and online sound effects library.

Depending on the version, Soundly comes with up to 7,500 effects already loaded in the library. DiCesare, who uploaded his own collection of 100,000-plus effects to the cloud, describes it as "an essential tool for sound designers." He also notes, "I can dial up Soundly and access the cloud instantly from any computer that has internet access. Now I can leave my sound effects drive at home, which is a huge relief."

The brand that popped up more than once in the responses was Focusrite. For Grammy-winning independent engineer and mixer Nick Sevilla of Sevilla Sound Services, the unit to highlight is the Focusrite Red 2 stereo equalizer. Offering two channels of four-band parametric and shelving EQ with highpass and lowpass filters, Red 2 is also available as a plug-in.

Matthew Weiner—who started out working at Sigma Sound Studios in Philadelphia before transitioning into sales at pro retailer Martin Audio, and then at JVC and Avid—has since moved professionally into the world of IT, but he remains active in audio. He singles out his Focusrite Red 8Pre for offering "lots of I/O and Dante."

The unit houses a 64x64 Thunderbolt audio interface with eight Red Evolution mic preamps and dual Thunderbolt 2, DigiLink and Dante network connectivity.

Weiner also recommends the PreSonus FaderPort, a compact desktop controller that provides 16 100mm touch-sensitive motorized faders together with 89 buttons that access 104 different functions. "Sixteen faders in a small footprint—not perfect, but I can get stuff done and go as wide as I need to, which is about 24-ish," writes Weiner.

Richard Barron, a veteran engineer, producer, mixer, musician and owner of Sonora Recorders in Los Angeles, where the War on Drugs took up residency to produce the

Grammy-winning *A Deeper Understanding* album, seconds the FaderPort choice. "I also really like the FaderPort," he notes, while additionally recommending Universal Audio's OCTO DSP Accelerator card. OCTO models host eight SHARC processors and can be integrated alongside UAD-2 PCIe DSP Accelerator cards and Thunderbolt-equipped Apollo interfaces, including Apollo Twin, DUO, QUAD and 16 for scalable mixing power. "The UAD OCTO is pretty terrific," Barron says.

Gear choices may often be dictated by the funds available, so it's always good to hear about low-cost quality options. Kent Holmes, who went on the road straight from school as a guitar tech for the likes of L.A. Guns and Poison and currently plays with L.A. band The Brutalists alongside former members of L.A. Guns and London Quireboys, offers his suggestion: "I picked up one of those Klark Teknik 1176 clones [the 1176-KT] and it has been a revelation. I mostly use it on vocals, but man, it'll make a guitar snap."

Producer, engineer, mixer and musician David Newton operates out of Rollercoaster Recording in a converted two-car garage behind his house. The control room there is outfitted with plenty of outboard gear and a Soundcraft Sapphire analog mixing console, but there's no

space for a multitrack tape machine, so Newton has adopted Slate Digital's Virtual Tape Machines plug-in. "I use it on the mix bus all the time," he says.

Artist, engineer, songwriter, producer, A&R and studio manager John Armstrong, whose résumé includes time at recording studios including Conway and Paramount, favors old-school hardware. He itemizes three pieces: the 1-inch Ampex ATR-102 tape machine; the AML 54f50, a triple-wide 500 series module housing a Class A compressor and limiter; and SPL's PassEQ passive stereo mastering EQ offering 36 boost and 36 cut frequencies with stepped potentiometers and 25 kHz and 35 kHz Air band frequencies. "They have made huge differences for me," notes Armstrong.

And remember, it's not just about the signal path. Chris Dauray of Duration Consulting, who offers marketing services to brands including Rupert Neve Designs, sE Electronics and Manley Labs, is a musician and something of an audiophile. Emphasizing that the listening environment should not be overlooked, Dauray recommends IsoAcoustics speaker stands, which decouple monitors from a supporting surface. He notes, "They've made a world of difference for me."

Independent mastering engineer Stephen Marsh stresses the importance of acoustic treatment in any room. "Once I left commercial facilities, proper advice and treatment from GIK Acoustics made a bigger difference than any other single purchase," he writes. As Marsh previously noted in an interview with *PSN*, he has been able to take the panels with him as he has moved from one location to the next over the years: "It saved me countless thousands of dollars."

> [Recording pros weigh in on their top tools, from gear to cloud storage to acoustic treatments and more.]

MUSICetc. IIII

Blood Brothers

BY JACQUES SONYIEUX

Ten albums in 25 years is quite an accomplishment for any band in this day and age, particularly considering how fast the industry and its related technologies are morphing and diverging.

Over the years, Collective Soul has not only remained stable both live and in the studio, but its sound has continued to evolve with each new release. The band's new album, *Blood*, the culmination of that quarter-century journey, has already racked up impressive positions on the *Billboard* charts in multiple categories. But chart success isn't everything, according to bassist Will Turpin, who says the band remains wholly focused on the art.

ON STAYING INSPIRED

I don't know how you stay inspired, but that feeling still comes when we all play together. Total goose bumps, hairs standing up on my arms, and it's magic! When you catch a vibe and you know you are creating something special—a piece of art that other people will appreciate—it's magic. It all boils down to emotion, and whether you capture that emotion in the music. This is ultimately what I feel hooks people in—when they have an emotional connection, whether it be through their memories or the lyrics. Ed [Roland] is a master of making lyrics relatable for a number of different circumstances, depending on the individual.

ON COLLECTIVE WISDOM

It is about really hearing the songs and always trying to serve the song. After 25 years of doing this, you are basically able open up creatively and use your ears and heart rather than depending on the more technical parts like counting the rhythms or putting your finger on the fretboard. Once you use your ears and heart and you get that feeling, you know that it is special. That's what we set out to do while we are recording, and it is all live and in one room.

ON RECORDING ON THE LAKE

The bulk of the material was recorded in New Jersey at The Barber Shop Studios. We rented a big lake house about two or three miles from the studio. For the most part, we already knew the material we were going to record by the time we went in there, but Ed threw in a couple of songs for us to check out. "Big Sky" was one that we made on the fly that day, and it ended up being my favorite. We also definitely rode a wave on the solo section of "Them Blues." Jesse [Triplett], Johnny [Rabb] and I were definitely playing off of each other and were in a sick pocket. It was awesome and it felt so cool that we were

Collective Soul has just released its 10th album, *Blood*.

popping it live.

ON CREATING BASS TONES

For me, the sound always starts in my mind; this will help determine which bass I pick and how I will approach the bass tone. I can make a bass sound so many different ways just by how I am playing it; for instance, where I am playing it on the strings can have an influence how much low end there is, or using a pick rather than my fingers can influence the attack. If I want some versatility after I've recorded, I will send multiple audio signals to the recording rig so I don't have to overthink it while I am playing. While I am recording, I just make sure that the core sound I am looking for is there based on the vibe of the song—that's where it all really starts for me.

ON *BLOOD* AND HUMANITY

Blood is partly in reference to all of us getting older and maturing, but it is also in reference to our individual legacies—the families that came before you and the children that are coming after you. The album is also about brotherhood and has references about all of humanity. There are a couple of songs on the album that deal with the human behaviors we are seeing right now, socially and politically.

ON JOGGING MEMORIES

Every song we've ever recorded brings back specific memories of what we were going through as a band at the time. The track "Disciplined Breakdown" on the third record was particularly memorable. When we were recording it, we had to break it down to the simplest re-

cording approach we could find. At the time, we couldn't get a recording budget from our label and we were going through a lawsuit with our manager, so we financed our own record and recorded it in a cabin. Now I listen to the songs and it is like, "Whoa, dude." It has a totally raw quality because of the circumstances behind it, which is also what makes it unique for me. It's real.

ON STAYING FOCUSED ON THE ART

When we started the band, it wasn't like we were confident and cocky, but we never thought "this might not happen." All we thought about at that point was what we could do next. That said, I do remember being nervous when a record would get released—like our second record, which was a big deal. This nervousness carried all the way through *Distant Breakdown* and *Dosage*. Now, with the release of *Blood*, we're way past that. Our record is a piece of art, and it does what it does. We've already done the "chase the charts" thing, but it doesn't really matter in the end as long as you are creating impactful music. I've never questioned whether our material was good enough; I was only nervous about the amount of success each release would achieve. I think this album is the culmination of all the experiences we've been through. Here we are, 25 years later, and everything is in there. The energy and the performances on this record are 100 percent real.

Jacques Sonyieux is a devout explorer of recording studios and the artists who occasionally inhabit them. Please send any tips or feedback to Jacques at jacquessonyieux@gmail.com.

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