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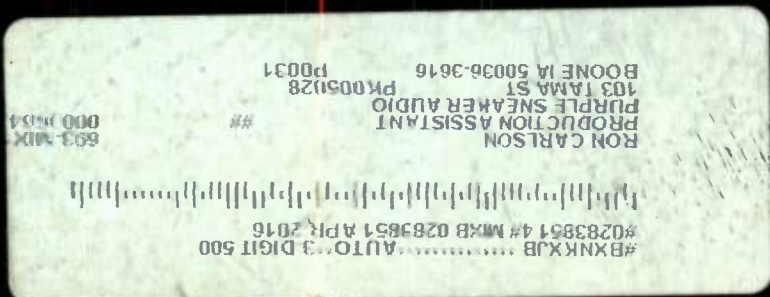
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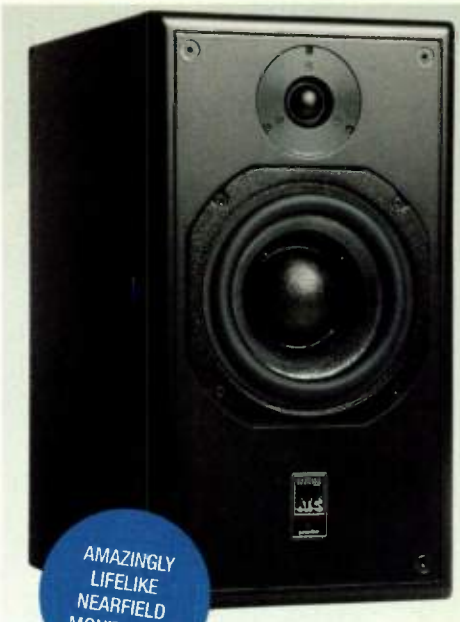
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FEATURES



36 **The Legacy of Helios:
The Branson Boards**
BY TOM KENNY



40 **2.4 GHz Wireless:
Simple, Easy and
Getting Better**
BY TOM KENNY

44 **Large-Diaphragm
Condenser Mics**
BY STROTHER BULLINS

MUSIC

16 **The Vaccines**
BY LILY MOAYERI



- 20 **News & Notes**
- 22 **Classic Track:
'Groovin', The Young Rascals**
BY ROBYN FLANS
- 26 **Shota Nakama and His
Video Game Orchestra**
BY GARY ESKOW

MIX REGIONAL: NASHVILLE

- 48 **News**
- 50 **Sessions & Studio News**
- 52 **Dylan, Cash and the
Nashville Cats Exhibit
at Country Music Hall
of Fame**
- 53 **Producer Engineer
Mickey Jack Cones**

LIVE

29 **City Center Encores:
NYC Revivals**
BY ERIC RUDOLPH



32 **News & Notes**
BY THE MIX EDITORS

DEPARTMENTS

- 10 **from the editor**
- 10 **current**
- 75 **marketplace**
- 77 **classifieds**

TECH

56 **The Robair Report:
A Call to Action**
BY GINO ROBAIR

58 **New Products**



- 62 **Review: AKG DMSTetrad
Digital Wireless System**
- 66 **Review: Maselec MLA-4
Stereo Triband Compressor/
Expander**
- 68 **Review: UAD Apollo
Expanded**
- 72 **Review: Fredenstein
Preamp/Compressors**
- 80 **TechTalk: Pick Up Your
Pro Tools Pace**
BY KEVIN BECKA

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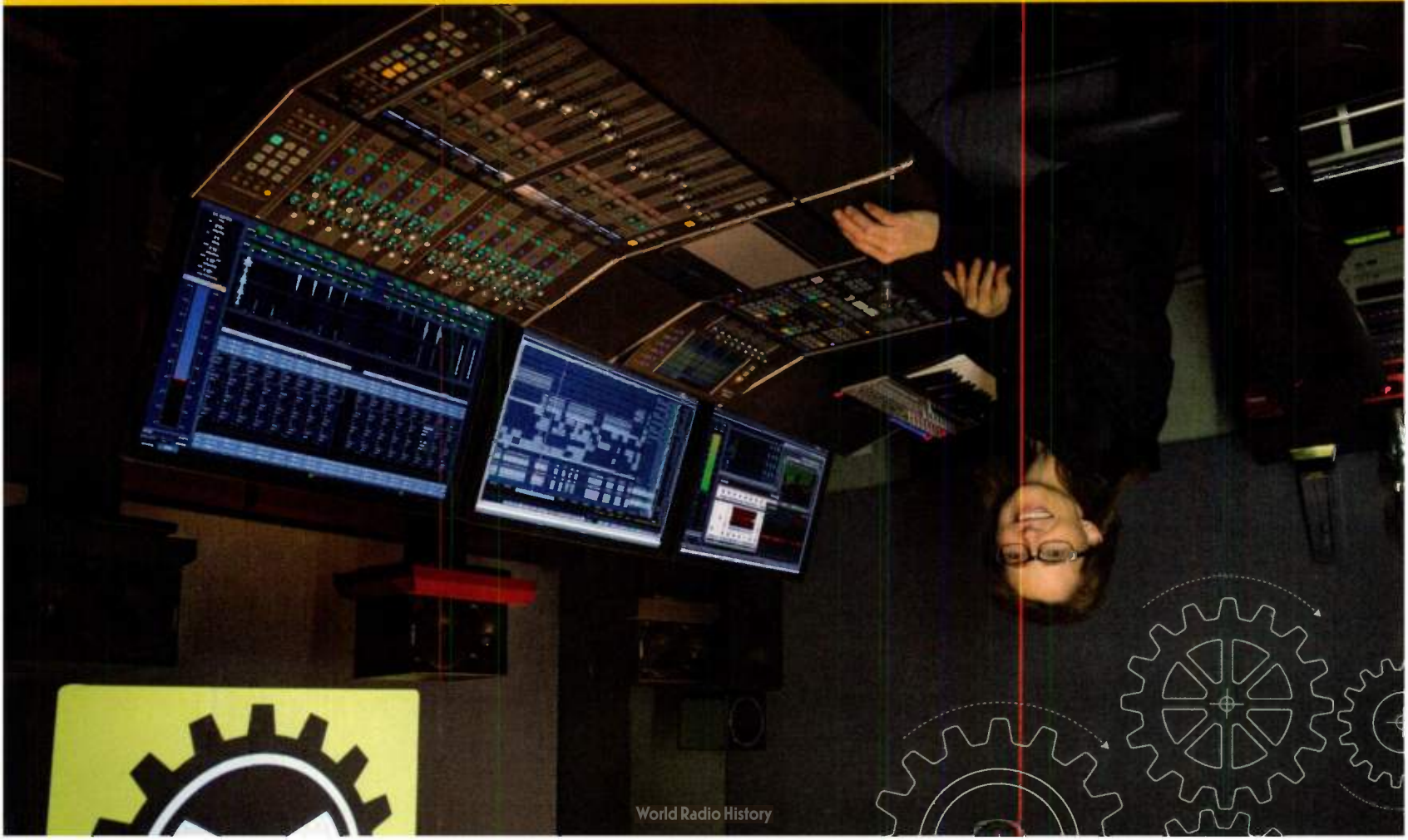
— Michelle Garwik

Based in Los Angeles, re-recording mix engineer and sound designer, Michelle Garwik is also co-founder and owner of Grind Music & Sound, Inc. Having expertise in mixing and sound design for adventure sport television and documentary film, Michelle's clients include industry giants such as Fox Sports, ESPN, NBC Universal, HBO and much more.

With clients spanning the entertainment industry, Michelle's everyday workload is anything but ordinary. To assist with her artistry, she relies on Yamaha's NUAGE Advanced Production System. We asked Michelle what she loved about NUAGE. In her words...

"With user assignable keys, and multiple ways to complete tasks, NUAGE lets me customize the way I want to work, which speeds up my workflow. Editing with the master unit is blazingly fast, leaving me more time for creativity with sound design and mixing. Our NUAGE system allows me to instantly access features that used to take many mouse clicks to get to, and the scrolling touch strip and track organization buttons allow me to quickly find tracks in large sessions. The tactile controls of NUAGE connect me to my mix and bring back fond memories from the onset of my career when my love for working with sound was born."

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From the Editor

EVERYBODY LOVES A GOOD STORY

I'm of mostly Irish descent, and I come from a large family. My undergrad degree is in history and my master's is in journalism. I love a good story. I like to hear them, I like to read different versions of them, and, because I'm a talker, I love to tell them, often many times over many years to the same people, usually with a new twist or embellishment. My father would be proud. My daughters forgive my repetition; most of my friends, too. They indulge me, knowing that from my point of view, whether it's about the exploits of John Wesley Powell or the saga of three days at an epic Bonnaroo, telling the story is half the story.

I mention all this as prelude to a run-in I had with Pepper Denny, an old friend from Nashville, walking past the UA booth at the January NAMM show. "What are you doing on Monday?" he asked in his trademark rapid-fire delivery. "You've gotta come up to L.A. with me and see this console. A Helios. This guy, Dan Schwartz, he bought it from The Manor awhile ago, Richard Branson's studio, and now it's been sitting in a warehouse for 15 years. He wants me to broker the sale for him. I'm going up to meet him Monday. You gotta come see it. This board has some serious history."

I had a conflict and couldn't make it. Besides, I thought, I know that it's a Helios, but still, it's Pepper selling a console. Maybe I could run a picture with a big caption. Mention Helios, drop the name Richard Branson and list a few hit records done on the desk. It would be a short news item, up front. And we could put it in the newsletter. Post it on the site. End of story. Hardly.

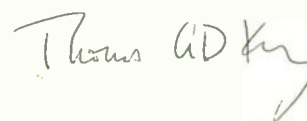
Soon after I got back home, Pepper called to say, "Dude, it's one of the three Helios consoles that Richard Branson bought for Virgin Records back in the '70s. And all three are now in the U.S." We talked for awhile and I said, "Well,

that could make a nice one-pager, but I can't make it be about Pepper trying to sell a board..." He laughed and said, "I don't care about that. This console will sell itself. I'll get you the other guy's names and emails."

Within a couple days I received a long e-intro to Joe DeMaio, owner of Shorefire Recording Studios on the Jersey Shore and the Townhouse Helios, and Danny White, until recently the owner of 16 Ton Studios in Nashville and now nearing the end of a complete restoration of the famed Manor Mobile 30-input Helios, the first desk Branson bought back in the early 1970s. He also sent a PDF of the Helios story from Tony Arnold's excellent helios-electronics.com site, a brief background on each of the three desks and contact info for David Gordon, Paul Ward and many others associated with Helios over the years.

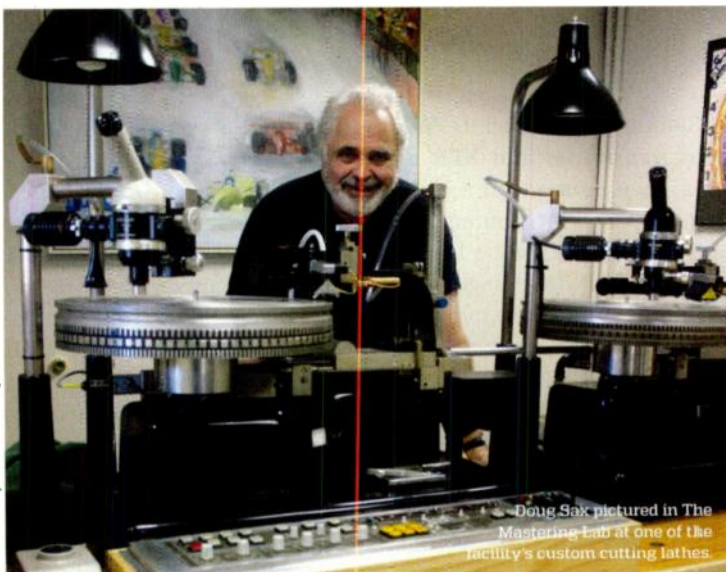
I started looking around, reading up on Dick Swettenham and Keith Grant and Olympic Studios back in the heyday of 1967. Type 69 and Type 78 EQs. Chris Blackwell came up, as did Andy Johns and Eddie Kramer, along with countless artists and hundreds of seminal records from my youth. Fun research. I realized the story needed to be a feature.

Then I called DeMaio and White, and after a couple of great talks, the feature became a Cover Story. Both are excellent audio guys, living the life for all the right reasons. So thanks for the tip, Pepper, and thanks for the passion all of you Helios owners out there. That's how a story becomes a story. Please, send us yours.



Tom Kenny
Editor





Doug Sax pictured in The Mastering Lab at one of the facility's custom cutting lathes.

Doug Sax, 1936–2015

Mix magazine was saddened by the April 2, 2015 passing of Grammy Award-winning mastering engineer Doug Sax, co-founder of The Mastering Lab, located in Ojai, California, since 2004, and a mentor and friend to audio engineers, producers and musicians for more than four decades.

Neil Portnow, President/CEO of The Recording Academy, stated, “Two-time Grammy winner and Technical Grammy Award recipient [in 2004] Doug Sax was known as one of the top mastering engineers in the music industry. Revered in the audio community, he co-founded The Mastering Lab, the first independent mastering facility in the world. Although he established a career as a symphonic trumpeter, his interest and talent in the sound of recorded music was undeniable, and he would ultimately become one of the most prolific figures in the field, gaining a reputation for being one of music’s best ‘ears.’”

On December 27, 1967, Sax, along with his partners Lincoln Mayorga and Sherwood Sax, his older brother, opened the doors to The Mastering Lab in Hollywood, Calif., as an independent facility. Today, The Mastering Lab—staffed by Eric Boulanger, Robert Hadley, and Jett Galindo—continues to use concepts of signal flow and electronics pioneered by Doug’s brother, Sherwood Sax, and features handcrafted, custom-designed electronics, vinyl cutting lathes and console. The Mastering Lab has earned more Grammy nominations for engineering than any other mastering facility.

“We were possibly the first independent mastering service in the country,” Sax told Barbara Schultz for a *Mix* magazine story about The Mastering Lab in the February 2008 issue. “When we opened [in Hollywood] in December 1967, all the record companies had their own mastering departments, and very large studio complexes might have had a mastering group where they could cut lacquers, but we were arguably the first to go into this as specialists. When we started out, we couldn’t get anybody to use us, but by the early ‘70s, you couldn’t get into the place.”

Sax’s discography includes Pink Floyd, Bob Dylan, Paul McCartney, Jackson Browne, Diana Krall, George Strait, The Who, Pink Floyd, The Eagles, Kenny Rogers, Barbra Streisand, Neil Diamond, Earth, Wind and Fire, Anita Baker, The Rolling Stones, Al Jarreau,

Bette Midler, Jackson Browne, James Taylor, Willie Nelson, Peter Frampton, Natalie Cole, Ray Charles, Bonnie Raitt, Lyle Lovett, and Rod Stewart, to name but a very few.

Sax also co-founded the Sheffield Lab Recordings label, along with Lincoln Mayorga, which pioneered direct-to-disc recordings and established an audiophile market and awareness worldwide. The Audio Engineering Society states that that awareness earned Sax a prestigious Lifetime Honorary Membership in the AES, and as part of the 2003 Grammy Award Ceremony, he was recognized by NARAS with a Technical Achievement Grammy.

In 2002, Sax received a Technical Excellence and Creativity Award for Outstanding Creative Achievement for his work on Diana Krall’s *The Look Of Love* in the Best Record Production/Album category. That album also won a Grammy for Best Engineered Album the same year. In 2004, Sax won two Grammys for Ray Charles’ *Genius Loves Company*: Album Of The Year and Best Surround Sound Album.

From an excerpt taken from a 46th Annual Grammy Awards article written by Howard Massey: “Through his body of work, Sax has inspired a whole generation of engineers. Sterling Sound’s Greg Calbi recalls that ‘Doug’s records always had a certain sound that everybody loved but nobody else could achieve. There was a sonic image that he planted in my head, and I’ve always aspired to make my records sound that good.’ Adds fellow Technical Grammy recipient George Massenburg: ‘Doug Sax’s work opened my eyes to the possibilities of how great equipment could better serve great artistry, and opened my ears to how good a recording could actually be.’”

On April 2 on his Lurssen Mastering page on Facebook, mastering engineer Gavin Lurssen wrote, “I just received word that my mentor, Doug Sax, passed away early this morning. It was expected and from what I hear it was a peaceful transition. I spent 15 years with Doug at The Mastering Lab starting in 1991. He has been a mentor to many before and since then. I met Doug within a week of arriving in L.A., when they needed what was called a ‘Box Person’. The job was essentially that of runner. I would pick up sandwiches, clean tape machines, and everything in between. Eventually—pretty quickly, actually—I announced to Doug that I was ready to be a mastering engineer, to which he quickly replied that I was way too young and needed some grey hair in order for people to trust me with their music. He meant it metaphorically of course but I did not take no for an answer, and when he saw that I meant business, he decided to train me. I learned to hear and listen. I learned that and much much more during my tenure with Doug and The Mastering Lab. Doug did trust me with his legacy and I did everything I could to continually earn that position. I still do. I got a chance to tell him last week that there is a big part of him in everything that I do. I’m very grateful I had that chance. Rest In Peace Doug. Thank you for everything. I will continue to pass your legacy down the line.”

Of Sax, Al Schmitt wrote this on his Facebook profile page: “Sorry to say but one of my dearest friends and in my opinion the greatest mastering engineer in the world passed away this morning. He mastered all of my recordings and I don’t know what I will do without him. He taught me so many things. I will miss his silly jokes and the great lunches we had whenever I was mastering with him. I love you Doug Sax, mastering in heaven just got a lot better.”

Read more about Sax’s life and work at themasteringlab.com.

It was a particularly dry and windy week in mid-April as more than 100,000 broadcast, video, audio and media professionals descended on Las Vegas for the 2015 NAB Show. Hats flew across parking lots, laminates were whipped over shoulders and those out and about Tuesday night found themselves in the middle of an intense and concentrated dust storm, known as a haboob, that blocked out the late sun and the mountains, casting a green-gray-orange pall over the Strip for hours.

Inside the North, Central and South Halls, meanwhile, it was all products, all the time. Considering the conflict with an overlapping Musikmesse in Frankfurt, pro audio was well-represented, with an obvious bent toward live sound, broadcast, corporate and events.

Yamaha is on a console roll. After the recent introductions of QL and CL comes the TF1, TF3 and TF5 (TF stands for TouchFlow). The boards showcase the balance of hardware and software functionality, emphasizing a one-touch/one-knob approach. Compact, powerful and extremely versatile, starting at 16 channels for \$2,500, up to \$3,500 for the 32-channel TF5. Then at the back of the booth, they hosted ongoing demos of a large two-person Nuage post-production system. Impressive. Oh! And the Bento Box...just Google it. It can be a little bit of everything.

Sound Devices was showing its 688 12-in, 16-track recorder with new automixing functions, but the big news was the SL-6 Super-Slot bolted on the top, providing power and three slots for integrated wireless systems from any or all of Sennheiser, Lectrosonics, Wisycom and Audio Ltd. Very cool collaboration. And a proposed open standard. What's not to like?

Roland made a big splash for the console they sneak-peaked at NAMM, the M-5000 Live Mixing Console, based on the O.H.R.C.A. platform. While the emphasis was on the broadcast features in Vegas, check out the versatility and functionality packed in to its modest frame. Great bang for the buck.

Shure debuted an impressive new line called the MOTIV family, USB and Lightning-powered models ranging from simple two DSP modes and a small diaphragm to MV51 with five DSP modes and a touch panel. Throw in the MVI interface for phantom power, and the MV88 powered I/Os, to go with a free mobile recording app. Simple, quality recording anywhere, anytime.

The in-house designers and fabricators at Lectrosonics outdid themselves with the SSM (Super Slight Micro), the smallest UHF mic transmitter on the market and fully compatible with all Lectro receivers. It's smaller than you think, and it weighs 2.3 ounces, with its lithium-ion battery installed. Amazing. It's half the size of competitors.

Sennheiser showed its AVX digital wireless system with hand-held transmitter and XLR direct into camera, operating at 1.9 GHz, then announced a partnership with Apogee that was only first proposed three months prior at NAMM. It's already in a box and it's called ClipMic Digital. Very simple. A small Sennheiser ME2 lav mic with Apogee Pure Digital 24/96 conversion direct to Lightning connector and into iPhone, iPad or iPod Touch. Apogee's free MetaRecorder app allows for all types of remote control. It seems like a toy, but they will sell a lot at Apple stores. I've already used mine.

I can't remember ever getting too excited about drives and storage, but solid state is coming in a big way! La Cie was showing Thunderbolt everything, with swappable 1TB SSD and a dual-Thunderbolt-USB 6TB orange-cased pack. Sturdy and reliable and five times faster with solid state memory.

Meanwhile, Other World Computing north of Chicago had its own SSD displays, including a package to remove the optical drive from a MacBook and replace it with SSD. Their crazy-versatile Thunderbolt 2 deck can route any and all cords and connections a studio might require. And they can be daisy-chained. Excellent utility.

Over in the sound library section of Central Hall, Pro Sound Effects announced the addition of 30,000 new sounds to its Master Library 2.0 for 175,000 total. There's also a new subscription service. But best of all is their collaboration with Ambisonics on a new collection called NYC Ambisonics, recorded with an Soundfield SPS 200 surround mic.

Studio Technologies, more well-known at broadcast endpoints, was all about Dante, showing its new 2-channel mic/line input and Model 5414 mic pre, both Dante-ready.

DPA showed its omnidirectional mic options for broadcast, including d:facto omni. Even cooler was the addition of an ear monitor to the d:fine headset.

We came across Wisycom wireless for the first time. Big in Europe, high-end analog, 1000 channels at Danish Radio, experts in companding and dual-diversity, the company showed its direct to camera options, along with its SuperSlot open standard compatibility.

Genelec showed a new ultra compact sub, the 7040A, and had a very cool living room-style immersive sound setup, showing clips off an Atmos Blu-ray. It's coming!

Audio-Technica showed its own version of camera-mount wireless, but maybe the coolest new product was the BP40 on-air mic. RE-20? SM7? Could it find a niche?



Roland M-5000



Yamaha TF5



Lectrosonics SSM transmitter

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AES 57th International Conference

In March, the Audio Engineering Society hosted “The Future of Audio Entertainment Technology: Cinema, Television, and the Internet,” in Hollywood, California. Co-chaired by Brian McCarty and Dr. Sean Olive, the conference was intended to stimulate increased dialog between the Hollywood content creation community and the AES, and drew a substantial audience to the three-day program, which was presented at the TCL Chinese 6 Theatres. Sponsors included Auro-3D, Avid, Dolby, DTS, Harman, MPSE, NBCUniversal Studio Post, Sennheiser, and SMPTE.

Keynote addresses were given by noted industry professionals, including Dr. Floyd Toole, former AES President, Fellow, and Gold Medal recipient; Louis Hernandez Jr., Avid Chairman, President, and Chief Executive Officer; and Francis Rumsey, Chair of the AES Technical Council, Fellow, and Bronze Medal Award recipient.

“The genesis of this conference came from the AES’s realization that the largest group of working sound engineers is those that do sound for picture in some way. Over the last few conventions we’ve been addressing workshops and seminars directly to that group of people,” says McCarty, who is the chair of the AES Technical Committee for Digital Cinema and Television. “What I’d like to see come out of this are some action items about what the Hollywood community thinks the various organizations need to do to start meeting their needs.”

Featuring the AES’s first-ever Immersive Audio Day, chaired by Dr. Francis Rumsey, the conference also presented paper sessions, workshops and panels on such topics as cinema acoustics, cinema B-chain measurement and calibration, low frequency reproduction



Steve Williams, VP of Post Production Services, NBCUniversal Studio Post, leads a tour of the NBCUniversal Studio Post facilities during the AES 57th International Conference.

challenges, loudness and noise-induced hearing impairment, dialog intelligibility, equalization and dynamics processing, and content personalization. Presenters also highlighted the pressing need to address the issues of next-generation streaming services and headphone delivery of the established and emerging immersive formats.

The leading immersive formats, several of which are vying for adoption in the ATSC 3.0 next-generation television audio standard, were discussed in great detail over the weekend. Workshops, paper sessions and panels offered in-depth technical details of well-established formats such as ambisonics and binaural sound, Auro-3D’s channel-based scheme, object-based systems from Dolby Labs and DTS, and the hybrid MPEG-H standard.

Capitol Studios Hosts Hi-Res Music Symposium

In March, the Producers & Engineers Wing participated with DEG: The Digital Entertainment Group in a Hi-Res Music Symposium at Capitol Studios in Los Angeles. The day began with opening remarks from Marc Finer, senior director, DEG, followed by a keynote from Don Was, producer and president of Blue Note Records. Panels included

Yamaha Forms Professional Audio Division

Yamaha Corporation of America (YCA) recently formed a Professional Audio (PA) Division to support the live sound, recording and sound installation markets in the U.S. and Canada. Alan Macpherson, a 27-year Yamaha veteran, will lead professional and commercial audio specialists in the new division. He will report directly to Tom Sumner, senior vice president of YCA. Macpherson is currently general manager of the Pro Audio and Combo division, and previously led Steinberg recording products in the U.S.

The PA division will market all Yamaha commercial audio products and provide the same high level of service to dealers and customers provided by Yamaha Commercial Audio Systems (YCAS), with no plans to change the current distribution strategy. YCAS will be merged into YCA as part of this initiative and Larry Italia, another Yamaha veteran who most recently has served as vice president/general manager of YCAS, will be leaving Yamaha. “We wish to acknowledge Larry’s years of loyal and valuable service to the company,” says Hitoshi Fukutome, president, Yamaha Corporation of America. “Larry has made significant contributions and helped Yamaha achieve many milestones during his tenure. We wish him the very best in the future.”

Photo: Courtesy of The Recording Academy

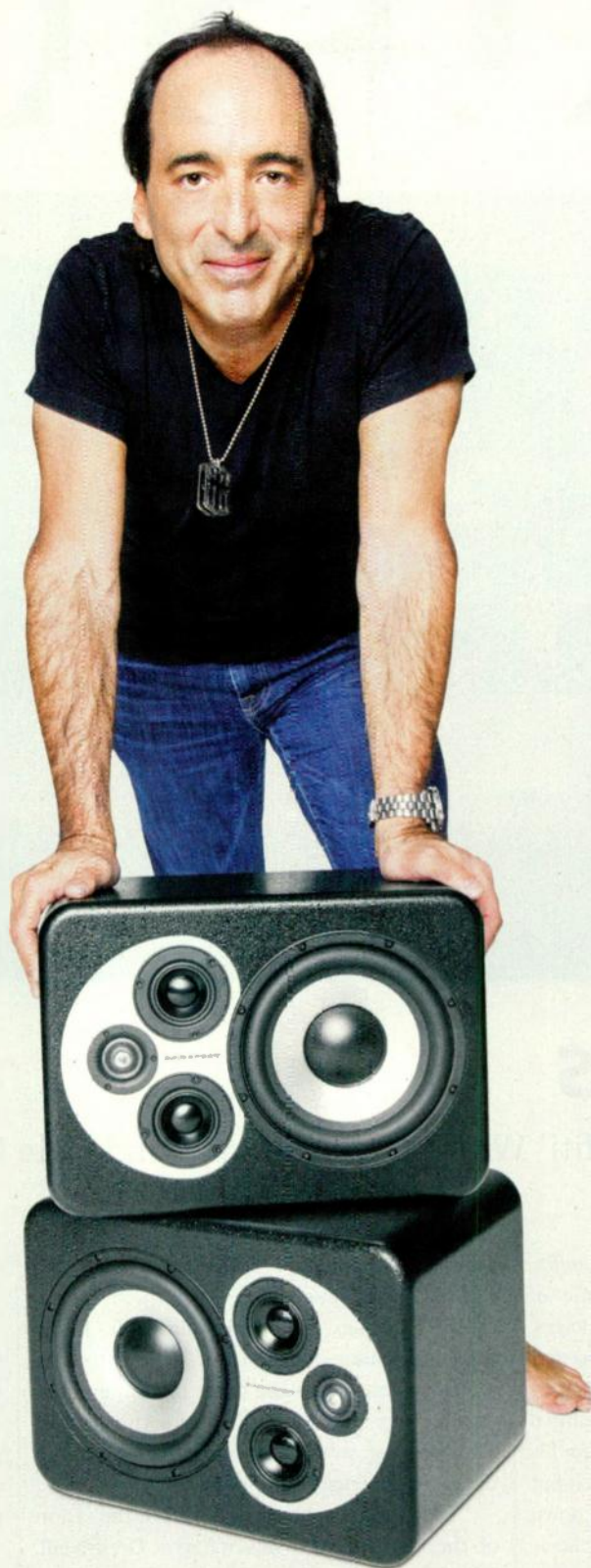


Pictured, from left: Barak Moffitt, global head of strategic operations, Universal Music Group; Maureen Droney, Managing Director P&E Wing; Ryan Ulyate, producer/engineer; John Jackson, VP A&R/content development, Sony Music Legacy Recordings; Eric Boulanger, chief mastering engineer, The Mastering Lab; and Bruce Botnick, VP, Content Acquisition, Pono Music.

“Past Is Prologue—What Does It Take for a Format to Succeed,” “The New Business of Hi-Res Music,” “Understanding Hi-Res Distribution,” “Setting the Stage for Hi-Res Audio,” “Hi-Res Devices for Every Lifestyle,” and “Meet the Hi-Res Music Creators” with moderator Maureen Droney and panelists Bruce Botnick, Eric Boulanger, John Jackson and Ryan Ulyate.

Barak Moffitt, global head of strategic operations, Universal Music Group, kicked off a playback session in Studio A’s control room featuring high-res versions of Frank Sinatra songs originally recorded in that very studio. Other music included cuts from the just-released complete Tom Petty catalog and the high-res remasters of Lou Reed’s catalog that Reed himself had overseen just prior to his death in 2014.

Chris Lord-Alge



BAREFOOT

Music



THE VACCINES

By Lily Moayeri **16**

NEWS & NOTES

By The Mix Editors **20**

CLASSIC TRACKS:

THE RASCALS

By Robyn Flans **22**

SHOTA NAKAMA

By Gary Eskow **26**



Freddie Cowan (lead guitar, vocals), Justin Hayward-Young (vocals, guitar), Pete Robertson (drums, vocals), and Arni Arnason (bass, vocals).

THE VACCINES

Recording 'English Graffiti' With Dave Fridmann and Cole Marsden Greif-Neill

By Lily Moayeri

For their third album, *English Graffiti*, the Vaccines take on the role of matchmakers as well as musicians. The British foursome brings together longstanding producer Dave Fridmann (Flaming Lips, MGMT, Tame Impala) and newly minted Grammy winner Cole Marsden Greif-Neill (for his work on Beck's *Morning Phase*) into an unlikely but very successful pairing. The Vaccines are known for their traditional approach to writing classic rock songs with the firm goal of timelessness. On *English Graffiti*, the group eschews that mentality, trading it in for an über-modern, experimental

approach—very much of the moment, but still a rock 'n' roll aesthetic.

The Vaccines' principal songwriter, Justin Hayward-Young, came to Greif-Neill with songs already written with the other band members, which Greif-Neill redid into his own versions. The two then went on to write the majority of the songs on *English Graffiti* together.

"They brought me in to re-create the vision of the album how I saw it," says Greif-Neill. "I would make my own demo of the songs, reimagining them. They had been working on the record for a year before I got involved. It was

at a point where they could use a refreshing."

Armed with countless songs, the Vaccines and Greif-Neill came to Fridmann's Tarbox Road Studios in upstate New York. According to Fridmann, much of what they arrived with did not get recorded. Instead, Greif-Neill delved further into the co-songwriter role, collaborating and directing every aspect of the recording.

"It was a piecemeal approach in the sense that we tried everything at least once," says Fridmann. "We tried as a band, we tried as individuals, we tried as a click track, we tried

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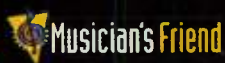
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Dave Fridmann

Photo by Justin Goetz

without a click track. We were trying to find the right approach per song.”

Fridmann draws an analogy between the Vaccines recording sessions and his wife making soup from scratch. Many, many ingredients go into the creation of the soup’s broth, all of which get thrown out. Similarly, the Vaccines do many, many recordings in various forms, with sometimes only one singular sound, such as a tambourine or a guitar riff, retained.

For these sessions, much of the equipment is set up and kept that way for the duration. In particular, two drum kits are set up with different miking schemes—one with a drier, tighter but junkier sound, another with opposite characteristics. The microphones—purposely chosen—are entirely wrong for capturing drum sounds. The toms are miked with RCA BK-6B lavalier microphones. These are paired with Altec Lansing 1591A preamps that transform them into the sound both producers are happy with. The kick is miked with an STC 4021 or “ball and biscuit” microphone. The snare drum is miked with an Electro-Voice Model 636, an omnidirectional microphone, again not the typical choice, but perfect for *English Graffiti*. An Altec 39A, a single mono overhead, is used for the kit and an RCA 44 for the room mic.

“There was almost no way to get a traditional sound out of what we were doing,” says Fridmann. “Even when the band used an acoustic guitar or Fender Rhodes or an organ or synths, the idea was, ‘Let’s see how we can break the mold.’”

balance of natural versus unnatural sounds, processed versus dry. But, there are performances that are completely unedited. Without those, the album would feel too produced and overwrought.”

One of the songs on *English Graffiti* that went through an inordinate number of facelifts from creation to completion is “(All Afternoon) In Love.” Young originally wrote the track on his own. Starting as a funky, folk-rock groove, after Greif-Neill’s re-demoing of it in Ableton, it transformed into an ’80s synth-rock ballad that the group recorded. Greif-Neill chopped and stripped away from these recordings, reprogramming the live drums by processing, distorting and making them lo-fi yet electronic-sounding.

“I can be a lot more aggressive in the original capturing of sounds if I know I’m going to be mixing it because I already know what the final result is going to be,” says Fridmann of the mixing, which he does wholly in analog on the Otari Elite. “At that stage, I just need to make sure it’s got all the energy and push and movement that we didn’t achieve through raw performance.

“The band was incredible in terms of their no compromise approach,” he continues. “They were willing to fail and keep doing it no matter how many times it took, no matter how much time we invested in any part of the song or any particular sound. They were fearless in their explorations. It was really impressive.” ■

Cole Marsden
Greif-Neill



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BUILT TO SPILL, 'UNTETHERED MOON'

Built to Spill's first album release in five years, *Untethered Moon*, features a couple of new bandmembers; since the group's previous release, *There Is No Enemy*, Steve Gere has taken over drum duties, and Jason Albertini is the new-ish bass player. However, *Moon* gets to the essence of what has always been the band's brutal-meets-beautiful sound. Heavy drum hits and tough—often effected or distorted—guitar sounds stand almost in contrast to frontman Doug Martsch's multitracked, gentle vocal.



capture, as engineer/producer Sam Coomes says, "the band playing like the band."

"They chose deliberate self-imposed limitations," adds Coomes, who recorded the band to an Otari machine at Jackpot Recording, Portland, Ore. "They decided to track to analog, 16-track. It was the best way to focus on just the band playing. It helps that Jackpot is such a comfortable place and so well-equipped."

Coomes has known Martsch for a couple of decades, and he humbly jokes that because the approach was so straightforward, and Martsch so seasoned, "There's really no production involved. That vocal approach is all Doug, singing into an SM7 with

The band made a very purposeful decision to record this album live, to maybe a little compression. That's his voice—his style."—*Barbara Schultz*

COOL SPIN HOT CHIP, 'WHY MAKE SENSE?'



With each passing year, the public's collective ears are better prepped for sounds like the experimental ones of Hot Chip. In turn, Hot Chip flexes just enough to become more accessible for general consumption.

On the British quintet's sixth full-length, *Why Make Sense?* (Domino Records), the fun kicks

off instantly with bubbly opener, "Huarache Lights." Produced by Hot Chip with Mark Ralph, *Why Make Sense?* takes its title's sentiment to heart, veering in a variety of directions. Case in point, De La Soul's Pos rhyming on "Love Is The Future," his slick flow juxtaposing against Hot Chip's Alexis Taylor's shuddering falsetto.

Disco flecks bounce off the rounded beats of "Started Right," and "Need You Now" samples Sinnamon's early '80s house style dancefloor-tearing vocals, while "White Wine And Chicken" is Hot Chip's successful attempt at a digital ballad.

"Dark Knight" hits just the right midtempo stride with enough moody emotion to warm up the electronics and enough studio play to keep it from becoming predictable. This is Hot Chip's signature as its maintaining of soul at the core of its productions is what gives the group its staying power.—*Lily Moayeri*

Written, produced and performed Hot Chip except: "Love Is The Future" written by Hot Chip and Kelvin Mercer. Additional production and engineering by Mark Ralph at Club Ralph and Angelic studios. Assistant engineer at Angelic: Tom Fuller. All songs mixed by Hot Chip and Mark Ralph except: "Huarache Lights," "Need You Now" and "Why Make Sense" mixed by David Wrench. "Started Right" mixed by Mark Ralph and David Wrench. "Love Is the Future" mixed by Jimmy Douglass. Mastered by Matt Colton at Alchemy Mastering

WILLIAM ELLIOTT WHITMORE, 'RADIUM DEATH'



On his own with a banjo, or fronting a rock 'n' roll band, singer/songwriter William Elliott Whitmore sings about trouble—in love, from the government, for the average human. He's got a raw, wounded sound that knocks you flat, like in the song "Don't Strike Me Down," on his new album *Radium Death* (Anti), when he sings, "Get ready to lose what you love." It's brutal, but also uplifting; it feels good just to hear songs this great.

Whitmore makes his albums in Flat Black, the studio he and his cousin/engineer Luke Tweedy built in Iowa City. Tweedy says

the facility is "extremely modest, but each step of our process has seen improvements, and I would not be where I am without an even more modest past. Just as Will started with a hand-me-down banjo, I remember saying to myself, 'Are you really going to drop \$100 on a mic?' Now I have piles of mics in the four digits."

Tweedy's recording/mixing platform is a Pro Tools system with UA Apollo Quad interface and Lynx Aurora 8 converters. "When there was a band involved, we cut live with a scratch vocal in the control room, so Whitmore and the band could see each other, but we could still have options for his parts. After tracking the vocals [to a Pearlman TM47 and an API channel strip], we would route them out of the DAW and into Whitmore's point-to-point Champ clone, totally dimed so it had this crazy distortion. That little amp was sitting in the control room, and we would put an AEA R84 mic two rooms away and record that; it is dirty and distant. That is the reverb on several songs, and it's only possible with an isolated vocal."—*Barbara Schultz*



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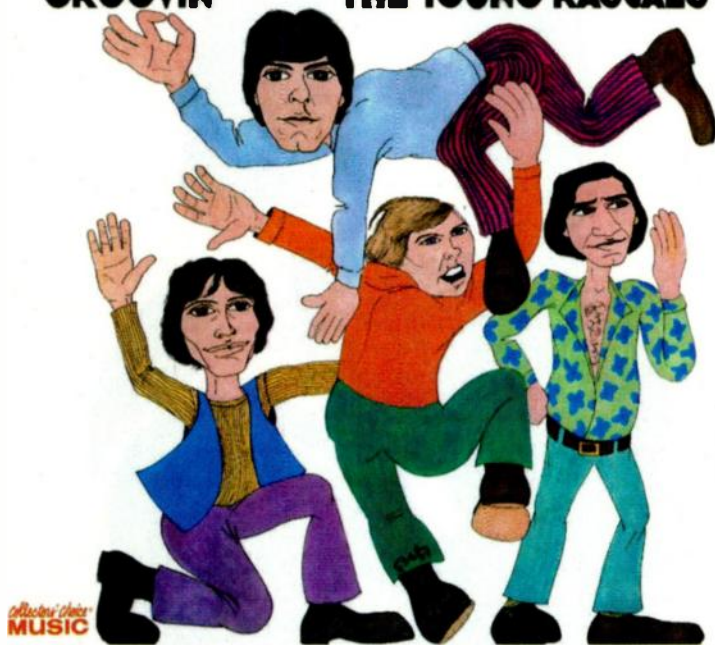
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Classic Tracks

By Robyn Flans

GROOVIN' THE YOUNG RASCALS



"GROOVIN'"

The Young Rascals

The sounds of chirping birds are a calling card to a song that almost didn't get released, an opener that offers a perfect imitation performed by brothers Eddie and David Brigati in the days before samples, leaving no doubt to the listener that the classic they are about to hear is "Groovin'" by The Young Rascals, as they were still known, soon to be The Rascals.

Writer/singer/keyboardist Felix Cavaliere remembers those early days as great fun. He laughs as he recalls the Brigati brothers' studio antics. Eddie was his co-writing partner and other lead singer in the group, and David, Eddie's older brother, was not in the group but often contributed background vocals on their albums, creating that special familial harmonic blend.

"Those guys could do any animal sounds you could imagine," Cavaliere recalls. "Half fooling around and half seriously, we would record them doing all these animal sounds. They went out there and they could reproduce birds, elephants, lambs. We had them do a traffic argument once which was...well, I wish I still had that. It was hysterical. We had so much fun in those days. It was a very experimental time."

Cavaliere says it became his idea to create "a sonic environment" like the Beatles had with the submarine sound in "Yellow Submarine."

"You're creating a place for that song to exist," Cavaliere says. "I mentioned that to Paul McCartney when I saw him after that and he looked at me like I was nuts."

Nuts or not, Cavaliere says the birds set the scene for the park on a Sunday afternoon, a rarity when musicians have time off to spend with their girlfriends, and from the outset of the birds and the topic, the song struck a chord and soared to the top of the charts in 1967.

"Musicians work on the weekends, Friday and Saturday, which is when 'normal people' go out," Cavaliere says. "So Sunday afternoon became the only time for us to be together, which became the premise for 'Groovin' on a Sunday afternoon.'"

Cavaliere says a girl in his life provided the muse for all the songs he wrote back in his early 20s, including the hits "Groovin'," "I've Been Lonely Too Long," and "How Can I Be Sure." "'How Can I Be Sure' was when we split up," he explains. "I really believe the reason she was sent into my life was to write this music."

Back in those days, Cavaliere would write the music and the chorus title, he says, along with the main body of what the song was about.

"Melodically it was all done with a la-la track, and I would try to get across to Ed what we would need to write," Cavaliere says. "He would send me different lyrics and I would sort them out and put them into the order I wanted. That kinda changed as the years went by, but for 'Groovin'" that was the way it was."

Cavaliere says he handed Brigati the theme for the lyrics because he felt he was better at expressing Cavaliere's ideas.

"In the beginning it was like big brother/little brother, and he was perfectly content having me go over it like an editor would, but as the years went by, I think he didn't like that much. But that was the winning arrangement, and if it weren't for egos, I think we'd still be together," Cavaliere says.

GROOVIN' IN THE STUDIO

The recording of "Groovin'" took place at Talentmasters on 42nd Street in Manhattan with Chris Huston at the board. After Huston met David Brigati when he had been a member of Joey Dee and the Starlighters, the elder Brigati recommended him for the engineering job.

"I had only been engineering for just about a year, although somehow I'd managed a hit with Mitch Ryder & the Detroit Wheels—'Sock It to Me, Baby,' in 1966, literally within months of first getting behind the console," Huston recalls. "My first impressions were of Eddie and Felix's incredible voices and the openness and smoothness of the basic rhythm track as we put it down to establish the feel. It was one of those songs that really evolved as it was recorded."

Cavaliere remembers the studio as "a box," but what mattered to

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them was that James Brown had recorded there.

Cavaliere says he and Atlantic Records' Arif Mardin mapped out the song before they entered the studio, deciding not to use drums, but instead to have Dino Danelli play conga. Cavaliere's own instrumentation was undergoing changes. Although he was known for playing key/bass in the early days, that changed around the time of the recording of "Groovin'," where he decided to concentrate on the piano.

He says Mardin, who was very hands-on, helped him come up with the piano solo that Cavaliere still plays to this day. "We were really in charge. Contractually we were the producers of The Rascals," Cavaliere says. "[Arif] came in as a supervisor."

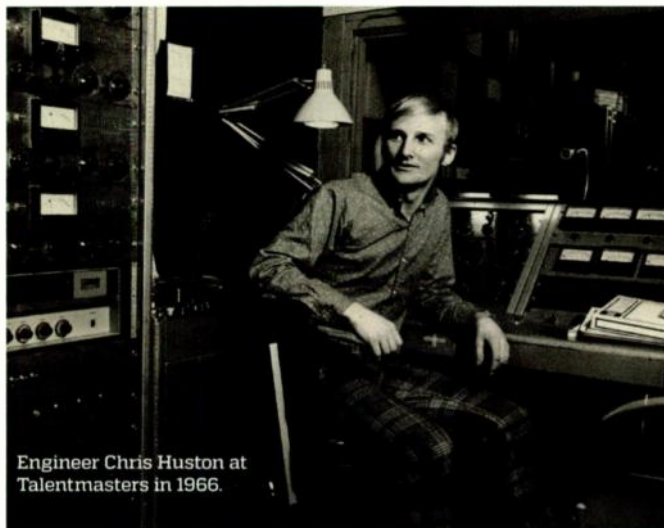
They discovered bassist Chuck Rainey from the Atlantic roster, where Rainey was part of the King Curtis group and had indicated he would like to do sessions.

"We fell in love with him and used him on whatever we could," Cavaliere says. "That was one of the first songs I remember him making a real contribution. When I blocked out the bass part, I didn't have all the nuances he put on it. I just had a basic bajon bass beat groove, and he put in all the other things that were magic. I don't know if people still record like that because I just did an album where we just phoned in our performances from different addresses. There was a real feeling in the room, and that was what Atlantic taught me."

"These were the days when everything was recorded live, especially the larger session dates, and the job of the recording engineer was to document the performance on tape," Huston adds. "The musicians—session musicians, that is—were used to playing together, so they were able to work without everyone having phones. I had to mix down from 4-track to 4-track, after the first session as I'd put the original three instruments—congas, keyboards and guitar—on their own tracks and used one for a pilot vocal."

Cavaliere says the piano miking was very important. Huston says their selection of mics was very limited at the studio. "I used a single microphone on the piano with the lid open. It was a Neumann U 67," Huston recalls. "The studio was set up for 'live' recording—tracking dates. Remember, in those days we were documenting a performance, whereas today, with the advent of Pro Tools, we are creating one."

"Once we started on the vocals, I had to submix one more time," he continues. "I also 'ping-ponged' the background vocals. 'Ping-ponging,' as it was sometimes called, between two 4-track machines provided the option of recording the individual instruments of the rhythm section 'live' onto separate tracks of one 4-track machine, then submixing them down to one, or more, tracks of a second 4-track machine, leaving the remaining tracks open for vocals and additional instruments such as solos or string and/or horn arrangements. This sub-mixing procedure could go on almost indefinitely, being limited only by the buildup of tape-noise, and perhaps more importantly, by the ability to hold together a cohesive mix while continuously bouncing tracks backward and forward between tape machines. In this case, I ping-ponged the vocals between two tracks



Engineer Chris Huston at Talentmasters in 1966.

of the 4-track machine on the same machine, which really filled them out. In essence I was double-tracking the background vocals to one track of the final 4-track submix. Eddie's big brother, Davy, helped on the background vocals."

The background vocals were very specific. Again, wanting to set the scene "like a painter would use colors," Cavaliere describes the ethereal sound and vocalizations of the Brigati brothers as the color blue: "heavenly," like sky.

"There's always something magical about having brothers who sing together like the Bee Gees," Cavaliere says. "What I was trying to do with the vocals was create a scene with sounds such as voices, such as Hammond organ, such as violin to create that kind of spacey place."

Right after the vocals enter the song, a harmonica helps create the "lazy afternoon," a suggestion from Mardin. There was no harmonica player in the group, but Huston had just the guy.

"Michael Weinstein, who played in a band, was helping out in the studio, cleaning up and whatnot," Huston remembers. "He played harmonica, so I brought him in."

Huston says the console was "incredibly basic," consisting of four Ampex MX-10 mixers, four Pultec EQP-1A Equalizers and four Fisher SpaceXpander spring reverbs. He built the patchbay when he first started working at Talentmasters. There were two 4-track machines: an Ampex 350 half-inch 4-track recorder and an Ampex half-inch 351 recorder, which they used to do 4-to-4 mixdowns to open up a couple of extra tracks. Then there was a single Ampex quarter-inch 350 mono machine.

The monitor system consisted of a single Altec 604E powered by a 60-watt Dynaco Dynakit amplifier. As his memory serves, it was a Mark III model. He installed a Bogen P.A. amplifier to handle the headphones when he was working the patchbay, and recalls having only about six pair of headphones back then.

NEARLY SHELVED

The "lazy afternoon" got the band in a little bit of trouble. After the recording, the battle began. "It was very exciting because the song was so different from anything we had done before," Cavaliere says. But so different that the label didn't want to release it. Thanks to New York D.J. Murray the K, who had come to the sessions and had fallen in love with the song, the label took the plunge.

"Murray the K said to us, 'You guys have a smash hit there, that's a Number-One hit, I'd play that tomorrow,'" Cavaliere remembers. "But when it went to the record label, Jerry Wexler said, 'What the hell are you guys doing? You're a frickin' rock 'n' roll band. You're playing like a cha-cha. There are no drums on it.' He gave me a really hard time and said, 'I don't want to do this shit.' He used to cuss like a sailor. 'We can't put this crap out, you're supposed to be a rock band. What is this?'"

A visit from Murray the K changed Wexler's mind and it reached Number One for four weeks, eventually becoming one of The Rock and Roll Hall of Fame's 500 Songs that Shaped Rock and Roll. ■

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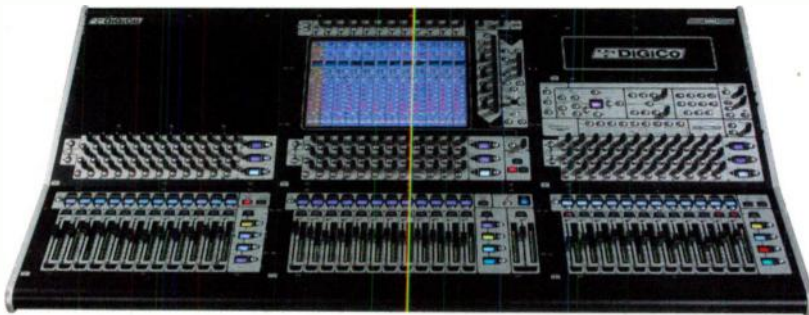


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COMPOSER SHOTA NAKAMA AND HIS VIDEO GAME ORCHESTRA

By Gary Eskow



It may seem hard to believe, but the videogame industry is in a gray-ing stage. You can set the time it reached maturity anywhere from the mid-1990s on, but it's certainly true that a generation-plus has grown up without knowing a universe devoid of galactic heroes, ancient villains and stolen vehicles, all residing inside the box.

Shota Nakama is of that generation. The not-yet-30-year-old composer and arranger moved from his native Okinawa, Japan, while still a teenager to pursue a music education at Berklee College of Music, where he majored in film scoring. "I chose that major because it's the most versatile of all," Nakama says. "You get to learn composing, orchestration, recording, sound design and editing." After completing his studies, Nakama earned a master's degree in classical guitar performance from the Boston Conservatory.

A videogame enthusiast, Nakama felt that the best scores in gaming deserved a wider audience. In 2008 he formed the Video Game Orchestra and began creating arrangements, which include a full orchestra, rock band and vocalists. VGO has garnered a considerable following over the past six or seven years and has performed at Boston's Symphony Hall, the Seattle Paramount Theater, and a number of venues in China and Taiwan. Nakama recently founded SoundtRec Boston, a recording production company designed to provide audio services for film, videogames and animation houses based in Boston, where he lives.

Nakama has written a number of arrangements of music composed by Yoko Shimomura, one of the most well established composers in the videogame industry. It's often difficult to draw the line between arranging and re-composing. Did Nakama in any way rewrite, or compose additional material, to the Shimomura's scores?

"I have been closely working with Yoko Shimomura as her arranger for the majority of the *Final Fantasy XV*-related music, and I can say a halfway

yes to that question!" he explains. "Sometimes I add quite a bit of things that don't exist in the drafts she sends. She gives me enough freedom to add a bit of my own taste in her music, which is really great."

Conduct a YouTube search and you'll have no problem coming across VGO performances, which reveal that Nakama has a clear command of the orchestra. "I write the arrangements using Finale, and then turn them over to my engineer, Falk Au Yeong, to execute MIDI mockups, at least most of the time. He's a tech wizard who knows a lot of samples and DAWs inside out. He mainly uses [Cakewalk] SONAR and Cinesamples. When I really have to do it on my own, I use Logic and Vienna Symphonic Library. I actually have been hearing a lot of great things about Spitfire from a lot of my L.A. friends."

VGO tracks are often recorded at Boston's WGBH Fraser Studios. Tracks are cut to a Steinberg Nuendo workstation and then brought into Falk Au Yeong's studio as audio files, where they are imported into the engineer's SONAR-enabled laptop. "My main work rig at home consists of a pair of PCs running in tandem, a main and a sample slave via Vienna Ensemble Pro, with the audio interface being a MOTU 828," Yeong says. "I work primarily on a pair of AKG K702 headphones due to familiarity and personal preference. I have a small collection of microphones as well as Aural Sonic portable audio treatment panels used to set up my space for whenever small-scale tracking is required. Part of the reason my setup is lightweight is so that it can also be carted around. We've taken this rig to track stuff, run a multiple-output backing tracks/clicks/video solution for live concerts, and even for mixing sessions."

"We have been working with SONAR for mixing almost exclusively," Nakama adds. "Falk has been a dedicated Cakewalk user since slightly before the days it transitioned to the Pro Audio line. Having an old-school Electronics and Computing degree, he has always been a PC person because it is more open and customizable. Cakewalk has always pioneered the cutting-edge, being, for example, the first truly 64-bit native DAW on the market."

Composers since Bach (and before) have dreamed of having an orchestra on call to perform their works, so it seems logical to ask if Nakama has plans to use the group that he formed nearly seven years ago for the purpose of performing arrangements of videogame scores as a vehicle for musical works that are solely his.

"I had thought about that, and my immediate thought was, 'Why would people hire Video Game Orchestra to record for their film or animation projects?' So the simplest solution was to establish another entity, SoundtRec [StR] Boston to handle all the recording projects," Nakama says. "We are already in discussion with numerous film companies as well as animation companies about recording their music. We are really fortunate to have some of the best professional talents from Boston, who are very passionate about what we do, in our StR and VGO network. It won't be too long until you start seeing our name on film and animation soundtrack credits."

If you'd like to know more about Shota Nakama, you're invited to reach out to him at contact@soundtreceboston.com. ■



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Live

CITY CENTER ENCORES

By Eric Rudolph 29

BENJAMIN BOOKER

By Matt Gallagher 32

SOUND SUMMIT

By The Mix Editors 32

WALT DISNEY

CONCERT HALL

By The Mix Editors 34

NEWS & NOTES

By The Mix Editors 35



Longtime Sound Designer for City Center Encores! Scott Lehrer is pictured in City Center.

CITY CENTER ENCORES

Classical Musicals, Modern Technology

By Eric Rudolph

Many older hit musicals are ripe for revival—and then there are the others, now commercially unviable, with slim hope of seeing Broadway again. However, each year three such shows are lovingly revived for six performances each by the New York City Center Encores! series.

For 21 seasons this busy, successful not-for-profit has been bringing back long-unheard musicals with their original large orchestrations—which often means 30 musicians alongside a cast of another 30.

One such show is Frank Loesser's moving and operatic *The Most Happy Fella*, a smash from 1956

that's now just too much for Broadway.

"*Most Happy Fella* is a classic, but so big it does not get revived," says longtime City Center Encores! sound designer and multiple-Tony-Award-winner Scott Lehrer. "After *Guys and Dolls*, it's Frank Loesser's best show, if not his best."

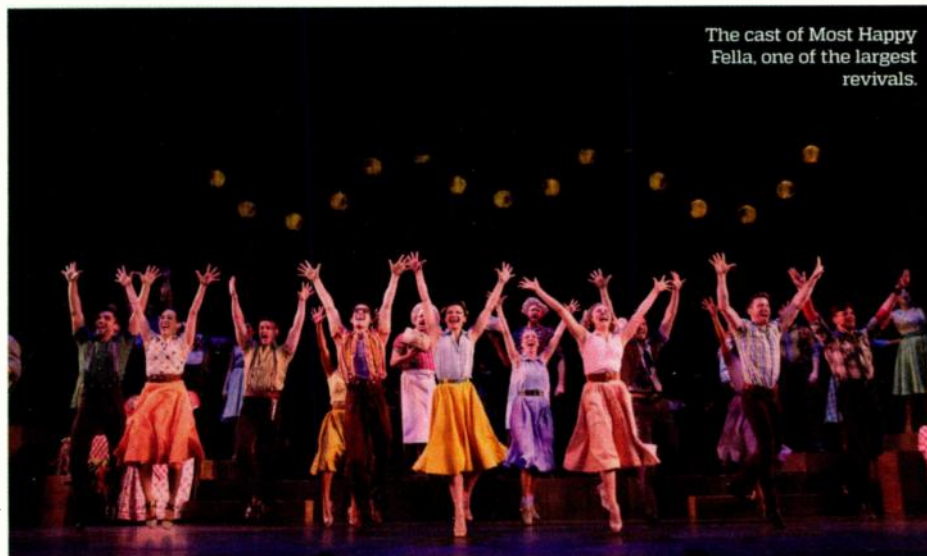
At the other end there's the ultra-lightweight *Lady Be Good*, the Encores! 2015 opener. This 1924 Fred & Adele Astaire show was the first true Gershwin Brothers collaboration, with great songs ("Fascinating Rhythm," "Lady Be Good") but a dated, silly book. However, at City Center Encores! music comes first, so a seriously dated book is no deterrent.

It's about hearing these original scores in all their glory for the first time in decades, in the lovingly refurbished Neo-Moorish City Center. It's a time machine for serious musical-theater fans. In fact, music so central to the mission that the big orchestra is positioned right up onstage.

Encores! is notable for working big but working fast. With the budgetary constraints of six performances, shows go from first rehearsal to opening in about a week.

"It is the X-Games of theater, like going back to summer stock," Lehrer says. "The actors ask themselves 'Can I learn my part in a week?' But of course they do."

And instead of tech-ing for weeks like on



The cast of *Most Happy Fella*, one of the largest revivals.

Photo: Joan Marcus

Broadway, tech is a day (or two). “It’s kind of fun. Guerrilla tech!” says Lehrer. “One day of tech, one dress rehearsal for 2,500 people and then we go. It’s exciting.” (And while quite busy with Broadway [*Honeymoon in Vegas*], Lehrer keeps coming back; *Lady Be Good* was his 50th Encores show.)

Despite the hectic schedule, they get Broadway’s finest: “The absolute best, whoever’s not busy with a movie or TV series, like Laura Benanti [TV’s *Nashville*; *Gypsy* Broadway revival] for *Most Happy Fella*. She was as good a Rosabella as has ever been!”

The male lead was Shuler Hensley (*Young Frankenstein*), just days from his Broadway run in *No Man’s Land/Waiting for Godot* with Patrick Stewart, and Ian McKellan.

Encores! also attracts big names from outside the theater world; film star John Turturro will make his musical-theater debut in the lead role of *Zorba!*, the final 2015 Encores! production, which takes place May 6-10.

Officially, Encores! are “concert versions.” Actors are often “on book”—holding, and sometimes using, scripts. (The audience expects this, and it can be played for clever laughs.)

However, 2014’s *The Most Happy Fella* was a Broadway-style production in most every sense, with exuberantly colorful costumes, full choreography and cleverly simple lighting and sets. Not one actor held a script.

The series has indeed come a long way. Their first production, 1994’s *Fiorello!*, was, “Bare bones, four RF mics, everyone on book,” says Lehrer, sound designer for that show.

The audio production has progressed but there is still an array of slim stand mics placed prominently downstage, something not seen on Broadway in decades.

While all principals now have RF head mics (up to 16 DPA 4061 and Sennheiser MKE 2s), the chorus has none, and uses the half-dozen AKG 391 mics at the stage lip. To make this old-school approach work, “I help re-block, move the softer voices in closer so everyone’s about two-to-four feet away when singing,” Lehrer explains.

As for singing without head mics, there’s no problem. “Vocal projection is still part of theatrical training,” Lehrer notes, cautioning that “there is sometimes so much stage noise, moving lights and sets. If you’re quiet,

you’re barely above the noise floor.”

Lehrer uses the house system, which he consulted on with house sound engineer Augie Properi. It’s run with a Studer Vista 5 control surface with Lexicon FX Engine and Theatre Cue software. “The Studer is flexible and has immediately-fantastic sound, you just plug in a mic. It has a ‘straight wire’ feel, musical and open like there’s nothing between actor’s voice and the speakers.”

City Center has long been a showcase for d&b audiotechnik speakers, and the system, with a center cluster added last year, is all d&b. It uses the J12/J8 for center, C7 for left/right and the E Series and T10 for delay and fill.

Encores! productions do move on to Broadway, sometimes for spectacularly unlimited runs, such as *Chicago*, revived in 1994 and still going strong, and a recent successful *Gypsy* revival.

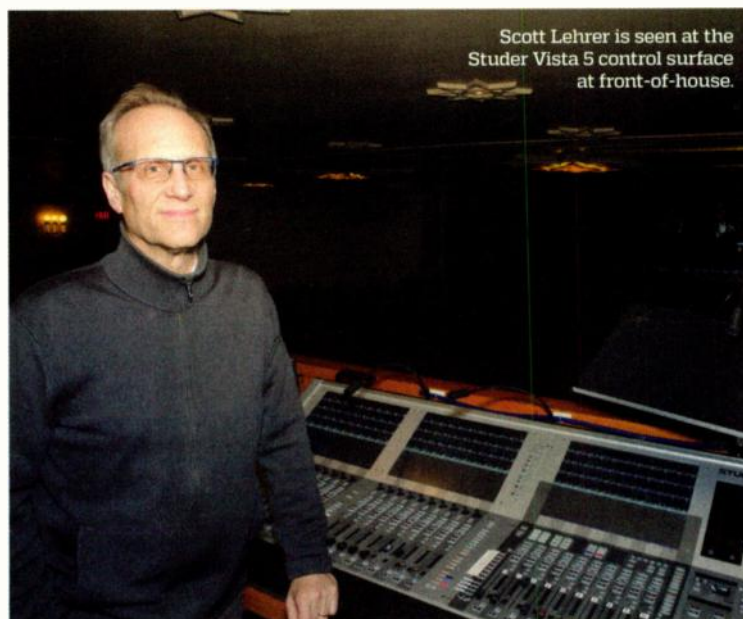
But Encores! isn’t a laboratory incubating for The Great White Way; their mission is presenting

great shows and scores faithfully.

And part of that is using modern technology—and a low volume level—to “present the work with the sound seeming to come from the stage, so the audience hears the music closer to how it sounded ‘in the olden days.’

“However, we’re doing a fair amount of reinforcement,” Lehrer adds. “We’re able to make it sound transparent using the Outboard Electronics Timax 2 delay matrix to source sound to the stage more accurately. Broadway designers are doing this more now, but it works much better when you keep volume levels down.”

It does work. The volume is refreshingly low, the sound is clear and present and seems to come from the stage totally un-amplified, like stepping back in time. Critics and audiences agree, Encores! is theater magic, and smart sound design is one reason why. ■



Scott Lehrer is seen at the Studer Vista 5 control surface at front-of-house.

Photo: Eric Rudolph



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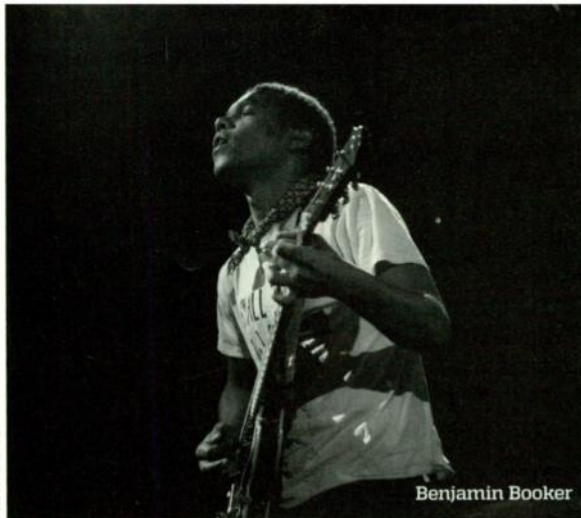
BENJAMIN BOOKER'S 2015 ROAD SHOW

Blues-rock guitarist/singer/songwriter Benjamin Booker hasn't slowed the torrid pace he set for himself and his bandmates in 2014, when he released his self-titled debut album, embarked on his first-ever headlining tour, and recorded *Benjamin Booker: Live At Third Man Records* on September 24 in Nashville for release on 12-inch vinyl on Jack White's record label. This spring and summer, Booker, Max Norton (drums) and Alex Spoto (bass) are bringing their blistering live set to a mix of clubs, theaters and festivals that include Coachella, Governor's Ball, Bonnaroo, Outside Lands, and others. The trio is appearing in North America up until June 21—with the exception of a May 28 performance in Barcelona at the Primavera Sound Festival—and then spending late June and July in Europe.

Booker's band is traveling with Nolan McGuire, who is multitasking as tour manager front-of-house engineer, driver, tech support and merchandise salesperson. "It's a lot of work but very satisfying at the end of the night when the show goes as planned! Never a dull moment out here," McGuire says. "I've also been very lucky, as I've been to a lot of venues that we did on this tour and know a lot of people, so it was great to see old friends who will put in the extra effort to help make Benjamin's show rad—especially venues like First Ave, The Metro, Music Hall of Williamsburg and the 9:30 Club in D.C."

McGuire says this tour is relying entirely on the venues for sound reinforcement, also renting much of the backline due to the extensive mileage in-

Photo: David Goldman



involved. "We are completely at the mercy of what the venue has in-house, which can go both ways, really," he says. "Console-wise, [for] my three favorite shows of the tour I was mixing on the Midas Heritage 2000 Series, and those were my best shows sonically. I think I prefer analog [consoles] over digital, especially for Benjamin's style; I think it makes it sound the warmest.

"I do my best to make Benjamin and band sound big and full, and yet still have a nice warm, old-timey rock 'n' roll mix,"

McGuire says. "I get into using phasers and panning to make things a bit more psychedelic-sounding. I think it's always important to have the vocals stand out in the mix—not blaring over everything, but just a bit on top and warm sounding. Also, the kick, snare and the hi-hat have to pop. Everything else just falls nicely into place. Mixing Benjamin and company is actually quite a treat, as they have the old Muscle Shoals kind of sound, and it's my fave."

For Booker's distinctively gravelly voice, McGuire prefers a Shure SM58. "His vocal chords almost have a natural effect to them and I think this mic makes his voice sound amazing," McGuire says. "He definitely has the most unique voice out of anyone I've mixed. I just throw a nice comp on it and then we are off and running."

As for Booker's guitar sound, McGuire says, "He uses two Fender Twins cranked way up. I use a 57 on the stage-left amp, and this amp has a lot of the highs cut out on it and [it] sounds way sludgy. For the stage-right amp that has more highs and mids, and less bass, I use a Sennheiser e 609. I whack a couple nice comps on them and these two [amps] combined make for a really sweet sound in the end." —Matt Gallagher

SOUND SUMMIT EVENT IN CHICAGO

On Wednesday, May 13, 2015 at the Cinespace Chicago Film Studios Ballroom on the west side of downtown Chicago (2621 West 15th Place), DPA Microphones, Lectrosonics and Sound Devices will host the Sound Summit, Chicago, an informal mixing and discussion event for the audio community.

These three manufacturers specialize in professional location audio capture, with products including DPA's d:screet 4061 and 4071 Miniature Microphones, d:screet Necklace Microphone and d:dicate 4017B Shotgun Microphone; Lectrosonics' new L Series units, SSM (Super Slight Micro transmitter and SR Series receivers with SuperSlot compatibility); and Sound Devices 688 Field Production Mixer with SL-6 SuperSlot accessory and the 970 64-Track Dante and MAD1 Audio Recorder.

"Following the open dialog we had at our first event in Los Angeles, we recognize how valuable the Sound Summits are to our sound mixing user base and were inspired to improve and develop new products for,



and communications to, the industry," says Christian Poulsen, CEO of DPA Microphones. "We're very much looking forward to this Chicago event, as well as future Sound Summits, such as the one planned for Atlanta later this year. We're confident each one will only grow larger and more popular."

"We're extremely excited to host the second Sound Summit event because it allows us to share ideas and learn from the community in a relaxed setting," adds Karl Winkler, Director of Business Development at Lectrosonics. "We

anticipate the Chicago event to be very valuable and to be able to host future events in other large metropolitan areas in the coming year."

"It's always great to have the opportunity to get together with our users and peers to discuss and learn more about the current trends in sound mixing," says Paul Isaacs, Vice President of Marketing and Product Design at Sound Devices. "The L.A. event exceeded our expectations and we can't wait to meet with our current and potential customers from in and around Chicago."

To sign up for this free event, register at www.thesoundsummit.org/chicago. ■

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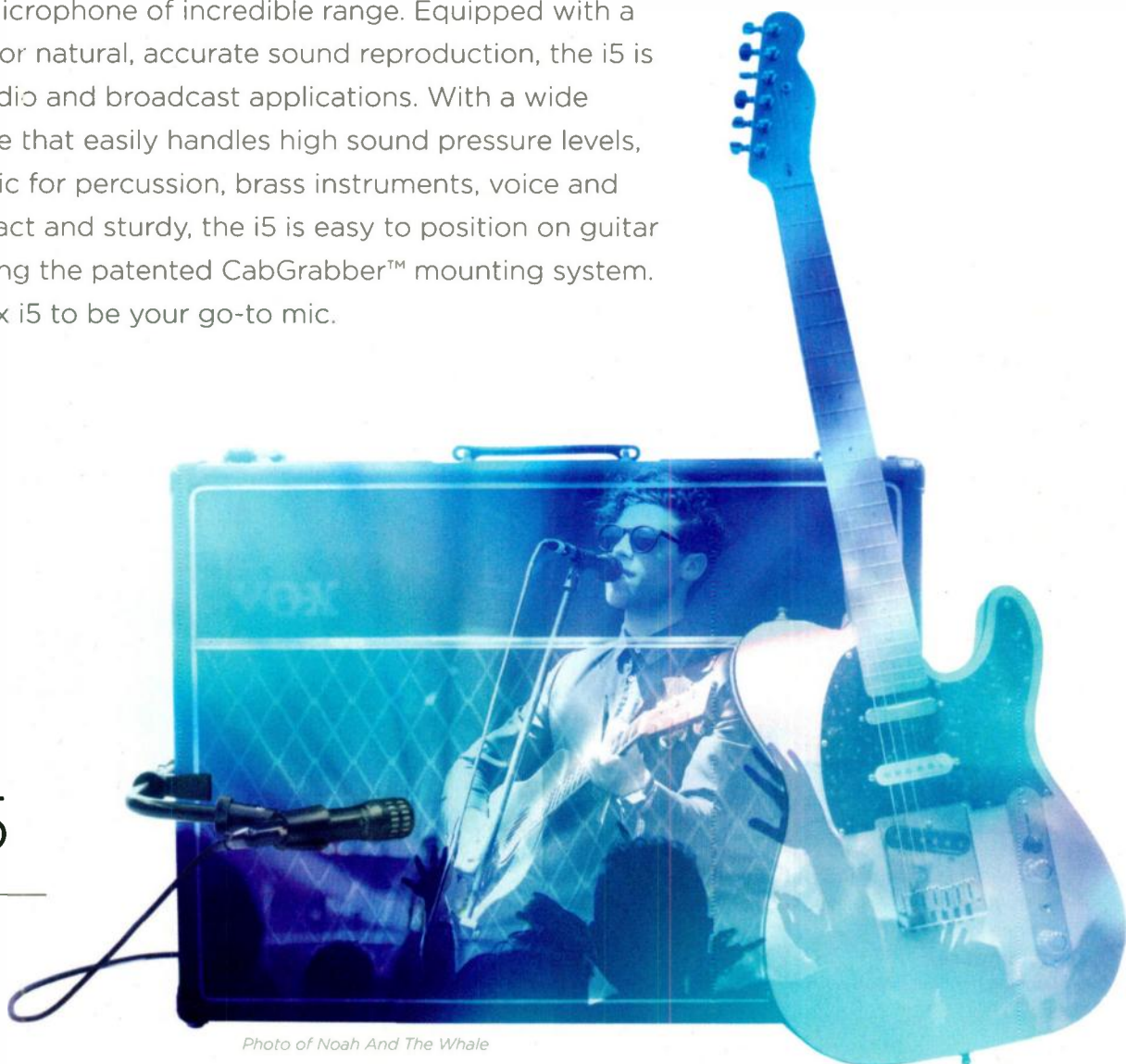


Photo of Noah And The Whale

WALT DISNEY CONCERT HALL

Designed by architect Frank Gehry and featuring an acoustical design by Dr. Yasuhisa Toyota, the Walt Disney Concert Hall opened on October 23, 2003, as the fourth venue on the campus of the Music Center in downtown Los Angeles. The Concert Hall offers 2,252 seats and includes the 270-seat Roy and Edna Disney/CalArts Theater (REDCAT), the 300-seat William M. Keck Foundation Children's Amphitheatre, and the 120-seat Nadine and Ed Carson Amphitheatre.

Earlier this year, ATK AudioTek of Valencia, Calif., supplied and installed a fiber-networked DiGiCo digital audio system at the Concert Hall: a DiGiCo SD5 at front-of-house, SD10 at the monitor position, with shared SD Rack. This installation follows the purchase of a pair of DiGiCo SD7 desks for the Hollywood Bowl in 2014 (see "The Hollywood Bowl: A Unique Blend of Natural Acoustics and Amplified Sound" in *Mix's* October 2014 issue).

"With our success at the Hollywood Bowl using DiGiCo, we considered the consoles pretty seriously when it was time to look at what we could do for the Concert Hall," says Fred Vogler, principal sound designer and mixer for the Los Angeles Philharmonic. "We wanted a desk that was easy to use, had good input/output flexibility, and provided future expandability. It also made sense for us to have the same type of consoles at the summer home of the L.A. Phil when we're at the Concert Hall during the winter season."

Kevin Wapner is the Concert Hall's head of audio/video, and assistant audio/video and monitor mixer at the Hollywood Bowl. "So the year before we made this latest purchase decision, we converted all our paths at the



Photo: David C. Miller

Concert Hall to 96k capability via RockNet [low latency audio distribution network] in preparation for moving in this direction," Wapner says. "The transition was really smooth, going from the previous consoles to the DiGiCos and using the fiber loop between them. AudioTek's integration and their knowledge got us up and going—it was seamless."

While the DiGiCo FOH console is rarely required to handle more than 40 inputs for non-orchestral performances, the SD5 enables granular control of the venue's sound reinforcement system, which is deployed only when needed. Custom left and right main speakers on the stage fire forward, sideways, and to the rear, as do the center-hung arrays. Front fills cover the first few rows of seating, and there are also ceiling speakers and balcony delays.

"Everything is addressable," Vogler elaborates. "You can change the level to the forward JBL VT4887 array—the upper and lower portions are separately addressed—as well as the sides and rear. You can also individually address the main custom ATC speakers. That was another factor in picking the DiGiCo console: We needed something with excellent matrixing and routing. The EQ sounds great on this board and the routing is superb." ■

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"I love the way the control and tracking rooms sound now... and so does everyone that records here!" ~ Butch Walker



Avid's VENUE | S6L live sound system

AVID PARTNERS WITH AUDINATE

At the 2015 NAB Show in Las Vegas, Avid announced that Audinate has joined the Avid Connectivity Partner Program to develop a new Dante option card for the VENUE | S6L live sound system.

The Avid VENUE | S6L system features a modular platform connected via an Ethernet AVB backbone, with hardware expansion options to connect to a wide variety of formats, including Dante. The new DNT-192 Dante Option Card is currently in development.

Dante is the market-leading audio networking solution developed by Audinate that delivers uncompressed, multichannel digital audio with near-zero latency. More than 200 manufacturers across the live sound, installation and pro audio markets support the Dante protocol.

"The introduction of the DNT-192 Dante card is a result of the close

collaboration between Avid and Audinate," states Lee Ellison, CEO of Audinate. "Avid is an innovative market leader in the live sound, production, and broadcast industries. We value the strong partnership between our companies which enabled us to quickly bring a Dante networked solution to market." ■

L-ACOUSTICS JOINS AVNU ALLIANCE

AVnu Alliance, the industry consortium driving open standards-based deterministic networking through certification, recently announced that pro audio manufacturer L-Acoustics joined its membership roster. L-Acoustics, founded in 1984 near Paris, sells its products, which are designed for both the touring and fixed installation markets, in more than 75 countries.

"We are excited to join the AVnu Alliance, as its philosophy matches our goals," says Genio Kronauer, head of L-Acoustics' electronics department. "We believe in standards and interoperability, so IEEE's AVB/TSN [Audio Video Bridging/Time Sensitive Networking] standard, certified by the AVnu Alliance, is a natural choice for us. We believe that L-Acoustics' high-end user base will bring significant contribution to growing the AVB/TSN market in the professional domain."

In addition to certification, Alliance members have access to compliance tools, testing plans, and test suites enabling early internal testing. Members may also benefit from participating in members-only plug festivals, offering a hands-on opportunity for engineers to test connectivity and interoperability.

For more information about AVnu Alliance, visit avnu.org. ■

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~ Daniel Adair Drummer - Nickelback.



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~ Keb' Mo' - Grammy winner, roots-legend.



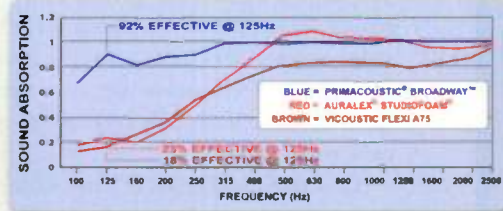
"Not only does my room sound amazing, it's also really beautiful!!!" ~ John Rzeznik - Goo Goo Dolls.

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

~ John Rzeznik

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A Tale of Three Helios

THE LEGACY AND RESURRECTION OF THE BRANSON BOARDS

BY TOM KENNY

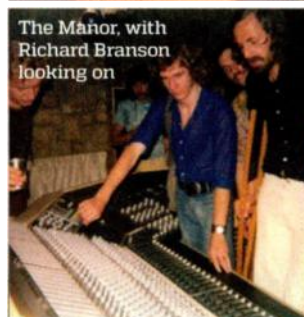
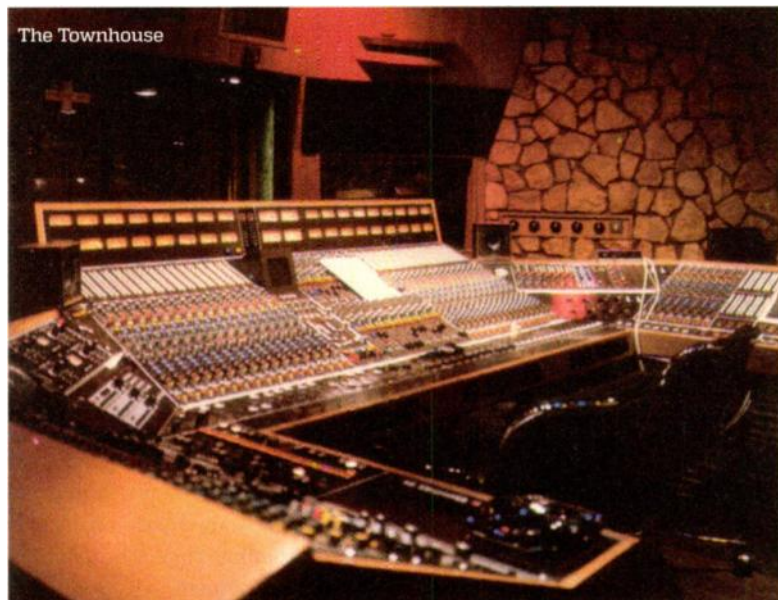
Liner notes. That's where it started for so many of today's engineers and producers. Later, in their teens, they would pick up a guitar or cart around drums, get a gig and wind their way into the studio, never to leave. But it really began with the music on the records of their youth; the "sound" of those records, as varied and dynamic as the range of recorded music, is what sucked them in.

When today's music fan waxes nostalgic about liner notes, it's typically about the artwork, the tactile sensation of vinyl or the sometimes-included lyrics. For many of today's engineers and producers, at least those who came of age in the 1960s and '70s, it was about the credits. There it was: Engineered or produced by people like Tom Dowd, Rudy Van Gelder, Cosimo Matassa, Bill Putnam, Phil Ramone, Bruce Swedien or Al Schmitt. There was a career in recording, the credits said.

With the British Invasion came names like George Martin, Glyn Johns, Andy Johns, Eddie Kramer, Geoff Emerick, Keith Grant, Roger Savage, Alan Parsons, Gus Dudgeon and countless others, on records by The Beatles, the Stones, Hendrix, Clapton, Zeppelin, Floyd, Queen, Mike Oldfield, the Who, Traffic, Procol Harum, the Small Faces, The Moody Blues, Deep Purple, 10cc, Steve Winwood and so many others. And there, buried in the credits, if you looked close enough, you would find that a great part of our musical heritage from the Golden Age of Recording, especially out of the UK, was recorded and mixed on a Helios console.

How and why an audio product takes on legendary status, coveted worldwide across generations, depends on so many factors: simple timing, available technologies and materials, getting it in the right artist's and engineer's hands, and, of course, a baseline of impeccable quality and musicality, among them. There were fewer than 50 Helios consoles built between 1969 and 1979, and only about 20 remain intact, the others parted out as modules long before channel strips or 500 Series units became popular. They are prized and they are not cheap. Of course they have been emulated, cloned, resuscitated and rebuilt in many ways and forms over the years. The legacy only gets stronger.

This, then, is the tale of three of the original desks, the Branson Boards, purchased in the mid- to late-'70s by Richard Branson for



his booming Virgin Records properties known as The Townhouse, The Manor and Manor Mobile. All three are in the U.S. today; all three remain intact—one very much alive and working every day at Shore-

fire Recording Studio on the Jersey Shore, another nearing the end of a two-year restoration in Nashville, and the third under plastic in a climate-controlled warehouse near Burbank, looking for a revitalization and a loving new studio home.

The Helios Legacy

Before talking about the desks themselves, a very brief history is in order. Dick Swettenham is Helios, plain and simple, though he would surely share the credit with others, including Keith Grant and his Olympic tech team, were he alive today. One of the great, yet largely unrecognized figures in professional audio, Swettenham was a British tech and engineer with reportedly as much character as genius. He came of studio age back when facilities built their own equipment, and he was at Abbey Road during the design of the REDD Series before moving to Olympic Studios in the mid-1960s and building a revolutionary new wraparound design (suggested by Keith Grant), with

electronics based around Lustraphone transformers and germanium transistors. Three were built for Olympic, and word got out quickly.

As the legend goes, Chris Blackwell wanted some of the Olympic magic for his relatively new Island Records, but as he was still an Olympic client, it was awkward. So he helped to finance a startup for Swettenham, who named the new company Helios. Blackwell would eventually order seven boards, though the first one built went into Olympic Studio 2.

Many more orders followed quickly, including for the famed Stones Mobile, Eric Clapton, Apple Studios, and the first of the Branson Boards, which he put into Manor Mobile. The early desks incorporated the revered and much-desired Type 69 EQ, which is considered the most musical of the designs and the first to be cloned; the later boards had the Type 78, considered the most versatile. Each desk was unique, many with a signature style or look; some even acquired nicknames like Red, the Love console or Big Brownie.

By 1979, Helios was out of business. In 1988, Tony Arnold, who had developed a penchant for the electronics and had been servicing those in use, began purchasing a few that came on the market but needed care, and with Swettenham's blessing acquired the trademark, re-opening Helios Electronics Ltd. in 1988. The first board Arnold purchased was the last one that Swettenham built, for Branson's The Townhouse studio in London. Today, that board is the centerpiece of Shorefire Recording Studio in New Jersey, and it's still working every day. We'll start there.

Townhouse to Shorefire

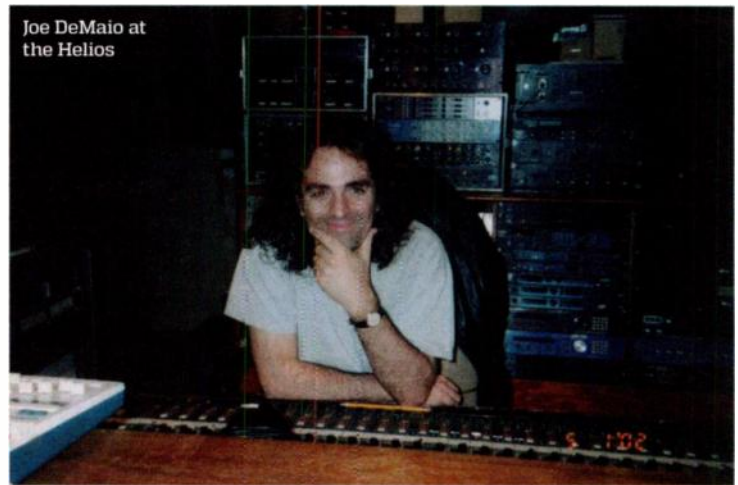
"I grew up in the '70s, so that was the soundtrack to my childhood, and I began to notice that Andy Johns' name was on all the records that I loved," says Joe DeMaio, owner/operator of Shorefire Recording Studio, a two-room facility in Long Branch, N.J., one block from the Atlantic. "Years later, a friend who knew Andy got us on the phone and he said it was these consoles, these Helios, that made the sound of those records. So I always kept that in the back of my mind, and around 1989, through a vintage gear dealer in the UK named Nick, I was able to buy two modules from the original Island board."

In many respects, DeMaio represents the heart and soul of recording in the U.S. over the past three decades. He read the liner notes, picked up guitar at age 9 and booked his first studio session at age 16 ("It was Shorefire," he recalls, with a laugh, "and it came out so bad!"). By his early 20s, in the early '80s, he was working on a 4-track Portastudio and engineering local bands, live and studio.

In 1995 he purchased the two-room Shorefire facility, which was founded in 1977 and had an MCI 600 board. He has made a go of it regionally, with a bit of national work, ever since. In the late 1990s, he got word that several Helios desks were purchased from Tony Arnold, and brought to America. And a Helios console was in storage and for sale at SST in nearby Weehawken, N.J. DeMaio picked the Townhouse desk, dubbed "Big Brownie" by Arnold, with its 40 inputs, 32-bus monitor section and two stereo returns.

"I bought it without hearing it, from storage," DeMaio says. "I was horrified. There was lots of dust, a couple modules had been ripped out, and somewhere along the line, someone had cut the wiring looms completely in half! I hooked up with a tech named Ken McKim and we got the right parts, got the power supplies back in shape and rewired it entirely.

"When we finally flipped it on, I was surprised at first; it didn't sound



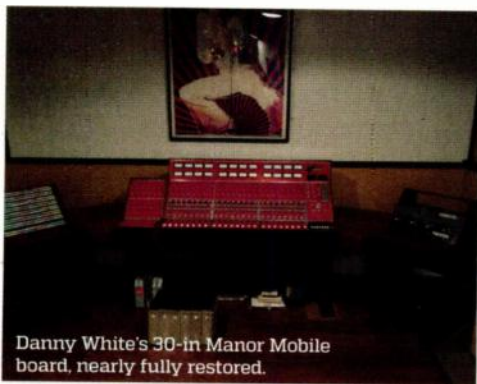
anything like the modules," he recalls. "It was more hi-fi sounding, more in your face, and it has this sweet top end, so smooth-sounding and open at the top, with a full-frequency spread across the bottom. Those are the different transformers. Not colored. Very transparent and open."

DeMaio has Pro Tools and plug-ins, vintage mics and new ones, boutique amps and modern pedals—a nice blend of the old and new across the board—but he most prizes his centerpiece, tracing its lineage from The Townhouse (1978-84), to The Who's Rampart Studios (1984-89, at the time owned by Virgin), then to Arnold, then to SST, and finally Shorefire. "I feel very lucky that I'm able to have this desk intact, not in parts," he concludes. "It has seen so many big records. Adam Ant did *Friend or Foe* on it. Queen did the soundtrack to *Flash Gordon* on it. Peter Gabriel, Phil Collins, so many others. And I just love the way it sounds."

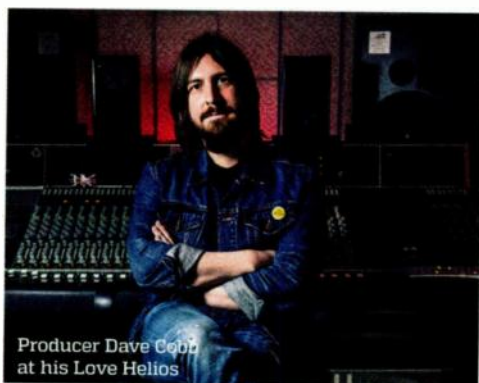
Manor Mobile to 16 Ton

Growing up in the tiny southern Indiana town of Palmyra in the 1970s, surrounded by cornfields, Danny White remembers Paul McCartney's *Ram* as the first time he was aware of "Helios," with full consciousness arriving with *Houses of the Holy* and the name Eddie Kramer. It would be another 35 years or more before he would actually see one of the desks in person.

Picking up the bass, playing in local bands, a Portastudio in the early 1980s recording demos and live gigs through Indiana, Ohio and Kentucky for 15 years—always keeping the dream alive. In the mid '90s he found some success with the Peacemakers out of Phoenix, and got the full recording bug while filling in at Vintage Recorders studio during his time



Danny White's 30-in Manor Mobile board, nearly fully restored.



Producer Dave Cobb at his Love Helios

off the road. When the studio closed, he bought the gear and opened Formula One studios. A few years later, in the early 2000s, he moved to Nashville and opened 16 Ton on Music Row.

Rather than buy a used SSL or bring his Trident A Range east, he decided to build his own tube-based one-off console with partners Steve Firlotte and Ian Gardiner. They called it Dymaxion. Nashville thought he was nuts, but it helmed hundreds of sessions over a decade on the Row. Firlotte and Gardiner went on to form Tree Audio.

"I've always been a tinkerer, fascinated by electronics," White says. "For me, the Helios was like the Loch Ness Monster of consoles. I'd heard of them all my life but never seen one. Then about three years ago a buddy of mine, producer Dave Cobb, called me and said, 'Look, I bought this Helios console from David Kean in Calgary. The Manor Mobile board, the first one Richard Branson bought. I'm gonna restore it.' Then he got really busy and couldn't wait for the restoration, so he bought the Love Helios from Kevin Kadish and put it in his Nashville studio. It's flat out killer. One of the best consoles I'd ever heard. Then Dave says, 'I'm not gonna restore this Manor Mobile console. Do you want to buy it?' Inside, I'm thinking, 'Absolutely.' Outside, I'm saying, 'No way am I doing that.' It needed a complete restoration. It would be expensive. Everything was there but the EQ modules."

A year later White bought the console and began a two-year, worldwide restoration effort, involving the team of Justin Herlocker in Nashville, Gareth Connor in the UK, Mark Owen of Elma Electronics in Switzerland, Kenny Varga for woodworking in Nashville, and David Kean of The Audities Foundation in Calgary, Alberta, who ended up loaning an original Manor Mobile module to replicate.

"We found the original transformer design, which had to be hand-wound in England," White explains. "The EQ inductor designs all had to be hand built. Find all the right switches. Re-create the woodwork. The footprint is identical to what it was, a 30-input desk in a mobile truck. But we have added removable wings for patch bay and outboard gear. This is 2015, and for me, it's about what works today."

The modules are now being final-assembled in England, the wiring is being done in Nashville, and the board should be finished this summer, bringing back the ghosts of AC/DC, the Grateful Dead at the Pyramids, Little Feat *Waiting for Columbus* and CSNY at Wembley, 1974. Meanwhile, after a decade on Music Row, White has closed 16 Ton and moved to Temecula, Calif., where he just launched Palomar Audio, the first product in development being a 500 Series unit based on the Manor Mobile Helios.

The Manor to ?????

Our final Branson Board, at 62 inputs and hailing from The Manor, is said to be the largest one ever built. For the past 15 years, it had been sitting under plastic, fully assembled, in a climate-controlled warehouse outside of Los Angeles. It resurfaced late last year when owner Dan Schwartz contacted Pepper Denny, one of the more colorful characters in retail with an attraction to rare and special-interest gear, and asked if he would help broker a sale and find the board a home, ideally intact.

Denny owns Pepper's Pro Shop in Nashville. He was trained in jazz bands and today is the drummer in Blooddrunk Shenanigans, still touring and recording. He's been a studio owner, recorded location sound for film, and he's had a 15-year history in retail with Westlake, GC and Vintage King. He's a hustler, no doubt, and he's an acquired taste, he freely admits. But he gets things done; he knows a lot of people and he knows how to connect those who are like-minded. On that first phone call with Schwartz, he warned him that a sale might take

awhile. It's an eclectic piece in a semi-tough market. There might be only 100 or so people in the world who would be considered serious customers. Schwartz asked him to come see it in January, after the NAMM show.

"It looks beautiful," Denny says. "Of course it will need to be serviced and recapped and everything because Dan told me it has been sitting there for about 15 years. But it's in great shape. Sixty-two channels of awesomeness! It's like a dream console, one that nobody thought still existed. It's like a museum-quality piece that should be used. It was not mass-produced. Dick Swettenham and his team built them by hand, to order. He designed it, and it's his mark on the console that makes them what they are. I want to sell it and then go in and record on it!" [Laughs]

The Manor Helios lived in the Branson studio until 1987, when it was decommissioned by Manor tech Paul Ward. It was later brought to the States by David Gordon, now of Josephson Engineering, who sold it to producer/musician Schwartz. The plans Schwartz had for it never quite materialized, as he spent a lot of time on the road. He ended up using only a few of the modules at home, building himself a small rack. After 15 years under plastic, the desk is ready to rock again. ■



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THE EMERGENCE OF 2.4 GHZ WIRELESS

BY THE MIX STAFF

In the crowded and shrinking wireless spectrum, manufacturers are looking for any opportunity to provide customers with options. Recently, following some leadership from Line 6, there has been a lot of migration to 2.4 GHz, home to WiFi and Bluetooth. There is limited range, fewer channels, and total dependence on line of sight, but at the same time systems are pretty much plug-and-play, it works around the world, and quality has increased.

While 2.4 GHz systems will not be found on major tours, they have caught on with touring regional bands, and they have found a home in House of Worship, corporate and event markets as well. Here, then, are a few recent offerings.



AKG

AKG's DMSTetrad digital wireless microphone system offers uncompressed audio transmission, superior RF performance and

128-bit AES standard encryption. The system features an integrated 4-channel mixer and an antenna front-mount kit. With 24-bit/48kHz audio coding, it provides uncompressed studio-quality transmission and a linear frequency response. Other features include the DSRTetrad Digital Stationary Receiver, the DPTTetrad Digital Pocket Transmitter and the DHTTetrad Digital Handheld Transmitter, available with AKG's patented D5 acoustics or as DHTTetrad P5 with standard dynamic capsule. Two sets are available: the DMSTetrad Vocal Set, including the DHTTetrad P5, and the DMSTetrad Performer Set, including the DPTTetrad together with a C111 L earhook microphone and the MKG L instrument cable. The DSRTetrad receiver can work with up to four channels of audio in parallel which can be mixed down directly to its balanced XLR sum output. The dynamic frequency selection ensures that only the cleanest frequency bands are selected for the connection between receivers and transmitters automatically.



AUDIO-TECHNICA

System 10 operates at 24-bit/48kHz and is designed for applications including houses of worship, live performance and corporate presentations. Frequency Diversity sends the signal on two dynamically allo-

ated frequencies, Time Diversity sends the signal in multiple time slots, and Space Diversity uses two antennas on each transmitter and receiver

to maximize signal integrity. Up to eight channels may be used together without any frequency coordination problems or group selection issues. System 10 receivers and transmitters offer an easy-to-read digital ID display. The single-channel System 10 includes the ATW-R1100 single-channel receiver and either a bodypack transmitter or handheld microphone/transmitter. The ATW-R1100 is a diversity digital receiver offering volume control along with AF Peak and Pair indicator lights. Multiple system configurations are available, with handheld vocal microphone/transmitters and UniPak body-pack transmitters designed for use with lavalier, headworn and instrument microphones as well as electric guitars.



BEHRINGER

Behringer offers several 2.4GHz wireless systems in the form of its ULM Series. The Ultralink ULM100USB 2.4GHz digital wireless microphone system comprises a dynamic handheld microphone with a microphone capsule for

dedicated vocal applications, and USB receiver. The ULM's receiver dongle is powered via a dual mode analog/USB digital audio interface with automatic sensing and can be connected directly to Behringer UFX, QX and Q Series "wireless ready" mixers, plus similarly equipped EuroLive active loudspeakers.



CLEARCOM

ClearCom states that its Tempest wireless systems feature Frequency Hopping Spread Spectrum technology that does not compete with signals from other 2.4GHz wireless devices, minimizing frequency coordination.

Further, with state-of-the-art Redundant Data Transmit (2xTX), which sends each packet of audio data twice on different frequencies, the system promises uninterrupted audio communications. Operating in the 2.4GHz band, Tempest2400 is available in 2- or 4-channel systems for indoor, outdoor and touring applications. The 2-channel Tempest2400 MasterBelt (CB-222) is designed for mobile production and offers advanced features, reliability and robustness of the Tempest2400 rackmount BaseStation. Embedded in the MasterBelt are the RF technologies available in the Tempest2400 family. Tempest2400 offers multiple modes of operations, with each mode providing varying level of communication flexibility and user capacity.

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(XD-V75, XD-V55 and XD-V35) feature sophisticated microphone modeling technology, promising to deliver the sound of the world's most popular wired mics. With 24-bit/10-20 kHz, compander-free performance, XD-V series digital wireless systems provide full-range audio clarity and license-free operation worldwide. The products include signal encryption, dynamic filters, gain control, channel scanning and more to handle complex applications. System components include the XD-V75 handheld or lavalier transmitter; XD-V75HS headset; XD-V75TR bodypack; XD-V35 handheld; XD-V35L lavalier; Relay V75-SC

14-channel digital wireless handheld transmitter; and Line 6 V75-40V live microphone.



RØDE MICROPHONES

In January, RØDE Microphones in Sydney, Australia, announced the RØDELink Digital Wireless System. RØDELink uses a next-generation 2.4GHz, 128-bit encrypted digital transmission sent on two channels simultaneously, providing a 24-bit/44.1k digital audio signal at a range of up to more than 100 yards. The RØDELink system comprises a number of receiver and transmitter options, and will be available in kits for specific audio solutions across film, newsgathering, presentation and stage use. The first system to be released, the Filmmaker Kit, comprises a beltpack transmitter, on-camera or beltpack receiver, and RØDE's broadcast quality Lavalier microphone. Using a series II 2.4GHz encrypted digital transmission that is sent on two channels simultaneously, RØDELink automatically selects the strongest signal and ensures your audio is as reliable and secure as a cabled connection.



SAMSON

Samson's Stage XPD1 Handheld USB Digital Wireless System comprises a wireless receiver built into a USB stick and the HXD1

handheld dynamic microphone transmitter. The Stage XPD1 Handheld offers more than 100 feet of wireless range (depending on the environment in which it is used), operating in the license-free 2.4GHz frequency band. The RXD1 Wireless Receiver is USB powered and features plug-and-play operation with no driver installation required; simply connect the RXD1 directly to a computer via USB. It's also compatible with iPads and iPhones (4S and later) using Apple's Lightning USB Camera Adapter or Camera Connection Kit (30-pin). The Stage XPD1 Handheld can also be paired with Samson's battery-powered Expedition XP106 P.A. system, as well as the larger Expedition XP1000 P.A. system.



SENNHEISER

Sennheiser's evolution D1 is a range of digital wireless microphone systems, offering solutions for vocals or for instruments. For multiple systems, receivers will synchronize themselves to accommodate up to 15 channels in an ideal RF environment. Transmitters and receivers auto-

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matically pair and select suitable transmission frequencies, while multiple D1 systems can automatically coordinate themselves. To allow co-existence with Wi-Fi, Bluetooth and other 2.4 GHz systems, the D1 receiver continually scans the RF environment and hop to another frequency if it detects any interference. Two channels are always available: the audio transmission channel and a redundant back-up channel, thus providing frequency and time diversity. Transmission reliability is further increased by fast-switching antenna diversity. evolution wireless D1 employs the aptX Live codec, and overall latency is said to be 3.9 milliseconds.

SHURE

The Shure GLX-D Digital Wireless Systems offer LINKFREQ Automatic Frequency Management. GLX-D analyzes the RF spectrum, determines the best available frequencies, and automatically deploys frequencies to the transmitter and receiver. Additionally, in the presence of RF interference, the GLX-D receiver and transmitter will seamlessly move



together to clean frequencies with no audio signal interruption. GLX-D Digital Wireless Systems offer an operating range of up to 100 feet indoors and up to 65 feet outdoors, and come in traditional bodypack and handheld configurations, including vocal, headset, and presenter systems, as well as a pedal-mounted guitar option. The durable Guitar Pedal Receiver features an integrated tuner and easily integrates into any pedal board. Each GLX-D transmitter is powered by a custom intelligent lithium-ion battery for up to 16 hours of continuous use at full charge.

SONY

Sony's DWZ Series 2.4 GHz digital wireless systems provide 24-bit linear PCM digital au-

dio and AES (Advanced Encryption Standard) 128-bit encryption. Packages include the DWZB30GB and DWZB30GB Digital Wireless Guitar Sets; DWZB501 Digital Wireless Instrument Set; DWZB70HL Digital Wireless Headset & Lavalier Set; DWZM50 Digital Wireless Vocal Set; and DWZM70 Digital Wireless Vocal/Speech Set. Using a space diversity reception system, the DWZ Series achieves stable transmission by drawing upon dual-antenna inputs/reception circuits. These units receive signal over two different paths and automatically select the stronger RF signal for output. Each DWZ series system receiver includes an XLR balanced output and two 1/4-inch unbalanced outputs that can be used to output audio to three destinations at once.



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STUDIO MICROPHONES

LARGE-DIAPHRAGM CONDENSERS

By STROTHER BULLINS

The mere image of a large-diaphragm condenser microphone defines the act of mainstream studio recording on a universal scale. Though every other component in the recording chain has evolved over the years, our adopted symbol—a relatively certain size and shape of microphone based on an approximately 1-inch or larger diaphragm in an almost-always side-address body—remains. It provides lively, comprehensive, quite accurate and full audio spectrum transduction, categorically with a most complete frequency response, usually covering the full range of human hearing. As such, LDCs are especially lovely on the human voice—the proven key component of popular music—and most other complex sound sources, too.

The LDC, featuring an externally charged capacitor via “phantom power” from its preamplifier, is most often cardioid in polar pattern, the most affordable configuration in its marketplace. Yet, multi-pattern models are most flexible in use, and “tube” (or valve amplifier) models generally impart some flattering tonal artifacts. When monitored by the performing artist, LDCs are said to often inspire better takes, reinforcing the widely accepted truth that they are worthy investments, alongside the ubiquitous workhorse dynamic mics.

I absorbed a lot about specific LDCs over the past decade as the Reviews Editor for *Pro Audio Review* magazine. We reviewed everything we could get our hands on. Month after month, not only did I use many of these mics, I edited reviews of nearly every brand’s newly released LDC, researching and discussing each of the procured models with our contributors who had applied them in professional, real world and practical applications. I didn’t retain all the thousands of pages of

the resulting facts and figures, but I did gain significant insight on the products that now define the LDC marketplace.

So without further ado, geek out with me on this “who’s who” among LDC manufacturers, as well as their latest, and greatest, hits. Among the “who’s who” are a number of manufacturers who did not introduce new models in recent years, while continuing to offer superb LDC mics—in some cases custom-built models—such as ADK, Bock Audio, Brauner, CAD, Charter Oak Acoustics, Flea Microphones, Josephson Engineering, JZ Microphones, Korby Audio Technologies, LeWilson Microphones, M-Audio, Manley Labs, Microtech Gefell, Pearlman, Peluso Microphone Lab, and Wunder Audio. Please visit their Websites to learn more about their offerings.

AKG’s most recent model is the C314 dual-diaphragm condenser, which debuted at the 2015 Musikmesse and is borne of C414 components combined with new proprietary technologies such as Overload LED Detection Display. Features include a 20dB pad, HPF and four polar patterns.

Audio-Technica’s relatively new flagship, the 50 Series, offers the cardioid AT5040, an “exceptionally large diaphragm” condenser featuring an innovative, pure-sounding four-part rectangular element.

The Audix USA SCX25A is a “lollipop” style cardioid featuring a 1-inch gold vapor capsule, impressively overbuilt machined brass housing and high-decibel handling (up to 135dB SPL).

BLUE (Baltic Latvian Universal Electronics) still offers its full historic LDC line, including the flagship Bottle—a modular system featuring nine interchangeable capsules, including a variety of LDCs—and newer LDC innovations, too.

Ear Trumpet Labs company founder Phil Graham creates his transducer artwork in Portland, Ore. In review, my colleague Rob Tavaglione says that ETL’s Mabel, a 3-pattern



AKG C314



Audio-Technica AT5040



Audix USA SCX25A



BLUE Bottle



Ear Trumpet Labs Mabel



Inner TUBE Mag Mic

LDC with dual 1-inch diaphragms, “is definitively one of those rare pieces of effectively artsy engineering that inspires performances and possibly shortens lengthy days” in the studio.

InnerTUBE Audio offers the MM-2000 Mag Mic, a tube LDC that employs the body of a black, red or blue 2 D-cell Mag-lite inspired by their work with Neumann U 87 and 451 tube mic retrofits. It’s truly savvy employment of an already existing sturdy, shockproof and “acoustically dead” housing. The MM-2000 is a continuously variable patterned, 12-pound model featuring 1-inch dual diaphragms, “premium European” capsule and a hand-selected 6922 electron tube.

Recently, Rob Tavaglione and Russ Long visited Studio at the Palms in Las Vegas for a first audition/listen to Lauten Audio’s latest LDC, the Eden LT-386. Rob shares of his initial pre-review impressions: “It’s warmed by its tube and transformer; versatile thanks to its voicings and filters; and physically secure thanks to an integral, semi-permanent shock-mount.”

Vienna, Austria’s Lewitt Audio was founded by Roman Perschon, whose line of condensers is called the LCT Authentica Series, offering seven LDCs with modern features such as illuminated buttons and automated attenuation with clip detection and history settings. Two LCT Authentica models, including the flagship LCT 940 with dual FET and Tube modes, feature a unique glowing tube built into the bodies.

Marshall Electronics’ MXL microphone brand, with more than 30 LDC models, offers much value, performance and impressive component- and

build-quality. In reviewing the Genesis FET LDC last year, Rob Tavaglione shared, “Bottom line, it’s clean and quick, forward but not pushy, with top-emphasis yet not bottomless. And for \$400? It’s a bargain-priced, worthy choice.”

Nashville-based Miktek Audio has a rabid pro-level fan base for its premium yet reasonably priced LDC range. Two new models, C1 Cardioid FET and flagship CV3 nine-pattern Tube LDCs, are both designed and built in the U.S., available for \$599 and \$999 street, respectively.

David Royer’s Mojave Audio brand ships Jensen transformers and NOS (New Old Stock) tubes to a Chinese factory Royer had been working with for 15 years, where they are paired with capsules and bodies selected by David and company. The results include LDCs of amazing value that are quality-controlled, burned in, and personally listened to by David back in Burbank, post-build. To date, Mojave offers four LDCs including multipattern FET, cardioid FET, continuously variable tube, and cardioid tube models.

Hardly needing an introduction, Neumann arguably holds the record for the most famous and respected condensers in our field, continued in LDCs such as the modern-day U 87 Ai, U 47 fet, TLM 67, M 150 Tube, among others. Neumann has also provided lower price-point LDC offerings in its TLM 102 and TLM 103 cardioid-only models and innovative digital mic models via the flagship D-01 and more affordable TLM 103 D.

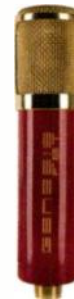
Russia’s Oktava was founded in 1927 and remains one of the oldest microphone brands in the world, though the company only started officially



Lauten Audio



Lewitt Audio



Marshall Electronics



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exporting its products in the mid-1990s. Presently there are four Oktava LDC models—ranging from MK-101 wide cardioid to the new MK-220, a twin-diaphragm multipattern model—currently available to the U.S. market.

Swedish manufacturer **Pearl Microphones** offers LDCs based on rectangular capsules; their shape allows them to be more narrow and longer, providing an unusually large capsule surface area with a low profile. Colleague Rob Tavaglione recently reviewed Pearl's latest LDC, the Priority, noting, "The sonic differences between rectangular and circular diaphragms are indeed audible, significant and offer utility to those who have mic placement down to a science."

Australian pro audio manufacturer **RØDE**'s LDCs include the exceptional-value NT1-A cardioid, a best-selling RØDE with notably low self-noise priced at \$229 street, up to the Classic II, a limited edition cardioid model featuring a 6072 twin triode tube.

sE Electronics' latest—another collaboration with the illustrious Rupert Neve—is now sE's flagship LDC. It's the RNT, "Rupert Neve's first and only tube microphone," based on a custom-manufactured, high-SPL handling capsule, and a hand-selected, low noise 12AU7 tube, paired with a nine polar-pattern floor power supply.

Sennheiser unveiled the MK Series of LDCs a few years ago. I reviewed the first model, the amazingly priced cardioid MK 4 (\$299 street), finding it to be an extremely fine bargain, actually built in the company's German factory alongside its far pricier relatives. Meanwhile, I just received the latest MK Series mic for review—the MK 8, a dual 1-inch diaphragm LDC with five polar patterns. Priced at \$699 street, I can't wait to tear into this one.

Shure released its first condenser microphone in the 1930s. However, it's only been within the past 15 years that Shure has pursued the studio recording microphone market, with great results; the company's KSM Series boasts some truly great LDCs at reasonable prices. Its flagship, the KSM44A (\$999 street), is a multi-pattern, dual-diaphragm model with characteristics rivaling LDCs costing hundreds of dollars more.

English microphone company **Sontronics** offers distinctively designed, equally great-sounding LDCs. Its latest LDC is the Aria, a buzzed-about cardioid model featuring a 1.07-inch capsule and hand-selected



Oktava MK-220



Pearl Microphones
Priority



RØDE Classic II



sE Electronics RNT



Sennheiser MK 8



Shure KSM44A



Sontronics Aria



Sony C800-G

REDD.47 MIC AMPLIFIER



Sterling ST6050



Sterling ST6050



Soyuz SU-017

12AX7/ECC83 tube.

Sony offers two LDCs: the cardioid C38B and the illustrious, legendary cardioid/omni C800-G tube. At more than \$11k, the wholly modern C800-G is vintage LDC priced and, if you have the budget, worth it, considering its blend of premium performance and justifiable prestige.

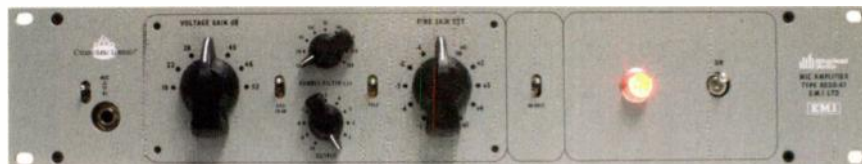
Soyuz Microphones' SU-017 is a "bottle-style"

cardioid model with eight optional interchangeable capsules. Based in Tula, Russia the brand remains in the same city where Russia's oldest continuously working microphone factory is located. Soyuz Microphones are distributed in North America by Southern California firm MV Pro Audio.

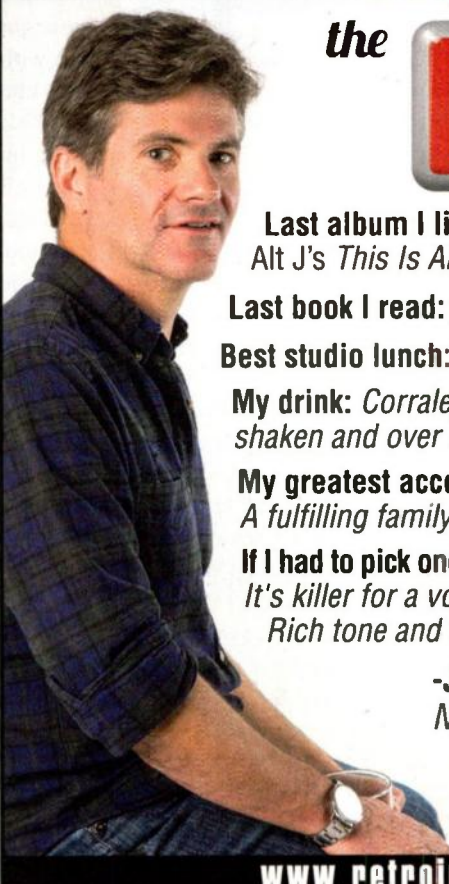
Guitar Center's private label microphone brand, **Sterling**, was born of impressive pedigree. The first few models employed designs and technology developed by Aspen Pitman for Groove Tubes, all of which were quite impressive microphones for the money in the late '90s/early 2000s. Sterling's flagship model, the cardioid ST6050, was voiced by Grammy Award-winning engineer Allen Sides.

Telefunken Elektroakustik in South Windsor, Conn., honors its illustrious namesake by building reverent modern-day remakes of its vintage LDCs, along with new, "ground-up" offerings, too. The company's Diamond Series features ELA M 251, U47, U48 and C12 models, while the R-F-T line features unique designs based on more affordable amalgamations of the designs. ■

Strother Bullins is NewBay Media's Reviews Editor, AV/Pro Audio Group. Reach him at sbullins@nbmedia.com.



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the **RETRO**

Last album I listened to:
Alt J's This Is All Yours

Last book I read: *The Match*


Best studio lunch: *Silly Goose in East Nashville*

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-Jacquire King (*Kings of Leon, Norah Jones, Of Monsters and Men*)



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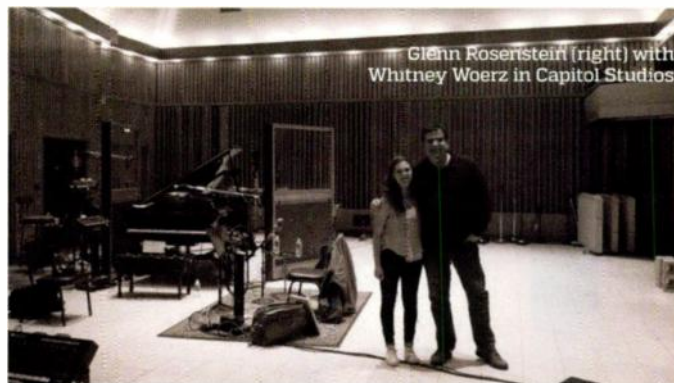
From left: Dave Cobb, Sturgill Simpson, Juanita Copeland, Vance Powell



Sound Emporium has recently acquired an API Legacy Plus console for the studio's B room, as well as a new vocal booth in the control room. Additionally, Sound Emporium added Z Studio (16 x 18 with a 7 x 4 booth), which is "our awesome little vibey mix/overdub room that is booked nonstop these days," says Juanita Copeland, studio general manager. "We've done a lot of awesome new things to the Sound Emporium, which is why we are not just surviving but thriving these days."

Some of the recent artists who have worked at the studio include country singer-songwriter Sturgill Simpson, who tracked for an upcoming release in the A room, with Dave Cobb producing, Vance Powell engineering and Mike Stankiewicz assisting; indie soul/jazz band Lake Street Dive worked on their upcoming release in A, with Cobb producing, Darrel Thorp engineering and Stankiewicz assisting; singer-songwriter/guitarist Jason Isbell tracked and did overdubs on new material in A with Cobb producing, Matt Ross-Spang engineering and Stankiewicz assisting; Nefesh Mountain Jewish Bluegrass band recorded tracks in A, with Eric Lindberg producing, Adam Taylor engineering and Amanda Miller assisting; Willie Nelson did a track in A for the upcoming Billy Joel tribute record for Sony, with Buddy Cannon producing, Tony Castle engineering and Stankiewicz assisting; nearly all of the tracking and vocals for season three of ABC show *Nashville* were done in A and B rooms, and vocals in Z Studio, with producer Buddy Miller producing, Mike Poole and Gordon Hammond engineering, and Stankiewicz and Zack Pancoast assisting; songwriter Javier Mendoza tracked and did overdubs in B room, with Toby Wright producing and engineering, and Miller assisting; and Sam Bush produced his own project in B room, with Taylor engineering and Miller assisting.

Glenn Rosenstein: Finding Balance



Nashville-based producer/engineer Glenn Rosenstein has been busy mixing artists at his own facility, Skylight Studio, as well as in other studios in the Nashville area and across the country. He recently finished producing two tracks at FAME Recording Studios in Muscle Shoals for San Francisco-based singer-songwriter Jenna Lavoie's debut album, and is currently producing albums for Whitney Woerz, Wes Sheffield and Blooddrunk Shenanigans.

Rosenstein worked with 14-year-old Broadway actress Woerz at Capitol Studios in Los Angeles to record her first album, for release later this year. They just finished pre-production and will start tracking at Blackbird Studios in Nashville this month.

Rosenstein is also co-producing Mississippi roots-rock artist Wes Sheffield's latest EP with Muscle Shoals icon Jimmy Johnson at Blackbird. "I've worked with Jimmy for years," Rosenstein says. "He hired me about 28 years ago to mix a Gary Rossington album and we've gone from there. It's an honor to be working with him again, and with such a talented artist." For this EP, Rosenstein worked with musicians Chad Cromwell, Tom Bukovac, Steve Mackey and Kevin McKendree, as well as engineer Jeff Balding.

Nashville-based post-punk band Blooddrunk Shenanigans tapped Rosenstein to produce their latest offering, *Falling Over*. Released last year to international critical acclaim, they will begin pre-production later this month for their newest recording.

Although busy juggling multiple projects—as well as overseeing a private equity and M & A firm—Rosenstein, a New York-native and 27-year Nashville resident, is content trying to balance everything on his plate. "I try to not make any facet of my life suffer. I deeply appreciate it all. I don't want to give up any of it—especially recording. That's been my focus for many years and continues to be. I enjoy doing as much as I can."

Other recent projects that have kept Rosenstein busy include mixing two songs, including "Stageline," for 19-year-old singer-songwriter Andrew St. James' second album, *The Shakes* (produced by Jim Greer, one half of the Rondo Brothers); and mixing six tracks for The Soft White Sixties' latest release *Get Right*, also with Greer producing. "I've mixed about seven projects with Jim," Rosenstein says, "and we've only met once. He's one of the most talented guys I know. We've got a system down where we do a great deal of Skype and live streaming of mixes, and it works."

Some of Rosenstein's favorite go-to gear includes Retro Instruments ("I have virtually everything they make; I love Phil's gear"), Acme Audio ("They make one phenomenal compressor"), and Tree Audio ("Very cool analog tube-driven stuff").

A Note From Memphis: David Porter's 'The Classics' at Stonebridge Mastering

Memphis-based mastering engineer Gebre Waddell recently mastered producer/songwriter David Porter's project *The Classics* at his Stonebridge Mastering studio. Porter is best known for songwriting credits including Sam & Dave's "Soul Man" (1968 Grammy winner), Mariah Carey's "Dreamlover" (1993 Grammy nominee), and Will Smith's "Gettin' Jiggy Wit It" (1999 Grammy winner), among many others.



by major film and commercial producers who wanted to do national commercials with instrumental versions of the songs. All of these factors played a role in the motivation to record those songs.

Some songs on *The Classics* include Sam & Dave's "Soul Man," "Hold On, I'm Comin'," "You Got Me Hummin'," and "Wrap It Up" (which was later covered by both The Eurythmics and The Fabulous Thunderbirds). For Waddell, this project gave him insight into an artist who has impacted the foundation of American music. "Memphis is a city known to be at the root of music, and David is at the roots of the city," Waddell says. "Performing my craft on the project, in my hometown, felt like being accepted into the ranks from which my inspiration in music began. David's classic work is something I grew up with. He gave me valuable feedback and listening impressions that shaped my decisions."

Waddell and Porter worked with tracking engineer Boo Mitchell and mixing engineer Kerry Kernan.

Mitchell (John Mayer, Rod Stewart, Bruno Mars' "Uptown Funk") recorded *The Classics* at his legendary Royal Studios. "We recorded it in an old-school manner, maybe four to five mics on the drums," Mitchell says. "It was really cool to try and emulate the songs. There was a xylophone/bell sound where we tried to make it sound like the original, so we put one of the synthesizers through a guitar amp and miked that. We tried to make it sound like the original recordings as much as possible—how we miked the horns, drums, everything. It was one of my favorite sessions."

Musicians on *The Classics* include legendary drummer James Robertson and Stax greats Ray Griffin on bass, Lester Snell on keys, and Michael Toles on guitar.

Kernan has been mixing projects for Porter over the past three-plus years. "The opportunity to mix some of David's classic and iconic songs was a real honor and treat," Kernan says. "On this project, David wanted the mix to have a more modern sound, as he has had requests from film/commercial producers as well as artists who want to sample the songs for use in their productions."

While Waddell has also expanded his skills into software development (he designed the Brainworx bx_refinement plug-in for UAD-2 and Apollo) and writing (he wrote *Complete Audio Mastering: Practical Techniques*, McGraw-Hill/TAB Electronics), he has no intention of leaving his first love: mastering. "Someone asked recently if I would continue in mastering, and I said mastering is something I will always do. Experiences like working with David Porter give me perspective and experience that shapes not just my mastering, but also my software development in ways that are extremely rare in programming."

LANGHORNE SLIM AT BOMB SHELTER

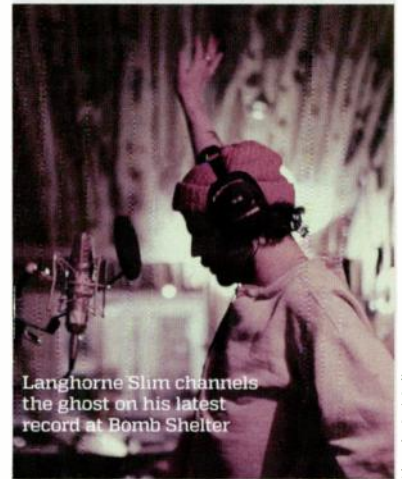


Photo by Jewi Sailler

Studio owner and producer Andrija Tokic just finished tracking and mixing for the yet-to-be-released Langhorne Slim record. The album was done completely analog on the studio's 2-inch MCI JH-16 and MCI console. "There were lots of tape edits between takes with the trusty razor blade!" Tokic says.

Other recent local Nashville projects at Bomb Shelter include Fly Golden Eagle, Majestico, Clear Plastic Masks and Alana Royale. Tokic also recorded an album in Spain for Josephine Foster on a Tascam 424 MKIII 4 track!

Bomb Shelter has also added Billy Bennett (MGMT, The Whigs, Drive-By Truckers) to its staff as a producer and engineer to take on the extra load. Bennett has been working on a variety of projects, including Los Colognes, Spanish Gold and Blank Range.

Tokic says the studio also now has an A and a B room, with MCI JH consoles and tape machines in both. "Tape is used here everyday in some capacity, with the occasional Pro Tools session when called for," he says.

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SESSIONS: NASHVILLE



Engineer Cameron Henry using the studio's Neumann VMS70 lathe.

Acoustic/vocal trio Applewood Road was in the studio with producer Darrel Sheinman and engineer Chris Mara...Southern rockers The Vegabonds were with producer/engineer Tom Tapley (Pearl Jam, Bruce Springsteen, Sugarland)...Alt band The Casual Pleasures were with producer Mathew Fulper-Smith and engineers Mara and Cameron Henry...Vinyl mastering of The Black Keys' "Rubber Soul" reissue took place at the studio, with engineer Henry...Vinyl mastering of Weezer's "Everybody Needs Salvation" took place with engineer Henry...The studio also added the following new equipment: Focal SM9 monitors, RCA 44 and RCA 74 mics, and API mic pre's are being added to the vintage MCI JH428 console (retaining original mic pre's, allowing engineers to toggle between API and MCI mic pre's with a flick of a switch).

WELCOME TO 1979



Tracking session for Big & Rich, with Taylor Pollert (left) and Sean Giovanni.

Country music duo Big & Rich worked on "Look At You" (from the album *Gravity*) with engineers Sean Giovanni and Nick Brophy (Big & Rich also produced)...Country artist Rick Monroe worked on his single "Fires Out," with Giovanni producing and engineering, and Taylor Pollert also engineering...Country duo Striking Matches worked on a live recording and video, with Giovanni producing, John Constable engineering and Make It Pop Creations on video production...Country music artist Brandon Chase worked on his single "Hope You Get Lonely," with Giovanni producing and engineering, and Pollert and Brophy also engineering...Music beds for the Kix Brooks American Country Countdown were produced by Brooks, Giovanni, Charlie Pennachio, and DJ Sinister, and engineered by Giovanni and Adam Engelhardt...The Country Fried Mix Syndicated Radio Show was produced by Pennachio and DJ Sinister, and engineered by Giovanni...The Balcony TV Nashville Music Showcase was produced by Giovanni and engineered by Constable...Pensados Place Nashville Gear Expo Videos were produced by Giovanni and engineered by Constable, with video production by Hy Def Imaging.

THE RECORD SHOP



Prime Cut Studio owner Daniel Dennis

Country songwriter/vocalist Karyn Rochelle worked on her self-titled album with producer/engineer Daniel Dennis (Rochelle also produced)...Singer-songwriter Daniel Crane worked on *Sure Is Sweet* with producer/engineer Dennis (Crane also produced)...Award-winning Native American artist Michael Jacobs worked on *Resisting Shadows* with producer/engineer Dennis (Jacobs also produced)...Singer-songwriter Beth Crowley worked on her debut album *Porcelain Heart* with producer/engineer Dennis (Crowley also produced)...Country/folk duo Paper Trails worked on *Beautiful Faces* with producer/engineer Dennis (Paper Trails also produced)...Skylar Laine (finished in fifth place on season 11 of *American Idol*) is working with Dennis on her debut album, set for an early summer release.

PRIME CUT STUDIO



Hilltop Studio A

Hilltop's Studio A tracking room has been upgraded with an SSL 9000 analog console, and the smaller Studio B overdub/mix room now has an Avid C|24 control surface...Grammy-nominated country artist Tim Menzies recorded in B room with Ben Isaacs producing and Mark Capps engineering...Ronny Reno produced overdubs and final mixes on a new album by bluegrass singer Mac Wiseman and country legend Merle Haggard in Studio B with Steve Chandler engineering...Grammy Award-winners Charlie Cushman and Johnny Warren finished their album in Studio A with mastering by chief engineer/manager John Nicholson... Nicholson produced a pair of new albums by Elvis impersonator Shawn Klush featuring a couple of the original "Memphis Boys," as well as albums by Bill Reid, Chris Cox, Brittany Jean and country rocker Angelo Tristan Band from the UK.

HILLTOP RECORDING STUDIOS



Studio owner Lij Shaw

THE TOY BOX STUDIO

Nashville-based band Twiggs was with studio owner Lij Shaw, who produced, recorded and mixed the new material (Twiggs also produced)...Swedish artist Anders Elfström was with producer Lex Price and engineer Shaw... Indie band The Autumn Defense (includes members of Wilco) worked on the *Spirit of*

Akasha soundtrack, with Shaw engineering and the band producing...The David Mayfield Parade worked with engineer Chase Colley...Country group Jared Daniels Band worked on the track "All I Need," with Shaw producing and engineering... Folk-rock artist Jennifer Knapp worked on the album *Set Me Free*, recorded by Shaw, produced by Jacob Lawson and mixed by Joe Costa...Indie-rock band bree worked on *Happier Place*, with Michael Gigante and Tyler Tuohy producing and Shaw recording.



(L to R): Tommy Putnam, Jacquire King, Lowell Reynolds Tyler Ritter, Wes Bailey, Spencer Thomson

BLACKBIRD STUDIOS

Singer-songwriter John Paul White worked on tracks with producer Dave Cobb and engineer Eddie Spear in Studio A...Indie prog-rock band Moon Taxi worked on tracks and overdubs with producer Jacquire King and engineer Lowell Reynolds in studios D and E...Don Henley worked on mixing with producer Stan Lynch and engineer Jeff Balding in Studio F. Henley also produced...City and Colour worked on tracks and overdubs in Studio D and B, with Dallas Green producing and Karl Bareham engineering...Country artist Jake Owen worked on tracks in Studio D with producer Ross Copperman and engineer F. Reid Shippen.



Willie Nelson at Ocean Way Nashville

OCEAN WAY NASHVILLE

All of the following projects were done in Studio A on the Neve 8078 console and in Pro Tools 10 HDX: Lionel Richie was with producer Mark Wright, engineer Greg Droman and assistant engineer Josh Ditty... Willie Nelson was with producer Fred Foster, engineer Pat McMakin and assistant

engineer Ditty...Blake Shelton was with producer Scott Hendricks, engineer Justin Niebank and assistant engineer Drew Bollman...5 Seconds of Summer was with producer John Feldmann, engineer Zakk Cervini and assistant engineer Jasper LeMaster...Composers John Debney and Bruce Broughton, engineer Nick Spezia, and assistant engineer LeMaster worked on scoring for the History Channel's miniseries *Texas Rising*.



The Lodge Studio at Dark Horse Recording

DARK HORSE RECORDING STUDIO

Christian-rock band MercyMe tracked a new album with producers Brown Bannister and Ben Shive...Rock band RED wrote and tracked the new album *Of Beauty and Rage* with producer Rob Graves...Charly tracked and mixed a new album with producer Chris Rodriguez and engineer Dave Hagen... Jared Anderson tracked his new album with producer Seth Mosley and engineer Mike X O'Connor...Christian-pop duo For King & Country worked on *Run Wild. Live Free. Love Strong.* with producers Mosley and Matt Hales, engineer O'Connor, and vocal editor Hagen...Engineer Pete Karam mixed the movie soundtrack *Jersey Boys: Music From the Motion Picture and Broadway Musical.*



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DYLAN, CASH AND THE NASHVILLE CATS

Country Hall Honors Golden Age of Non-Country Sessions

BY BARBARA SCHULTZ



Rick Diamond. Getty Images for the Country Music Hall of Fame and Museum.

Attendees enjoying the "Dylan, Cash, and The Nashville Cats" Exhibition at the Country Music Hall of Fame and Museum.

When Bob Dylan brought some of his *Blonde on Blonde* sessions to Columbia Studios, Nashville, he spearheaded a pro-Nashville movement among non-country artists. For nearly a decade after his first visit, Music City saw a steady stream of high-profile artists, including Neil Young, Joan Baez, Linda Ronstadt, Simon & Garfunkel and others, who also wanted to work with Nashville's top-notch session musicians.

Also fueling this trend was the short-lived but influential *Johnny Cash Show* TV program (1969-1970). Cash's series was filmed at the legendary Ryman Auditorium, and the Man in Black's relationships with singer/songwriters in diverse genres lured artists from James Taylor to Eric Clapton to Nashville. Dylan and Joni Mitchell were Cash's first TV guests.

Beginning this past March, the Country Music Hall of Fame and Museum is paying tribute with the exhibit "Dylan, Cash, and the Nashville Cats: A New Music City," featuring historical photos, artifacts and music.

Session greats who are featured in the CMHOF exhibit include guitarist Fred Carter Jr., steel guitarist Grady Martin, harmonica player Charlie McCoy, pianist Hargus "Pig" Robbins, and fiddler Buddy Spicher. "Nashville Cats" also points to game changers such as pianist/producer David Briggs and bassist/producer Norbert Putnam, who co-founded Quadrafonic Sound, where Young recorded *Harvest* and Dobie Gray cut his crossover smash "Drift Away." And these are just a few examples.

The timeline of the exhibit tops out in 1974, depicting Paul and Linda McCartney's legendary six-week stint in Nashville. In July of that year, the McCartneys brought their family and Wings (drummer Geoff Britton, rhythm guitarist/vocalist

Denny Laine and lead guitarist Jimmy McCulloch) to town for rehearsals at Curly "Junior" Putman's farm in Lebanon, Tenn., where the McCartneys were staying. But as we now know, their visit yielded several recordings.

"Their accommodations had been arranged through Buddy Killen, president of Tree Publishing at that time," recalls Ernie Winfrey, the engineer who recorded McCartney's Nashville sides. "Buddy acted as host and guide for them, and being the businessman he was, he made sure they knew he had a recording studio [Sound Shop]. While I was doing vocal overdubs one evening with one of Buddy's artists, Paul and Linda walked in unannounced. I was quite nervous and had no idea what to expect, but between takes, they chatted with Buddy and myself and I quickly felt at ease. They said they felt very comfortable in the studio and made arrangements with Buddy to block out the next two weeks."

Winfrey had been on staff at Sound Shop—then equipped with an MCI JH24 console, and Scully, Ampex and Studer tape machines—since the studio's inception in '71, and had seen a huge variety of artists come through, thanks to Killen's far-ranging connections and tastes. "We recorded Millie Jackson, who was a big R&B artist at that time, and of course from 1972 on we did all of Joe Tex's music," he says.

Winfrey worked on seven songs with Paul McCartney and Wings. A few tracks had been started elsewhere but were brought to Sound Shop for the band to play with and add parts ("Hey Diddle," "Bridge on the River Suite," "Wide Prairie"). But others started in Sound Shop: "Eloise," which was tracked with Chet Atkins on guitar and Floyd Cramer on piano; "Junior's Farm," the tribute to the McCartney's Nashville host; and "Sally G."

"Sally G. is featured on the Country Music Hall of Fame's compilation CD from the artists in the exhibit," Winfrey says. "It was supposedly inspired by Paul's trip to Printer's Alley with Buddy. All of Wings played on this one, except Linda, who did feature very prominently on the harmonies. Buddy got fiddler Johnny Gimble and steel player Lloyd Green for this song."

Winfrey loaned several mementos from his McCartney sessions to the CMHOF. Displayed in the exhibit are several of his personal photos (including the one above), a postcard that the McCartneys sent him from England, and a record jacket from "Walking in the Park with Eloise."

"It's funny, even today, every time I'm introduced to someone, it's appended with 'The Guy Who Recorded Paul McCartney,' and I guess that will be my major claim to fame forever. But I don't object to that. If that's the way I'll be recognized, that's fine with me." ■

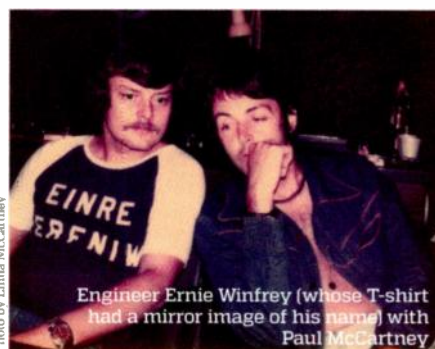


Photo by Linda McCartney

Engineer Ernie Winfrey (whose T-shirt had a mirror image of his name) with Paul McCartney

MICKY JACK CONES

Stars Aligning

BY BARBARA SCHULTZ

Producer, mixer, recording engineer, studio owner, musician, songwriter... Mickey Jack Cones is a hands-on dynamo, with copious enthusiasm and creative ideas; the technical expertise to make things happen; and a proven track record of contributing whatever is necessary to take artists including Dustin Lynch, Joe Nichols, Jason Aldean, Trace Adkins, Kellie Pickler and others to the top. Here, the Texas native shares the benefit of his experience building a hitmaking career in Music City.

What were things like for you when you first came to Nashville?

I moved here in '96 and started engineering for David Malloy's publishing company. I moved here to be a producer. I had been in bands since I was a kid, and I thought, "I've been perfecting my craft for years. I'm going to show them what I know."

But I learned quickly at that company, where I was nose to nose with some of the top musicians in Nashville, that I had a lot to learn about etiquette in the studio and relationships. I was saying, "No, play this," and grabbing guitars and being too bossy.

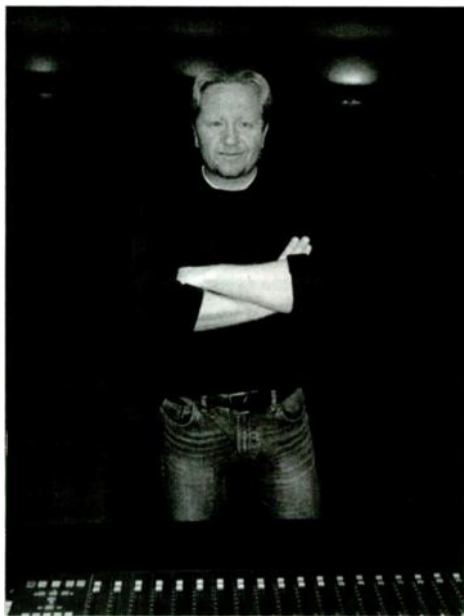
On some of the big records you've done you were the recording engineer, or the mixer and backing singer. These days, do you only take projects where you're the producer?

Last year I had three Number Ones in 12 months, and that was a pivotal time for me. After that, the phone calls were more like: "Whatever you did on that, we want you to do that for us." So rarely at this point am I throwing on just the engineering hat, or just a background vocal or guitar-playing hat. But when I'm producing, that's the extra bang for the buck that people get.

That said, if it's best for somebody else to mix, I will go that route. If it's better with somebody else singing background, I'll go that route. But for example, on the Dustin Lynch record [*Where It's At*], I played 95 percent of the guitar solos and sang 95 percent of the backgrounds, and I mixed it. It's not because I had to, but sometimes when you're in the studio, it allows more experimentation if the background singer's not on the clock.

What are some of your favorite Nashville studios?

I've been in some of the great rooms—Sound Kitchen, Sound Stage,



Ocean Way, Blackbird. And I would mention OmniSound, too. They have a great API console; the drums sound really tight. But in 2009 David Malloy called me and said, "Do you want to buy Westwood Studios?"

I said, "No, I don't want to be a studio owner," but still we looked at it. It's a log cabin on the outskirts of Berry Hill. It's a legendary studio: Blake Chancey produced the Dixie Chicks there, and Buddy Cannon had done Kenny Chesney. But it needed a lot of work. It's got a great sounding tracking room, but it's rustic. And I have kind of a Type-A personality; I like things to be clean and tight. I said, "We better get a good deal, because we're going to put a lot of money into it."

We ended up buying it and we brought in Marti Frederiksen, who is an incredible producer/writer/publisher. We had the studio together for four years, and then I bought them out.

What work did you do Westwood?

We updated the control room with a more contemporary vibe, but we kept the tracking room's rustic vibe. You get nice diffusion from the logs. That's a very unique sound for drums, strings and horns, but it's not so unique where you can't dial in any sound you need.

The studio came with a 48-channel Neve V Series, but after two years we were getting killed by the maintenance and electricity costs. We replaced it with an SSL AWS900+. It's transparent but it's got the flippable E and G EQs. You have 24 channels that all have pre's. It fit our needs.

What are some of the albums you've made in your studio?

I've made quite a few at Westwood. All of the Dustin Lynch and Joe Nichols songs that I produced were recorded and mixed here. I'm also going in to cut sides on Trace Adkins next week.

How do you know whether a project is right for you?

It really has to be soulful to me. I don't mean it has to sound like Marvin Gaye. Hank Williams was soulful. They have to believe in themselves and have emotion behind it. If somebody has all that and they have talent, and if we're in agreement about songs, it's like the stars align. That's what happened with the Dustin Lynch record, and now he has his first Number One. I love it when that stuff happens. ■

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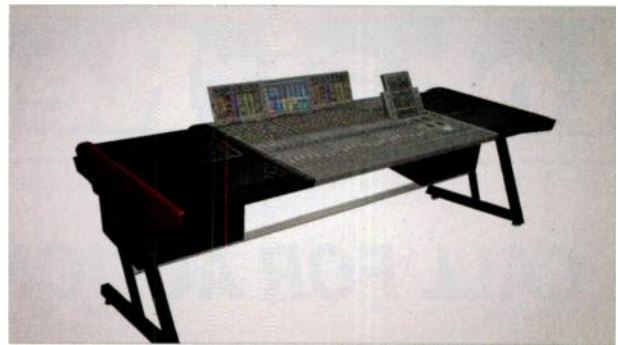
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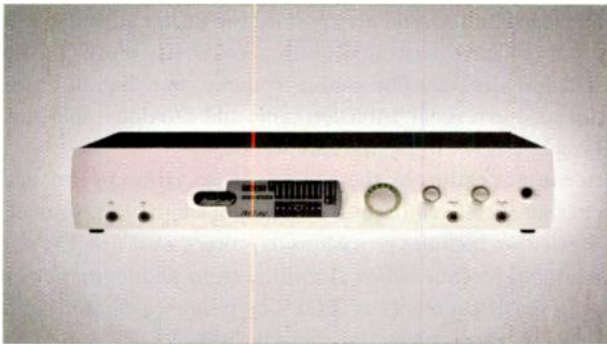
RETRO INSTRUMENTS 176

An absolutely fabulous recreation which is better than the original because it is completely reliable. – Ryan Freeland



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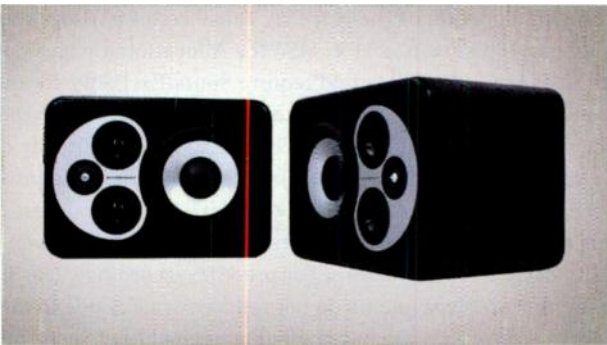
PRISM SOUND ATLAS

Ultra-high fidelity 8-channel 192kHz interface with 8 killer pres, award-winning clock, and a host of great features



UNIVERSAL AUDIO APOLLO BLACK

All-new Apollos feature next-gen conversion for stunning sound, plus convenient "mix and match" operation of up to 4 units



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A CALL FOR ACTION



By Gino Robair

If you're not at the table, you're on the menu." That's an oft-heard quote in political advocacy, but it aptly describes the fight that music creators are involved in over fair compensation for the use of their work. Broadcasters and content delivery companies regularly take advantage of outmoded intellectual property laws to unfairly exploit the assets of artists, producers and engineers.

But each of us can do something to help change the situation. In fact, now is the time to get involved because, frankly, you and your work are already on the menu.

It is with this in mind that I took part in this year's Grammys on the Hill, the Recording Academy's annual advocacy event in Washington, D.C., where the organization's members descend en masse to educate their representatives about issues that greatly impact the lives of music creators. What makes this event special is that the majority of the attendees—musicians, engineers, producers, managers, studio owners—invested their own time and money getting to the nation's capital to make their voices heard. (In the spirit of full disclosure, I am a Governor on the board of the Recording Academy's San Francisco chapter, and I, too, covered my own expenses to the event.)

The Recording Academy's message is clear: Music creators deserve fair market pay across all platforms, and to get there Congress must enact comprehensive licensing reform. After two years of congressional hearings by the House Judiciary Committee that scrutinized U.S. copyright law, as well as the recent release of the U.S. Copyright Office's music licensing study, "Copyright and the Music Marketplace" (available online), the pieces are finally falling into place.

Our job on that sunny April day was to get our congressional representatives on board with the Fair Play Fair Pay Act (H.R. 1733), a piece of bi-partisan legislation that "harmonizes, rationalizes, and modernizes music licensing in a logical, comprehensive way, so that all music services play by the same rules and music creators receive fair market value for their work." To do this, the bill addresses a number of inequities that currently exist.

To begin with, it would require terrestrial radio (AM and FM stations) to pay a performance royalty to artists and copyright owners of sound recordings at the same fair-market rate that Internet radio does, something that is commonplace throughout the rest of the world. One of the main benefits for musicians in enacting a performance royalty (and a major selling point to members of Congress) is reciprocity: Nearly all other countries collect performance royalties when they play U.S. recordings on their radio stations, though the royalties are never delivered

because we do not reciprocate. The loss to artists and to the U.S. economy is estimated at \$100 million per year.

The legislation would also remove the unfair advantage that terrestrial stations have over digital-only services when AM/FM stations deliver digital streams. The goal is to make sure that all of the delivery platforms—terrestrial, Internet, cable and satellite—abide by the same "willing buyer, willing seller" rate standard.

To counter claims by the National Association of Broadcasters and others that such a requirement would put small players out of business, the legislation includes provisions to protect local AM/FM stations that have annual revenue below \$1 million from undue financial burden by capping yearly payments at \$500. The proposed cap for public, college and other non-commercial stations is \$100.

Another important aspect of H.R. 1733 is to enforce royalty payments for digital performances of recordings made before 1972. Pandora and SiriusXM have been exploiting a perceived loophole in federal law in order to play pre-'72 recordings without compensation. In an article in *Billboard* magazine, the CEO and President of SoundExchange, Michael Huppe, estimated that this cost labels and artists \$60 million in royalties in 2013.

The final portion of the Fair Play Fair Pay Act is also a stand-alone, bi-partisan bill known as H.R. 1457, the Allocation for Music Producers Act (AMP Act). This bill would require SoundExchange to make direct payments of royalties to engineers and producers when instructed to do so by a featured artist. Although SoundExchange is already doing this on a voluntary basis, putting the practice into law would protect these payments in the future, as well as create a way for producers and engineers to seek permission from featured artists (or their heirs) to collect royalty payments they deserve for pre-1995 recordings. It is important to note that these payments do not reduce royalties due to other rights holders because they are based on an agreement between the featured artist and the producer or engineer.

The feedback we got after Grammys on the Hill is that Congress members enjoy hearing directly from their constituency, especially when it involves small business owners such as music creatives. When it comes to complex issues such as those in H.R. 1733, it's important that our voices are heard in order to combat the paid lobbyists working to maintain the status quo.

The window of opportunity is open and the time to act is now upon us. Contact your Congressional representative and tell them to support your right to control and benefit financially from your work through licensing reform. Bring your voice to the table. ■



The Professional's Source™

- A Native Instruments Maschine Studio Groove
- B sE Munro Egg 150 Studio Monitors
- C Behringer X32 40-Channel, Digital Mixer
- D Neumann TLM 102 Large-Diaphragm
- E Moog Minimoog Voyager Monophonic Synthesizer
- F Neumann TLM 107 Multi-Pattern Large Diaphragm
- G Universal Audio Apollo Quad Core
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Tech // new products



PRESONUS STUDIO 192 INTERFACE

USB 3 with 26x32 I/O, 8 Preamps

Featuring eight digitally controlled XMAX™ Class-A solid-state mic preamps and premium Burr-Brown converters with StudioLive Fat Channel signal processing, the Studio 192 Interface (\$899.95) operates at up to 192kHz/24-bit. The single-space rack unit also acts as a studio command center, managing speaker switching and talkback (with onboard condenser microphone) and featuring main mix Mute, Mono and Dim. PreSonus' innovative UC Surface touch-ready control software for Mac, Windows and iPad is included, for easy management of all Studio 192 functions and quick creation of eight stereo monitor mixes with full Fat Channel processing on every analog input, plus reverb and delay.

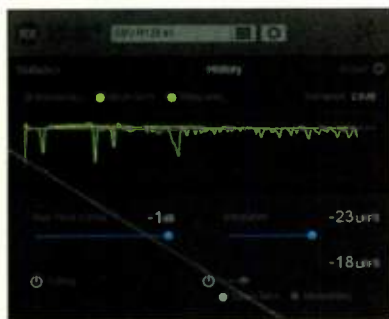


PROPELLERHEAD SOFTWARE RIG BUNDLES

New Rack Expanders for Reason 8

Propellerhead Software has released three new Rig bundles for Reason 8 (\$199). Features include handpicked bundles of the top instruments, effects and sample packs made by leading developers such as Propellerhead, iZotope, Softube, Korg, Rob Papen, and others. Rigs include the Backline Rig with playable, organic-sounding instruments and effects.

The Synthetic Rig adds a collection of electronic instruments and effects tailored for electronic music producers. The Outboard Rack includes a collection of high-quality studio outboard effect Rack Extensions from leading developers.



IZOTOPE RX LOUDNESS CONTROL PLUG-IN

Compliance Helper for Broadcast

The RX Loudness Control plug-in from iZotope (\$349) gives video and audio editors the ability to easily choose the broadcast standard they wish to adhere to from a set of global templates. In faster than real time, RX Loudness Control automatically analyzes the audio and renders out a compliant file and an accompanying .CSV-formatted loudness report in two clicks. The intelligent DSP processing inside RX Loudness Control is brand new and was developed

specifically to guarantee transparent loudness correction, and to offer loudness tolerance metering across a range of program types. RX Loudness Control supports mono, stereo and surround channel counts, up to 5.1, for seamless integration into any workflow.



AUGSPURGER DUO 8 SYSTEM

Mini-Main, Free-Standing or Soffit-Mounted Monitors

The Duo 8 System from Augspurger (\$15,000 without sub) is a small-format main monitor built around George Augspurger's newly designed smaller maple horn featuring a pure Beryllium diaphragm. The Duo 8 boasts no tradeoff in sonic performance compared to its larger Augspurger cousins. Low-end extends to 30 Hz without a sub, with footprint dimensions of just 16 inches wide by 17 inches deep by 27 inches high. The Duo 8 system is powered by Augspurger DSP-3/2000 three-way DSP-Controlled Class-D power amps, with a total of 2,000 watts supplying power to not only the onboard drivers but with a third way for the optional Augspurger S12 or S18 subwoofer(s). The system can be purchased with or without subs depending on room size and SPL desired.



SOUND DEVICES 688 MIXER/RECORDER/CONTROLLER

Audio Plus Wireless Control

The Sound Devices 688 is the center of an extensible mixing and recording system that incorporates MixAssist, Sound Devices' automatic mixing technology. The 688 accepts the new SL-6 SuperSlot powering and wireless accessory. A mixing bag comprised of a 688 with attached SL-6 plus SuperSlot-compatible wireless offers audio mixing, recording and wireless receiver control all from the mixer, with simplified power distribution and interconnection. The optional SL-6 powering and wireless system, available summer 2015, simplifies interconnection between the 688 and multiple channels of wireless by accepting up to three dual-channel slot-compatible receivers.



WAVES BUTCH VIG VOCAL CHAIN

Vox Processing With Personality

From the mind and talents of Butch Vig (Nirvana, Foo Fighters, Smashing Pumpkins, Green Day and Garbage) comes a new vocal processing plug-in from Waves. Features include a 3-band EQ with a distinct frequency character, low-cut, hi-cut and mid-dip filters for removing unwanted frequencies, compressor and de-esser, tube and solid-state saturation with low and high cut controls, and a blend option. Also, the plug offers a Unique Focus control for zeroing in on the 1kHz and 2kHz ranges.



SOUNDIZERS STEREOMONORIZER

Workflow Enhancer for DAWs

The StereoMonoizer from Soundizer is a simple-to-use application for Mac (PC version coming soon) that analyzes audio files and discovers their stereo content, allowing you to convert to the proper format before importing into your DAW. Features include easy drag-and-drop operation for importing files and stereo/Mono Conversion to automatically analyze files and identify "mono audio in stereo files." It recognizes mono and split stereo (.L/R) files, and includes conversion to interleaved stereo, pan depth compensation to automatically adjust the level of the converted mono files, and a normalize gain mode that will adjust the gain of each file to a desired level, in the event you receive files that are either too loud or too soft. This alleviates the need to adjust clip gain once in the mix. Price for one license is \$49, or \$79 for two licenses.



STEINBERG UR242 4X2 INTERFACE

Preamps, USB 2, DSP and More

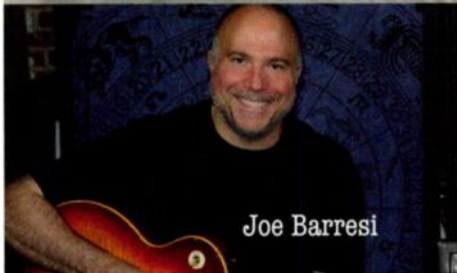
The UR242 interface from Steinberg (\$249.99) features 192kHz/24-bit audio quality and DSP power, class-compliant support for the iPad, and MIDI I/O alongside studio-grade converters and acclaimed discrete Class-A analog D-PRE microphone preamplifiers. Other features include two combo connectors, each offering Class-A D-PRE microphone preamps with 48-volt phantom power, peak LEDs, gain controls and dedicated pad buttons for signal attenuation. A headphone jack with its own volume level control and a master output volume control round out the front panel. I/O on the rear includes two TRS line inputs, two analog TRS line outputs, one MIDI input/output and a USB 2 port. Inside is DSP power for low-latency monitoring through the REV-X reverb, Sweet Spot Morphing Channel Strip and the Guitar Amp Classics.

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K-ARRAY CONCERT SERIES

Line Array for Touring Pros

K-Array's new Concert Series carries the company's signature Slim array technology, which makes them some of the most compact touring loudspeakers in the market. Features include self-powered units delivering up to 139 dB, plus the ability to digitally steer the sound. The KH2 is a medium-format speaker comprising 2x8-inch Neodymium magnet woofer with 2.5-inch voice coil and

2x1.4-inch compression drivers with 2.5-inch voice coil. The KH3 is a medium-to-large-format speaker with 2x12-inch Neodymium magnet woofer with 2.5-inch voice coil and 2x1.4-inch compression drivers with 2.5-inch voice coil. The KH5 is a large-format speaker holding 2x15-inch Neodymium magnet woofer with 3-inch voice coil and 4x1.4-inch compression drivers with 2.5-inch voice coil. The KS5 is a subwoofer made up of 2x21-inch Neodymium magnet woofer with 5.5-inch voice coil with integrated DSP with EQ, delays and preset management.



CAD AUDIO CADLIVE MICROPHONES

Four New Dynamic Mics for Stage

The new CADLive D32 (\$49) is a supercardioid dynamic handheld vocal mic with a QuietTouch on/off switch. The three-pack D32X3 is outfitted with carry case and mic clips. Also a supercardioid dynamic handheld mic, the CADLive D38 (\$59) includes a high-performance Neodymium capsule for exceptional accuracy and sound quality. The three-pack D38X3 is outfitted with carry case and mic clips. The CADLive D89 (\$89) supercardioid dynamic instrument mic is equipped with a Trueflex diaphragm and PowerGap high-gauss Neodymium magnets, as is the CADLive D90 (\$99) supercardioid dynamic vocal mic, which is engineered to produce a powerful, smooth and detailed performance in a variety of high-SPL live situations. The D90 features a durable and road-ready case for maximum protection and survival on the road.



ADAMSON S-SERIES

Sub-Compact Line Array

The new sub-compact line array system from Adamson (priced per configuration) comprises the S10 line array enclosure, S119 subwoofer, Blueprint AV and the E-rack, Adamson's new unified rack solution. The S10 is a two-way, full range, sub-compact line array enclosure ideal for mid-size arenas, theaters, churches and dance clubs, as well as outdoor festivals. It is loaded with two newly designed 10-inch ND10-LM Kevlar Neodymium low frequency drivers and an NH4TA2 1.5-inch exit high-frequency compression driver mounted to a wave shaping sound chamber, which produces a slightly curved wavefront with a nominal dispersion pattern of 110x10 (HxV) degrees. The compact solution—265/10.4 x 737/29 x

526/207 (mm/in)—weighs in at 60 pounds. The companion S119 subwoofer is loaded with a lightweight, long-excursion, 19-inch ND19 Kevlar Neodymium driver using Adamson's Advanced Cone Architecture and a 5-inch voice coil for exceptional power handling.

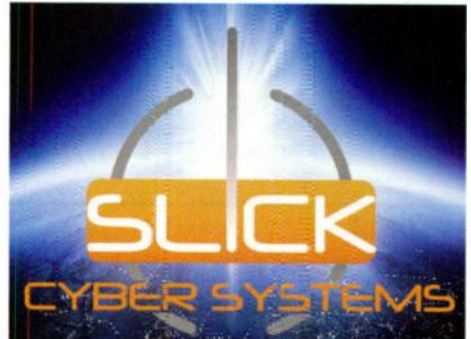
CYMATIC AUDIO UREMOTE SOFTWARE

Cross-Compatible Wireless Remote



uRemote software from Cymatic Audio (free) is a software remote control application for the company's 19-inch rack-mountable uTrack24 24-track recorder, player and interface. uRemote is compatible with Apple iPad, iPhone, OS X and Windows, and whichever way you work with it, wireless remote functionality is as extensive as its

feature list. The home screen shows all recording/playback information at a glance with full transport controls and playback bar available at all times on all screens. A one-button loop control allows creation of loop-in/loop-out points and loop playback, and an analog-style mixer screen allows easy adjustment of all mixer settings. Also featured is a dedicated full-screen metering page offering 24 meters for setting levels; plus, the file browser allows for quick and easy navigation of files on an attached drive. uRemote also offers control over multiple uTrack24 units connected to same network.



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Tech // reviews

AKG DMSTETRAD DIGITAL WIRELESS SYSTEM

Clever Features, High Quality, Excellent Performance



The DMSTetrad system optionally includes the Vocal Set with D5 capsule; Handheld Transmitter with P5 capsule; Bodypack Transmitter; C111 LP Over-Ear Microphone; and MKG L Instrument Cable.

As the RF environment grows increasingly hostile, pro audio manufacturers continue seeking solutions for reliable operation of wireless instrument and microphone systems. There's been a move toward the 2.4GHz band, a part of the RF spectrum that (at least for the moment) can be used by the audio community license-free, worldwide. AKG's DMSTetrad is a 4-channel digital wireless system operating in that band. Designed for live sound, clubs, corporate, and house-of-worship applications, DMSTetrad provides 24-bit/48 kHz uncompressed audio transmission, 128-bit AES data encryption for secure transmission, and several proprietary technologies to fight interference.

The handheld DMSTetrad Vocal Set is available with AKG's D5 or P5 capsule. The DMSTetrad Performer Set includes the DPTTetrad bodypack transmitter, C111 LP over-ear microphone and MKG L instrument cable. All versions include detachable antennas, rack ears with front antenna mounts, and antenna front mount cables. Any Tetrad transmitter may be added to the system later, facilitating expansion. For this review Mix received the whole kit-n-kaboodle.

INSIDE, OUTSIDE

To combat interference from Wi-Fi routers and Bluetooth devices that also live in the 2.4GHz band, DMSTetrad uses several technologies. Dynamic Frequency Selection automatically moves the system to a different channel when interference is detected (aka "frequency hopping"). Time Diversity detects a lost signal and asks the transmitter to resend it. And Antenna Diversity switches to the antenna with the higher signal strength at any moment. The system also employs AKG's DROCON (DROpout CONcealment), which extrapolates missing information in the case of a dropout, and conceals noises that might otherwise occur.

Controls on the front of the DSRTetrad receiver are minimal

TRY THIS

AKG's DMSTetrad features automatic pairing that sets the transmitter and receiver to the same channel. First, power up the transmitter and receiver. Find the Connect button on the receiver channel you wish to use. Press and hold it until it flashes. The system scans the RF environment for an open frequency. Press and hold Connect on the transmitter until both status LEDs glow steady green. They are now paired. To check pairing, push the channel Connect button on the receiver. Its LED blinks and the LED on the paired transmitter blinks. When adding transmitters, DMSTetrad is smart enough to look for a vacant channel that won't interfere with existing pairs.

PRODUCT SUMMARY

COMPANY: AKG

PRODUCT: DMSTetrad Four Channel Digital Wireless System

WEBSITE: www.ake.com

PRICES: DMSTetrad Vocal Set with D5 capsule: \$699; DHTetrad Handheld Transmitter with P5 capsule: \$199; DPTetrad Bodypack Transmitter: \$249; C111 LP Over-Ear Microphone: \$99; MKG L Instrument Cable: \$35

PROS: Easy setup. Excellent RF performance. Four receivers in single-rackspace unit.

CONS: System is limited to a maximum of four channels. Microphone gain is not continuously variable. No visual indication of channel setting.

but complete. Each channel has LEDs for Battery Status, Link and Clipping, a volume knob, and a single pushbutton for Connect. The rear panel features dual antenna inputs, a power supply jack (12 volts DC 500 mA, included), four discrete Channel Outputs, and a fifth XLR output providing a mix of the four channels. A switch toggles this output between 0 and +20, enabling it to be connected to either a mic or line level input. The remaining switch is labeled Interference Protection. According to the manual, this switch should be set to Low for optimum transmission time unless RFI is a problem, in which case it can be switched to Mid or High. Unfortunately, the manual does not provide detailed information on this feature, but I suspect there might be a small increase in latency when the switch is set to Mid or High.

The handheld DHT transmitter features a power switch and status LED. Unscrewing the battery cover/handle reveals a Connect button and a two-position gain switch (high/low); I would prefer a variable pot for gain but the two settings were adequate. Similarly, the DPT body pack transmitter has a power switch (with safety cover) and status LED. Opening its battery compartment reveals a gain pot, enabling it to be used with either the MKG L instrument cable or C111 LP over-the-ear microphone. All transmitters are powered with two AA batteries.

When setting up the DMSTetrad, frequency selection and pairing is automatic. A brief trip to the Quick Start Guide revealed the transmitter/receiver pairing procedure (see the "Try This" sidebar). The process usually takes a few seconds but on one or two occasions took as long as 10 seconds. There is no manual channel selection, nor visual indication of what channel a transmitter is using.

It appears that AKG intends the DMSTetrad to be used in one of two manners: patch the Mix Output into a single powered speaker (or mixer input), or patch each Channel Output to the inputs of a mixer. Most pros will choose the latter, however the option to use the Mix Output is very attractive for applications where an engineer is not present, or in situations requiring fast, simple setup.

ROADSIDE

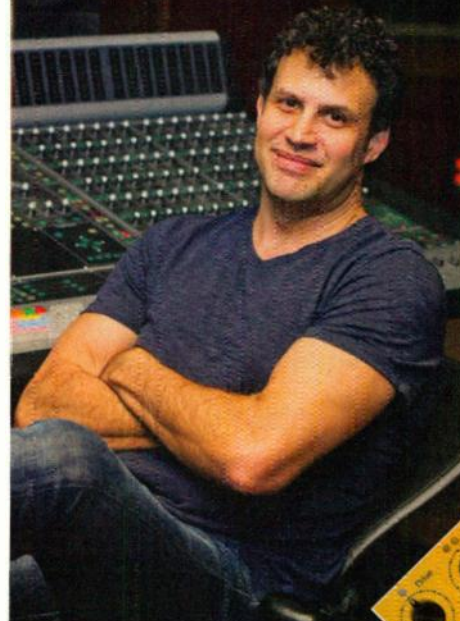
I took the DMSTetrad on the road for a few weeks, using it in various regions across the country. Most often I used the handheld transmitters, but I also briefly used the DPTetrad body pack transmitter, both with the C111 LP over-ear microphone and the MKG L instrument cable. Typically, I connected the Channel Outputs from the receiver to the inputs of a mixer, though on at least one gig I connected the Mix Out directly into a powered speaker to run acoustic guitar (with pickup) via the DPT body pack and a DHT vocal mic.

AKG's documentation regarding the outputs leaves something to be desired. Regarding the Channel Outputs, the manual states, "You can connect the microphone inputs on a mixer to these outputs, for example." I'd feel better if it were stated more like: these outputs operate at microphone level and should be connected to the mic inputs on your mixing console. Also there is no clear indication in the specs regarding operating level of the Mix Output—which, by the way, operates at line level when set to +20 and mic level when set to 0.

Channel Output level is determined by the front panel Volume control. I usually set the DHT to High gain, cranked the Volume until the receiver's Clip LED blinked red, then backed it off a bit. This yielded a good gain structure that efficiently drove a microphone input. Whether it was due to this or the Tetrad's overall RF performance, transmission was startlingly quiet, in a "is this thing on?" manner—particularly when using the DHT/

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ATLAS
was ~~\$6,995~~ now \$5,295



TITAN
was ~~\$4,950~~ now \$3,995

D5 combination. RF performance of all configurations was excellent. The only time I experienced RFI was when a Wi-Fi router was literally placed next to the receiver; moving it a few feet away cured the problem.

When I used the DHT handheld with the P5 capsule for a female vocalist, she sounded a bit muffled initially; boosting a few dB at 3.2 kHz brought some presence and air to her voice. Both (supercardioid) capsules were great at rejecting feedback, and their sonic differences were subtle: The D5 has a slightly smoother off-axis response and perhaps a bit more mojo in the lower-midrange. I found the P5 slightly more aggressive in the upper mids, which was perfect for a male lead vocal in a bar band. My biggest surprise was the C111 over-ear mic. I hate headworn mics and with good reason—most of them sound like crap (I am being polite). The C111 just plain sounds good, providing clear articulation while still producing a balanced low end and a surprising amount of ambient rejection. This one's a no-brainer for presentations or corporate work and easily holds its own for music applications.

CREATURE FEATURES

AKG built some clever features into the Tetrad system. The BAT light on the receiver turns red when battery performance starts to deteriorate, and blinks red when battery life is down to about an hour. At that point the status LED on the transmitter changes from green to red. The transmitter's status LED blinks (green) when interference is encountered, which can be helpful in locating dead spots or warning a performer that they are moving to an area of poor RF performance. The set includes rack ears with built-in antenna mounts, and cables to connect these to the rear panel antenna inputs, enabling the stock system to be rack-mounted while simultaneously moving the antenna out of the rear of a rack.

I see the DMSTetrad being comfortable in installed situations, for small tours that don't require dozens of wireless channels, HOW applications and for rental houses that need to cover a variety of wireless needs. A first look at the price tag might cause a bit of sticker shock, but you have to remember that the receiver includes four independent channels in a single rack-space. Adding a channel requires purchase of only a transmitter, and with an average street price around \$200, is very affordable. Of course none of this would matter unless the DMSTetrad's audio and RF performance was up to the task—which it is. The combination of smart design, high-quality audio, excellent RF performance and expandability should put the DMSTetrad on your wireless watch list. ■

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

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World Radio History

MASELEC MLA-4 STEREO TRIBAND COMPRESSOR/EXPANDER

Unique Processor Offers Powerful Features, Superb Sound



The MLA-4 can link two or more bands' sidechains and provide simultaneous downward compression and upward expansion in the same band.

Boutique British manufacturer Maselec is highly regarded for its top-tier recording, mixing and mastering gear. The company's new MLA-4 Stereo Triband Compressor/Expander essentially retrofits the legacy MLA-3 3-band stereo compressor with upward-expansion capabilities. But it's the unusual sidechain linking and compression-expansion interplay that make the MLA-4 truly powerful and one of a kind.

MASTERING QUALITY

The MLA-4's beautiful front-panel features all stepped rotary controls and bipolar switches with solid, positive action. The consistent use of switches (think extremely accurate recall) and selection of mild to moderate compression and expansion ratios suggest mastering as a principal use, but there's no reason why you can't use the MLA-4 for mixing duties.

The solid-state processor splits its left- and right-channel input signals into three frequency bands—Low, Mid and High—for stereo dynamics processing. Dual-mono processing isn't afforded, but separate input-gain controls for the two channels each provide ± 5 dB adjustment range in 0.5dB steps.

The two crossovers between bands each have a 6dB/octave slope; their filters are passive, promising minimal coloration and accurate summing for the three bands. You can select 100, 200, 400 or 800 Hz for the crossover between low and mid bands. Selections for the midrange-high crossover are 1.5, 3, 6 and 12 kHz.

Each band has separate stepped controls for adjusting threshold, ratio, attack and release times, and makeup gain. (An additional master threshold control proportionally adjusts the

thresholds for the three bands at once.) Rotating a band's ratio control counter-clockwise from the noon position (which provides 1:1 ratio) affects compression, while clockwise rotation produces upward expansion. Each band offers the same selection of compression and expansion ratios (five each): The compression ratios are 1.4:1, 1.6:1, 2:1, 3:1 and 6:1, while the expansion selections include 1:1.2, 1:1.4, 1:1.6, 1:1.8 and 1:2.0 ratios. Each band's gain control provides up to 2.5 dB of boost or cut in 0.5dB steps.

The selection of attack and release times differs for each band, with each control offering six switched positions. The actual release times are program-dependent. Switching in the S/C (side-chain) Boost function provides a shelving boost to high frequencies in the High band's sidechain, causing greater compression or expansion in that band.

NOVEL LINKING AND METERING

A five-position switch links the three bands' sidechains in various—some unusual—ways and provides an Off position to unlink them. The L>M setting makes the Mid band compress or expand the same amount as the Low band, but not vice versa. The L>H setting causes the High band to compress or expand as much as the Low band, but not vice versa. The L>MH setting makes both the Mid and High bands compress or expand the same amount as the Low band, without linking the Mid and High sidechains to each other or causing them to affect the Low sidechain's detector. With the L>M, L>H and L>MH settings, there is an exception to the behavior detailed thus far: The bands linked to the Low band's sidechain won't follow the Low band's gain changes if they are by themselves producing higher gain changes than the Low band. (This is one of several key operational points omitted in the somewhat vague owner's manual.) Another setting, dubbed Linked, links all three frequency-bands so that they are compressed or expanded the same amount (tantamount to wideband dynamics processing). With all link settings, compression and expansion functions are linked separately.

Three vertically oriented, high-resolution LED ladders show compression and expansion amounts for the three bands, respectively: up to 4 dB of gain expansion is displayed by the top six (red) LEDs, while the bottom ten (green) LEDs show up to 8 dB of gain reduction. When bands are linked, it's possible to see both gain expansion and reduction simultaneously displayed on one or more

meters. For example, say you've selected the LPM link setting, the Low band is compressing 3dB, and the Mid band is expanding 3 dB. In this case, the Mid band's meter would show 3 dB of compression and 3 dB of expansion simultaneously. The net effect would be 0 dB gain change due to the equal expansion and compression cancelling each other out. But the meters would still show what each process is contributing to the net gain change so you can discerningly adjust each.

A five-way switch lets you select what signal is routed to the MLA-4's outputs: the combined multiband signal; discrete signal from either the Low, Mid or High band; or unprocessed input via hardware bypass. A large output-gain control adjusts post-processing gain ± 5 dB in 0.5dB steps.

On the rear panel, separate latching XLR connectors are provided for the left and right I/O, which are all electronically balanced but can be unbalanced by grounding pin 2 or 3. Roughly five feet in length, the detachable AC cord is rather short.

The MLA-4 boasts superb specs. Respective maximum I/O levels are +29 and +28 dBu—high enough to strap the unit across the stereo bus of virtually any mixing console. The frequency response is stated to vary no more than 0.05 dB from 20 Hz to 20 kHz, and the bandwidth is said to extend beyond 500 kHz. Typical noise is -90 dBu, and THD (with 1:1 ratios selected) is less than -90 dB.

MASTERING SESSIONS

A country pop mix had a somewhat loud, boomy and muddy-sounding kick drum to go with slightly weak and dull-sounding snare hits. I set the MLA-4's crossovers to 200 Hz and 3 kHz. I selected a 2:1 compression ratio for the Low band, and then dialed in the fastest possible attack and release times and the highest threshold so that only the kick drum's low end was audibly compressed. Next, I selected a 1:2.0 expansion ratio for the High band, switched in its S/C Boost circuit, and chose fast attack and release

PRODUCT SUMMARY

COMPANY: Maselec (distributed by Prism Media Products)

PRODUCT: MLA-4 Stereo Triband Compressor/Expander

WEBSITE: maselec.com

PRICE: \$5,740

PROS: Superb sound quality. Unique and powerful sidechain linking. Robust build.

CONS: No separate band bypasses. Somewhat-vague documentation. Short AC cord.

times. I adjusted the High band's threshold so that only snare (and, unavoidably, kick) hits would be expanded; doing so made the snare sound brighter and louder, but it also made the kick's beater sound too slappy (now that the kick's bass frequencies were attenuated in the Low band). No problem: By linking the Low and High band's sidechains, I could make the kick's high frequencies compress simultaneously with the same amount as its lows—fully nulling the kick's High-band expansion and without affecting expansion on snare hits. The net effect was the kick sounded leaner, tighter, clearer

and quieter, while the snare sounded louder and brighter. I know of no other device that can achieve quite the same balance. Awesome!

Unfortunately, during the same song's choruses, the lead vocal became louder than the snare and was expanded along with it—not what I wanted. I wished the MLA-4 had separate bypasses for each band so I could've instantly defeated only the high-frequency expansion during those song sections. The solution was to master the track's verses and choruses in separate passes and then splice together the whole enchilada.

Next up was an Americana mix propelled by a very percussive, slow groove played on acoustic guitar. The mix was nevertheless not quite dynamic enough, and it sounded slightly midrange-y. Mild compression in the Mid band softened the glare. But the mojo really ignited when I expanded both the Low and High bands and linked their sidechains; fast attack and release times gave the guitar groove a smiley-curve pulse and accented the male singer's deep and raspy voice in sync with the music.

With all ratios set to 1:1, I could also use the MLA-4 as an equalizer for broad tone sculpting. The MLA-4's passive filters sound excellent, with crystalline clarity and depth that goes all the way to China. Powerful and pristine, the MLA-4 is a fantastic tool for both mixing and mastering. ■

Michael Cooper is a recording, mix, mastering and post-production engineer and a contributing editor for Mix magazine.



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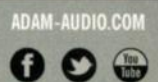
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UAD APOLLO EXPANDED

Twin DUO/Satellite Thunderbolt OCTO Core



The Apollo Twin DUO's link controls works bi-directionally with the plug-ins; software controls hardware, and vice versa.

For the past year, I've been running into Apollos everywhere, and it seems like anyone who has heard UAD plug-ins immediately realizes that they can't live without them and buys an Apollo or a UAD-2 system. Granted, there are plenty of other innovations coming from new-school plug-in manufacturers that do things that could never be accomplished by outboard gear. But when you instantiate a UAD processor, it's like firing up the real thing. When using any classic hardware, I get this feeling like I'm harnessing the power of every great engineer and musician that has ever passed signal through that same circuit. The UAD plug-ins give me that same feeling.

If you have them, you want to use a lot of them, but there have always been a few key hang-ups and roadblocks. Unlike SSL, Universal Audio has never issued Native versions of its plug-ins; they only run on UAD-2 hardware. This means you have to buy UAD-2-friendly hardware and get it connected to

your computer. But when you use up all of the chips in your UAD-2 hardware, it doesn't matter how much CPU headroom you have left on your computer because you cannot insert any additional UAD-2 plug-ins. However, recent developments have helped to alleviate these concerns.

The issue has always been that UAD-2 processors are going to do a lot of math and try to turn it around fast enough so that latency is kept to a minimum. In order for that to be possible, data has to get to those chips through a high-bandwidth bus. PCIe is preferable, and while FireWire 800 has been deemed an acceptable solution, the low bandwidth relative to PCIe means that the FireWire Satellite introduces more latency than its PCIe equivalent. Also, Universal Audio offers a QUAD version of the UAD-2 Satellite DSP Accelerator.

For a while, the solution to this has been a Thunderbolt PCIe expansion chassis for UAD-2 cards, or a Thunderbolt expansion card for Apollo.

The newest devices in the UAD-2 family, however, are Thunderbolt-ready powerhouses right out of the box.

On the Apollo side, there is the slick, compact Apollo Twin. This is a small, desktop interface with one or two SHARC processors. On the UAD-2 side, there is the new UAD-2 Satellite Thunderbolt, a low-profile, fan-free, Thunderbolt-connected box that can house your choice of one, two, four, or eight SHARC processors.

APOLLO TWIN DUO

The Apollo Twin features a stylish, well-built housing with a small footprint that doesn't eat up too much space on a desktop. On the back panel, to the far right, is a pair of XLR/TRS combo jacks that can receive mic or line-level signals. To the left of those are four TRS outputs, two of which are designated "Monitor L and R." The other pair is an additional set of line output jacks. These can be used to feed a mixdown deck, or would be

useful in creating a hardware effects loop. On the far left of the back panel, there is a connector to attach the wall-wart power supply, and next to that, a power switch. Above these, you'll find a Toslink connector that can accept eight channels of ADAT while also accommodating S/PDIF or S/MUX.

Next to the Toslink connector is a single Thunderbolt jack. The Thunderbolt situation is absolutely something to consider when contemplating the purchase of an Apollo Twin. For one, no Thunderbolt cable is included, so you will have to make that investment. But the bigger issue is that the Apollo Twin only has one Thunderbolt connector. If your machine only has one port, you will not be able to daisy-chain anything else to that connector. I have not yet seen a simple multi-port Thunderbolt hub, so you won't be able to use an external display unless it is an Apple Thunderbolt Display that has two connectors. Fortunately, newer Macs have multiple Thunderbolt ports.

The top surface of the Apollo Twin slopes up from front to back, making it comfortable to view and reach the top panel controls when seated. At the center of the top panel is a very large knob attached to an endless rotary encoder. The knob feels well built. It doesn't wiggle or tilt when turning. Overall it has a smooth, comfortable feel. The knob can be made to control the level of either of the two inputs, or it can be repurposed as a monitor level control. Buttons labeled "Preamp" and "Monitor" toggle the selection, while single-tapping "Monitor" repurposes the knob as a level control for the front panel headphone jack. Flanking the knob on either side are two pairs of five-segment LED meters displaying the input level of each channel on the left, and the level of whichever output signal is being controlled.

Tapping the Preamp button repeatedly toggles control of the two inputs, and the two inputs can be linked with a Link button. Controls for highpass filter, phantom power, pad and polarity flip are addressed by individual hardware buttons on the top panel. Switching between mic and line-level gain controls is accomplished by pressing the Input toggle control, but a connection present on the front panel instrument jack will override either selection and take over input Number One. Having dedicated buttons for all of this functionality means that it is rarely necessary to take trips to a software control panel. More and more, it seems that the alternative route is taken, but it just seems so much more efficient and ergonomic to have the buttons right there next to the level control.

APOLLO CONSOLE

Building headphone mixes, including low-latency input signals, requires a trip to the software mixer. While many devices include a purely utilitarian mixer, with the sole purpose of blending low-latency inputs with software outputs, the Apollo Console sweetens the deal with a plethora

PRODUCT SUMMARY

COMPANY: Universal Audio

PRODUCT: Apollo Twin DUO

WEBSITE: www.uaudio.com

PRICE: \$899

PROS: Hardware buttons for controls. Well-built. Loaded with features.

CONS: Only connects with Thunderbolt. No second port to daisy chain.

TRY THIS

When tracking guitars or re-amping them through miked amplifiers, sometimes multiple mics on one amp are required to get the right sound. Soloing each mic and placing it at the ideal position can lead to good individual sounds that combine into a comb-filtered mess. This problem can be eradicated before the 1s and 0s ever hit Pro Tools by using the UAD Little Labs IBP plug-in across the appropriate channel within the Apollo Console and sending the result to Pro Tools.

I also assumed that only a stripped down set of plug-ins would be available, because there would be no way that some of the more complicated processors could turn around the math that quickly, but everything was there. Even with some heavy-hitters like an AMS reverb and an ENGL guitar amp and others all running in coincidence, the guitar pick called and the system responded in perfect sync.

Apollo Console's potential applications span beyond studio recording, considering all of its available processing power and the fact that Apollo Console is a stand-alone application that doesn't require a host DAW. Given its low latency, DJs and musicians could absolutely use Apollo Console as a live rig. Console configurations can be saved and any snapshot can be recalled with a click of the mouse, so having a hardware setup per song is totally feasible. Radio broadcasters and podcasters could also certainly benefit from using the software's virtual preamps and processors in real time.

FIELD TEST

When I first fired up the Twin, I spent a lot of time just listening to its D/A converters and getting familiar with them. I listened to a lot of music, and when I felt like I had a handle on the sound I mixed a trailer using the unit as my DAW back end, feeding my monitors. My initial impression was that it sounded extremely clean and clear. The bottom end was generous, respectably tight, and seemed honest. The midrange was incredibly open and detailed, and there was a great separation of the individual components in every mix I heard. The top end extended nicely, without being edgy or garbled in any way. The more I listened, the more I noticed that the upper midrange did seem slightly

of bells and whistles. The theoretical design of any software mixer is to replace the need for a small routing console in the control room. The Apollo Console gives you a full-on, large-format console with your choice of mic preamps, a variety of different routing buses, cue sends, effects sends and returns—any of which can be combined and sent to any of the hardware outputs. Its built-in DSP provides access to the entire fleet of UAD plug-ins for use in any part of a zero-latency mix.

You can use either of the Twin's hardware inputs and run them through an entire channel strip of low-latency processing. In the first place, signal can run through a virtual mic preamp; currently, a Neve 1073 with EQ, a UA 610 with EQ, and an API Vision channel strip are available. The wildest part is that adjusting the preamp knobs within the plug-in actually sends the message back to the hardware, and adjusts the analog gain accordingly. Once the desired color is achieved, the signal can be dressed with a chain of up to four hardware inserts. Running through four plug-ins plus a virtual preamp without picking up any noticeable latency seems utterly impossible to me, but after hearing it, I can attest to the fact that Twin can absolutely pull it off.

Shhh... Don't tell David



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he's having visions of orchestras and choirs. He wants to pick up every detail with dimension, depth and dynamics. But then we take them and put them on screaming vocals, loud guitars and slammin' drums. From the most sensitive singer to the most rockin' of bands, Mojave Audio microphones excel at capturing every detail. So use them any way you see fit. Just don't tell David. And, by the way, they do rock on orchestras and choirs!



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forward. It didn't sound bad. In fact, it actually made everything sound a little clearer, even when listening at lower volumes, but that kind of dishonesty can sometimes lead to real troubles when mixing.

As I got into doing actual work with the Twin, I found myself in a situation with a lot of noisy production sound requiring treatment. When applying noise reduction, there is always a fine line between making it sound better and adding artifacts. The Twin's circuitry was kind of like a magnifying glass, zeroing in on that area where the articulation of the dialog lives and where garbled digital artifacts are most noticeable. I was able to find that edge of reduction versus destruction with ease, and always stay on the safe side of it. Processing the dialog and keeping it ahead of the music bed also came very naturally when monitoring with the Twin's outputs. When all was said and done, I took the mix around to the usual tour of iPhone, laptop, TV and other consumer speakers to check compatibility, and the mix translated incredibly well. Even in the worst-case scenarios, the dialog was clear and intelligible, and the music was not lost.

The Twin's inputs have a sound that is similar to the outputs. I heard an especially wide dynamic range as the noise floor seemed very low. The detail and clarity of everything the Twin captured was impeccably preserved. The converters are really nice, and the preamp has incredible definition throughout the entire frequency spectrum, and imparts only the slightest color in the upper midrange. There is a little sparkle, but only in the best way possible.

Running the preamp through the 1073 preamp model was exciting. In contrast to the stock sound of the preamp, the 1073 model had that dark, warm, British character that Neve is known for. Shooting the UAD version against a hardware clone of that circuit was eerie: The sound was nearly identical. On a snare drum, both circuits presented the same warmth throughout the body of the snare. The top end, in both cases, cracked open into a pleasant, subtle, harmonic overdrive. A similar sound was present in a kick drum recording. The beater had a nice bristle that could cut through a mix, while the bottom was ac-

tually a bit fuller on the UAD version than the hardware.

Altogether, the Apollo Twin's build, sound quality and overall operation are impressive. Once I installed the software, my computer recognized the unit every time it was attached. If there is anything to complain about, it would be the fact that we always just want more UAD plug-ins, and the two cores inside the Twin DUO are, at times, just not enough. With just the included DSP, the system maxed out at eight tracks of Studer A800. One EMT 140 eats up nearly 20 percent of the DSP. Putting a pair of 610s across the inputs takes about 30 percent of the DSP available. Granted, a healthy complement of 19 1176 Legacy compressors can run simultaneously. If you need more, however, Apollo Expanded has you in mind. Now, you can string together a number of UAD-2 Thunderbolt devices and aggregate their processing power. This is where the UAD-2 Satellite Thunderbolt comes to the rescue.

The Apollo Console gives you a full-on, large-format console with your choice of mic preamps, a variety of different routing buses, cue sends, effects and returns—any of which can be combined and sent to any of the hardware outputs.

SATELLITE THUNDERBOLT OCTO

The Satellite is a very attractive, extremely portable, sturdily built black box housing your choice of additional DSP for your system. It can run on its own, providing UAD-2 processing to your DAW. Multiple Satellite units can be attached, or you can pair the Satellite with an Apollo system to gain additional DSP.

The Satellite is not bus-powered and requires a provided external power supply, through a 4-pin XLR-type connector on the back panel. Other than that, the back panel features a rocker-style power switch and two Thunderbolt ports. I could attach the Satel-



Multiple Satellites can be daisy-chained or added to existing Apollo systems to increase the DSP.

lite and then still connect an external display to my MacBook. Alternatively, I could daisy chain the Apollo Twin through the Satellite and combine the processing power of both units.

Installing the Satellite's software was a bit of a process, but once it was done, as with the Twin, there were no issues of any kind. When I first started out, I was running UAD-2 Version 7, and the unit was recognized immediately whenever I would connect it. There were never any hang-ups or issues, the system ran flawlessly all of the time.

The UAD software displays a small usage meter that is small enough to stay open on a corner of the display. Three meters display available DSP, Program Memory and UAD RAM. As different processors use different amounts of each, one could max out before the others, so it is useful to monitor each factor. When attaching the Twin and the Satellite, the total resources available when combining the two were summed and displayed on these meters.

When it comes to the individual devices and their individual chips, opening the larger UAD Control Panel can provide more insight. Here, each hardware device is listed in a scrolling menu, and within each device the status of each core is displayed. The system does a round-robin allocation of processing, distributing little bits of work to each available chip. With eight cores to work with, I never came close to running out of DSP when doing music mixes. Considering that you could run 384 mono dbx 160s, or one EMT 250 takes up 1 percent of the total processing power, the sky is the limit. A full instance chart is available on Uni-

versal Audio's Website: www.uaudio.com/support/uad/compatibility/instance-chart.html.

Via the plug-ins tab, additional UAD-2 plug-ins can be authorized or demoed. It's almost too easy to start a demo and fall in love with a new

must-have plug-in. Part if this ease is due to the fact that all of the UAD-2 plug-ins are installed in the initial setup, whether they are licensed or not. While this makes the addition of new plug-ins to your system a snap, it is a little awkward when accessing the plug-ins in a DAW. Whether you have a license for the processor or not, the lists in Pro Tools are exploding with options. I constantly find myself loading a plug-in only to find out that it is not authorized or that the demo is timed out. It's a cruel tease. I suppose the solution is to simply buy them all.

The UAD-2 Satellite Thunderbolt OCTO is a no-brainer. Considering that the PCIe OCTO card is the same price, the fact that Universal Audio is essentially throwing in a Thunderbolt chassis with power supply for no extra charge makes the Satellite Thunderbolt a killer deal. If you're adding on to an Apollo system, it seems like you can probably get away with just adding a QUAD, because I feel like six cores are plenty. That said, I was using it on music mixes with right around 30 tracks. If you do much larger mixes than that, you might need to go bigger. My only words of warning would be to proceed with caution. Every plug-in has a 14-day demo, and if you try one, you will almost certainly buy it. ■

Brandon T. Hickey is an independent audio engineer and educator.

PRODUCT SUMMARY

COMPANY: Universal Audio
PRODUCT: UAD Satellite Thunderbolt OCTO
WEBSITE: www.uaudio.com
PRICES: \$1,499 with Analog Classics plug-in bundle; \$5,999 with Ultimate 3 plug-in bundle.
PROS: Amazing-sounding plug-ins. A lot of DSP in a portable package.
CONS: None found

TRY THIS

I really like the sound of the Thermionic Culture Culture emulation from UAD. It's great for warming and thickening a 2-bus or for mastering. Working with the Triode setting and the overdrive switches engaged, push the Drive until the track starts to distort. Then, tweak the Drive and Bias to the point where the track is crispy and buzzing, but there is still clear intelligibility to the key elements of the mix, like snare and vocals. Then take the mix control all the way down, and slowly sneak it back up until you hear the mix thicken up.

FREDENSTEIN PREAMP/COMPRESSORS

500 Series Units With a Digital Edge



The Fredenstein 500 series units can be used in any powered enclosure, or in the companion Bento "D" housing offering a digital readout of all parameters.

I'm a big fan of 500 Series audio gear. It's a great way for anyone to affordably start a collection because there's no need to re-buy the power supply for every unit in your rack. There are a lot of preamps and processors to choose from, and manufacturers are stretching the format in novel ways.

Fredenstein Professional Audio—a team of German and American designers who manufacture gear out of Tapei, Taiwan—offers a range of 500 Series units that not only work in any basic enclosure, but also offer an extra digital component when run in their affordable Bento 6D, or Bento 10D enclosures.

For this review, I got the Bento 6D six-space 500 Series host unit plus a pair of F600A solid-state compressors.

BENTO 6D

The Bento 6D (\$499) came loaded with the units mentioned above with slot 6 empty. Before applying power, I wondered about the rectangular, blue LED screen on the right of the unit. I first thought it had something to do with the integrated power supply, a great feature not usually found in popular 500 Series enclosures. But upon power up, I quickly found that when I moved a knob or switch, even when jumping from unit to unit, that the screen displayed the changes in white-on-blue letters. Change from soft to hard knee, apply phantom power, adjust the threshold or gain, and the display responds accordingly. I quickly got used to this, especially since the units use every bit of available real estate, positioning knobs, switches and labels very close together.

The display is easily readable, even in low light, and will make anyone needing glasses for close-up work shout, "Freedom!" On the back, in addition to XLR in/outs and Aux in/outs on each slot, the Bento offers audio linking, compressor bus linking, a ground

flip, an on/off switch, and a standard IEC connector for power. The Bento has a quiet fan that kicks on when the unit needs cooling, which is noted by a fan On indicator on the LED panel with a Temp readout in Centigrade.

F609 PREAMP

The F609 preamp (\$599) uses "American made" input and output transformers and squeezes two tubes into a single vertical space—an ECC802S and an ECC803S. Front panel features include separate input and output gain controls, allowing you to play with distortion; a three-position low-cut filter switch (Off, 50Hz or 100 Hz); a -20dB pad; polarity switch; a standby/on switch; phantom power; single clip LED; DI input; and a slick looking circular VU meter. The phantom power and standby switches come with a single LED indicator, and the VU meter will not light up unless the unit is "on."

I used the preamp first on a male lead vocal with great results. Despite the fact that the mic was a Shure SM7B, the top was very open, and the vocalist's lower range, which was prominent, sounded great. The vocal was "there" without needing EQ during tracking. In fact, on subsequent uses, I got used to staying away from any EQ at all, relying solely on mic placement and selection—as it should be.

I next used the preamp on kick drum. The mic was an AKG D12 VR, a great active dynamic mic that has a three-position EQ switch tailored for kick. The signal was punchy and just needed pairing with a Yamaha SKRM-100 Subkick to bring up the 50Hz range. Last, I used the F609 to record a Martin acoustic guitar with a Neumann U47 FET placed just where the neck joined the sound hole. Once again, the instrument needed no EQ help and sounded great.

F600A COMPRESSOR

The F600A compressor (\$549) boasts low distortion and an internally balanced signal path. The gain control circuit is analog but the sidechain is digital based on two DSPs. Features include three dual-concentric knobs offering threshold/gain, release/attack and ratio/HPF. The highpass filter is sweepable from off to 4 kHz, giving you some serious options when trying to crush just the top end of a signal. The release ranges from 1 ms to 128 ms, while the attack is variable from 1 ms to 32 ms. I would like to have seen these attack/release ranges extended higher for some lazier applications like vocals, especially at lower tempos.

The largest 500 Series selection anywhere.



MÄAG PREQ4

Super-clean mic pre with the original AIR BAND®

SSL 611DYN

Classic VCA dynamics from the famous SSL E Series

KUSH ELECTRA 500

4-band EQ enabling precise, musical control over tone and texture



MOOG ANALOG DELAY

Pristine sound, hands-free control, stereo-linkable

BAE 312A

Fast and full mic pre with Jensen transformers

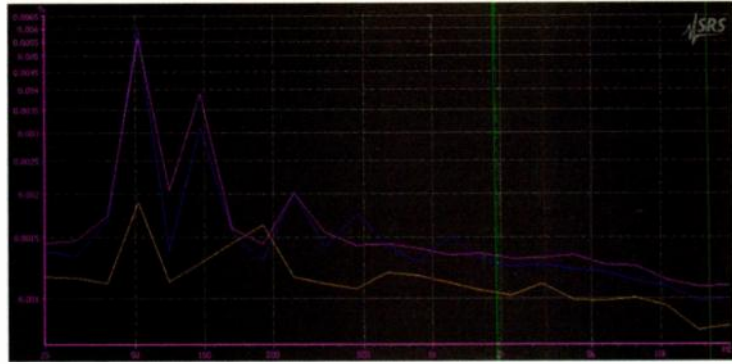
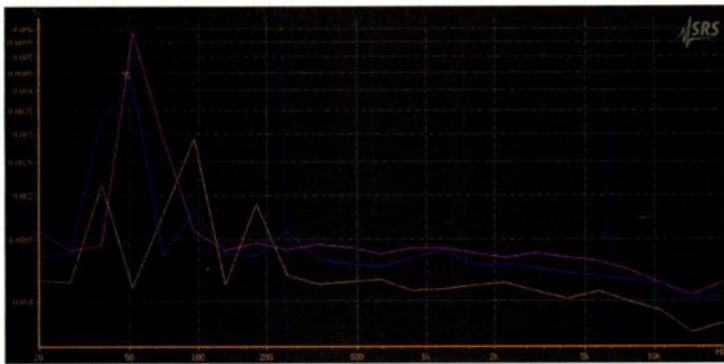
INWARD CONNECTIONS THE BRUTE

Luscious and smooth opto-cell compression



VINTAGE KING RACK 500

Vintage King's new, very own 500 Series rack!



Units tested in Slot 6, next to the power supply, had no THD+N difference from units tested in Slot 2, further from the PS.

Its sidechain is very sophisticated, using two LED lit switches to range from peak or RMS, at hard or soft knee. I found this useful for subtle changes of compression when recording transient material like handclaps or snare drum. The unit uses the same circular VU meter as the other F Series units.

I had a pair and quickly put them to use on a stereo acoustic guitar recorded with a U67 on the low end and a KM84 near the neck. It was easy to gang them in stereo by flipping the Comp Bus switch on the back and the link switches on both units. I adjusted the F600A's attack/release, sidechain options, ratio and threshold but could never get it to sound better than the raw mic feed. In this case, I believe with more leeway on the length of attack and release, I could have finessed the track a bit better.

However, on snare drum, I was able to really play with the sidechain and LPF to get some very interesting and musical results. I was able to quickly crush down on the top end of the snare by setting the sidechain at 2 kHz, which brought out the beef of the snare, and then blended in the snare bottom mic to bring out the upper frequencies. It was educational playing with all the options: RMS, peak, sidechain, and the quick attack times.

NO NOISY NEIGHBORS

Being a skeptical guy, I was curious as to why slot 6 in my Bento 6D was unoccupied. There are reasons why manufacturers use external power supplies in audio, one of them being electrical noise introduced to the audio path. So, I put our Stanford Research SR-1 audio analyzer on the job to see if that would be a concern. The first test was to run a Total Harmonic Distortion (THD+N) test on the F600A compressor set in slot 2, with the threshold set to maximum to take the compressor out of play. THD+N was tested with the output gain on three different positions; 0dB Brown, 7.5dB Blue, and 15.5dB Purple (see the two graphs on page 74). At maximum gain, the noise was just under a meager 0.006. For the second test, the F600A was moved to slot 6, closest to the power supply, and the noise moved a hair to just over 0.055. So much for healthy skepticism—the figures are great with little to no noise introduced to the audio coming out of slot 6, and all that comes in a box that costs \$499 with the digital option, and \$319 without.

I've not seen a lot of gear manufactured in Taiwan, but if my experience with the Fredenstein units is any indication of what can be, then bring it on. The fit, build and sound are tops, the American/German collaborative design excellent, and the digital read-out afforded with the Bento 6D makes it a must-have companion piece. I purposely never look at the price until the end of a review, but I was surprised that the cost of these units is right in line with the competition, even a bit below. So, if you're looking for great sounding 500 Series preamps and processors plus a bit more, Fredenstein has some gear you'll want to see and hear. ■

Kevin Becka is Mix magazine's technical editor.



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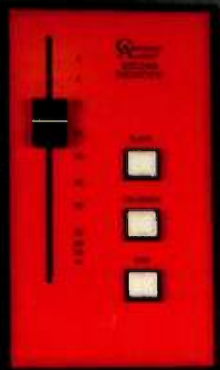
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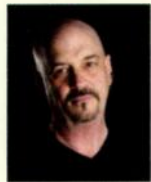
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Pick Up Your Pro Tools Pace



By Kevin Becka

While attention to detail and organization are vital elements in professional session workflow, speed can often make or break a session. In my own work and with the students I teach, I'm always looking for ways to cut time without negatively affecting the quality of the work. For example, in Nashville, where the publishing demo is a common session framework, it's not uncommon to cut four, five or more songs in a six-hour session.

Creating a project template is one great way to jump from song to song quickly during a tracking session; you can be ready to record faster than it takes the band to chart out a new arrangement. The key to a great template is to get the framework right before you name the session and hit Record.

In work here at the school, we use the band folder to house everything. This will pay off later when trying to find specific session dates for a particular client. In this case, being organized = speed later on, so name your folder for the artist and include the date—e.g., Kendrick Lamar yymmdd. This folder is where you store your Pro Tools session template for that artist (KLTemplate), songs cut on that day, rough mixes, and anything else pertinent to a session. Next, based on your session input list, build the template with tracks, cascaded in/out, track names, group colors, click track, and all the other favorite ways you like to work. One of my favorite tricks here is to increment a playlist on every track in the template so each track is named K.01, Sn.01 etc. This way, each take has its number embedded into the track name making it easy to answer the question, "Which take was that?" without having to look at your playlists (which annoyingly has the wrong number!).

Once the mics have been clicked and inserts checked, you're ready close the session and store the template on the dock. First, go to the Pro Tools template session file (KLTemplate.ptx), click once to select it, then hold Command + I to bring up the Info window (sorry PC'ers, the rest of this is Mac only). Click the box next to "Stationery Pad," close the Info window and drag the session file from the folder to the dock, just above the trashcan. This creates an alias that lets you quickly rename the template for each new song without looking in a drive and folder, or clicking through New Session options in Pro Tools. When you're ready to

jump to a song, single-click on the alias in the dock, choose New Session when prompted, name the new session for the song and store it in the topmost tier of band folder. All your tracks, colors, in/out, and everything else in the template is there in the new session. If you need to make changes to the template, choose Edit Stationery after opening the new session from the alias, make the changes, save it, and you're ready to open another session with the updated template. The bonus of doing it this way rather than using Pro Tools templates is that it stays with the project and works on any system.

Comping is a time-consuming process that pays off with unique results built from multiple vocal or instrumental takes. Using shortcuts is a great way to substantially cut your comping

time and make the process more about the art than the mechanics. To display the playlists on any selected track(s), hold Control + Command + Left arrow. (FYI, further left/right arrow clicks while holding the modifiers will take you through all the other track views.) Once the playlists are open, make a new (emp-

ty) playlist called VOC COMP, or whatever it is that you're comping. Then on the topmost playlist (under VOC COMP), use the cursor to select a phrase to audition and hold Shift + S to solo it. With the VOC COMP un-soloed, you'll hear the selection in the track; with the VOC COMP soloed, you'll hear the selection by itself. After you've heard the selection, use the semi-colon key to jump the selection to the next playlist and hold Shift + S to move the solo. You can easily jump around to different playlists in this way—using P or semi-colon to move the selection up or down, then Shift + S to solo it. When you find the take you like, use Control + Option + V to move it up to the comp track. Select the next phrase, rinse, lather, repeat and guess what? You've only used the mouse to make the initial selection; the rest is ninja-style Pro Tools operation.

The techniques above are just two examples of many workflow speedups you can use to alter the way you operate and build speed when using Pro Tools. My mantra is "step away from the mouse"—that little furry creature can be a time suck.

Developing speed while tracking, overdubbing, editing and mixing is something that will give you more time to spend on the creative side rather than fighting your DAW, and you've got to love that! ■

Step away from the mouse—that little furry creature can be a time suck.

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