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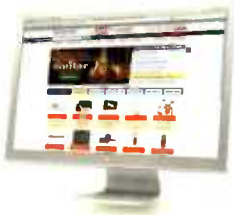

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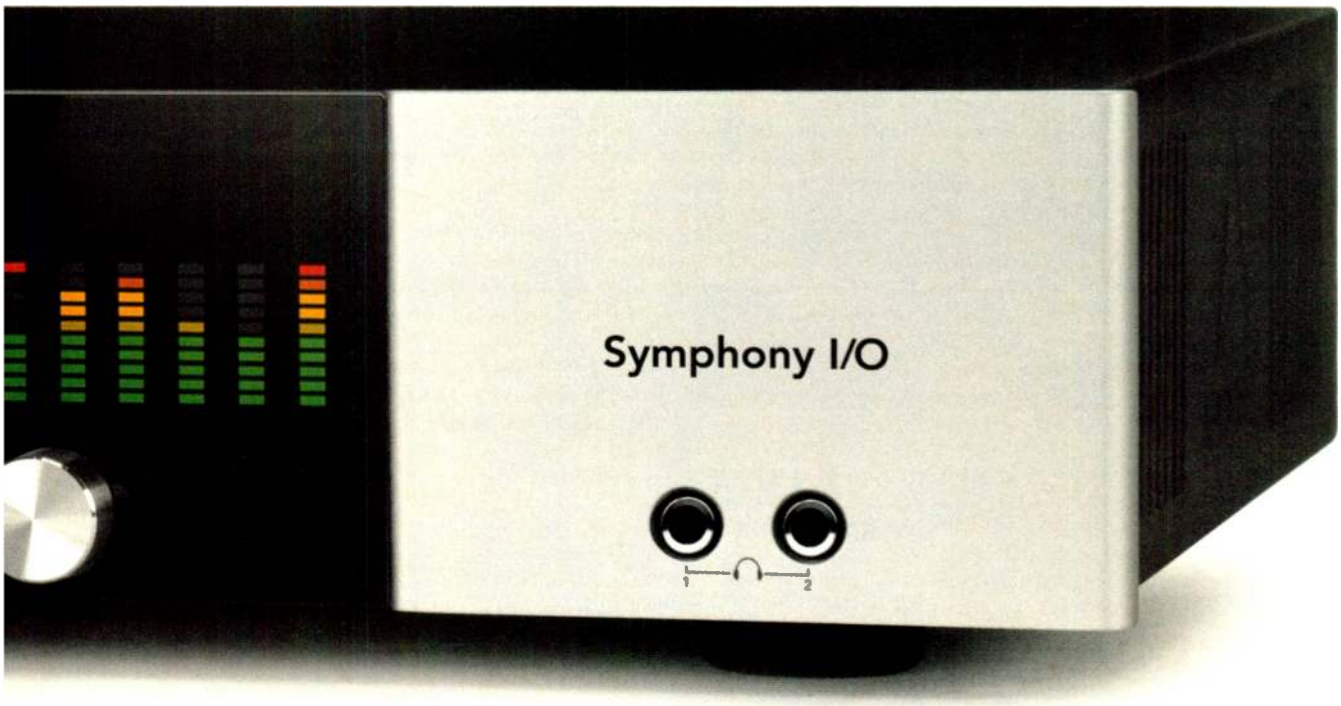

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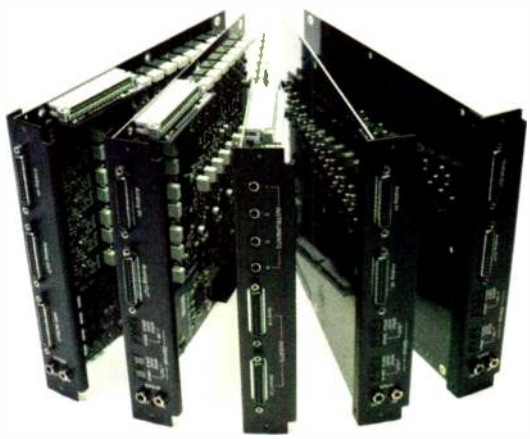

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on the cover

Naughty Dog, a subsidiary of Sony Computer Entertainment America, creates videogame audio in a multiroom complex designed by Chris Pelonis. See page 12. **Photo:** Chris Pelonis. **Inset:** Steve Jennings.

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FROM THE EDITOR

Coming Back to Nashville

We've been regularly calling Nashville from the *Mix* offices these past few months in anticipation of our third annual Mix Nashville event, to be held September 13 to 14, 2010. Many conversations involved the logistics in rescheduling a two-day event and coordinating sponsors, attendees, presenters' schedules and the venue. The venue, of course, is Soundcheck Nashville, and on page 56 you can read our update on its rebirth following the devastating floods of early May.

But many of the calls were just about what's going on in Music City, besides the 119-degree Heat Index of early August—it's sure been a survival summer in middle Tennessee! And we learned a couple of things. First, it's hard to put a label on the town, much as we like to refer to it as the country music capital, which it is, or the epicenter of Americana, which is also true. But it's so much more, and it began long before Jack White came to town and produced Loretta Lynn's *Van Lear Rose*.

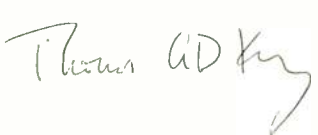
You have Kid Rock with Sheryl Crow, the emergence of teen pop under the guise of new country with Miley Cyrus and Taylor Swift, the Black Eyed Peas stopping in for a brief stint, and we just heard that first-call engineer/producer Chuck Ainlay (who's worked with everyone from Vince Gill, Wynonna and George Strait, to Peter Frampton, Mark Knopfler and Melissa Etheridge) is scheduled to work with Tony Brown on Lionel Richie's upcoming duets project. And that doesn't even begin to describe the range of what's taking place along the Row, in Berry Hill on out to Franklin and all spots in between.

Even with all of these seemingly disparate influences, Nashville maintains its signature sense of community, which was evident in the aftermath of the flood as people pitched in to help neighbors chop down damaged trees and clean up basements, lend out equipment or offer up a replacement guitar. And that spirit of community is most prominent within the tracking rooms, where musicians reign and are increasingly enjoying the benefits of being in a room with other players and just kicking it out.

Nashville has always been about players in a room, running down a song. At last year's Mix Nashville, Bil VornDick provided some colorful anecdotes of cutting a bluegrass record in two days and mixing on the third. It sounds great. And Chuck Ainlay notes the concept of "live recording" has definitely picked up around town during the past year. The players, he says, seem to appreciate and even thrive on it—especially after experiences outside of Nashville where they might be hired to come in for an overdub, play three or four takes alone in a studio, and then hear it for the first time when the record is released.

"You can't beat the energy of a band in a room," Ainlay explains. "The players here are the best in the world, and even with the best of them, you can feel them take off on the performance when they're feeding off other musicians. It definitely makes my job a lot more fun."

So you can't peg Nashville, but you can sure count on Nashville, even with tornadoes, floods and crazy heat waves. Come join us at Soundcheck in September and stop by to say hello. We look forward to seeing you.



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TALKBACK

Spreading the Word

Taking nothing away from Bobby McFerrin's talent, there's another lesser-known reason for the widespread success of "Don't Worry, Be Happy" ("Classic Tracks," July 2010 issue). At the time of the release of *Simple Pleasures*, EMI Manhattan was pushing it to jazz stations. The assistant program director of what was then New York City's only contemporary jazz station, WNEW-AM (that would be me), shared living quarters with the assistant music director at arguably the most important Top 40 station in the country, Z-100 (that would be my sister), who promptly brought it to the attention of program director Scott Shannon. And the rest is history.

Anita Bonita

Walter Sear Remembered

I just discovered Walter Sear had passed away and it made me think of a story that began with reading a *Mix* article ["N.Y. Metro," February 2003] about Sear Sound.

I like to go to swap meets, garage sales looking for any type of musical gear or equipment. I sat down at NAMM one year and talked at length with [*Mix* executive editor] George Petersen about the great scores made by scouring the flea markets, which he also enjoys. So about a year or so after reading that article, I'm at the local swap meet and spot this old piece of tube gear in a pile of stuff—big VU meter in the center, a couple knobs and a switch or two. As I looked at it closer, I realized it was an old audio limiter. In fact, it was a Federal Television Co./U.S. Army Signal Corps. AM-864/U vintage mono vari-Mu tube limiter. I thought, "I've got to make a deal before someone else sees it!" So the seller said, "That's an audio compressor, not sure if it works." "Okay, how much were you thinking for it?" "$10," he replied. Oh my! I was going for my wallet as fast as I could without seeming too excited, but then his girlfriend pipes in, "But if you take it now, it's only $5." I forked over the $5 and walked away with a huge smile on my face and a great find.

When I took it home and tried to get it going, it would pass audio but no compression/limiting would occur. Still a great score! I looked around for schematics but was having trouble coming up with them. Then I remembered in that *Mix* article, one of his engineers had said, "Walter has these weird compressors around that were made for the Army. We like to use on snare." "Hmm, it's worth a try," I thought, so I looked up the studio and found an e-mail address. So I wrote and to my surprise, I was answered almost immediately by Walter himself.

We e-mailed back and forth a few times in regard to the AM-864, and he explained, "I have about five of those around here that we've made work much better in the studio environment. My engineer guys have worked up mods to make them even more usable for recording." So I asked him if he might send me a copy of the schematic. "Sure, just send me your address and I'll mail them to you," he wrote. I did, and sure enough, a couple days later I get the big manila envelope addressed from Walter and inside is not only the original schematics, but copies of all the hand-written mods and upgrades incorporated into his AM-864s

I immediately e-mailed him back and thanked him, expressing my gratitude and wanting to compensate him for his time and trouble. I mean I couldn't have asked for anything better than this! Walter wrote me back, and said, "Never a charge for information."

I have never forgotten that act of kindness and personal attention from a man who may have just as well told me to go jump in a lake somewhere. Walter was a class act with no other goal than to promote knowledge of the art of recording and electronics, and to strive for the best in everything audio and not settle. He deeply understood what so many today either don't bother to learn or take for granted. A die-hard advocate of quality. Since then, I have had the compressor repaired and the modifications Walter gave me performed. Beautiful! I would never have gotten it to this state if I hadn't reached out for some help from Walter and he hadn't been so graciously and selflessly willing to help out someone he'd never even met before or knew. Walter, you will be greatly missed by all who knew you.

Brian Hutchison
Lunatech Studio (Seattle)

R.I.P. Bill Porter

I am deeply saddened to hear about the death of one of my mentors and dear friends, Bill Porter. Bill and I had been in touch with each other on a regular basis for many years, until about five to seven years ago when we lost touch. I knew he was in St. Louis years ago after leaving teaching audio at the Univeresity of Miami. He taught master classes at my college, Trebas Institute (Toronto and Montreal). A number of music industry educators and other persons have been asking me about Bill; unfortunately, I could not give any positive response.

He was a very inspirational human being with a great heart, always available to help a person in need. He was particularly close to and available for consultation with any students of audio, always willing to share his knowledge and expertise. He worked hard to establish standards of excellence in music industry and recording education through the Music & Entertainment Industry Educators Association (founded in Nashville in 1979), which is where I first met Bill in 1979, as MEIEA was being formed. It was an honor for me to be elected VP of MEIEA for the first two years of its operation ('79-'81) and president from 1982-'84. This happened largely due to Bill's recommendation. This meant so much to me because, for the previous 20 years, I regarded him as an idol, a mentor, a recording engineer with outstanding musical taste and perception—great ears.

David P. Leonard, president/CEO/founder
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Next month, we delve into audio education. What was the most memorable piece of information you learned while getting your feet wet in the industry? E-mail mixeditorial@mixonline.com.

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by Tom Kenny

Naughty Dog Puts a Byte Into Game Audio

PHOTO CHRIS PELONIS

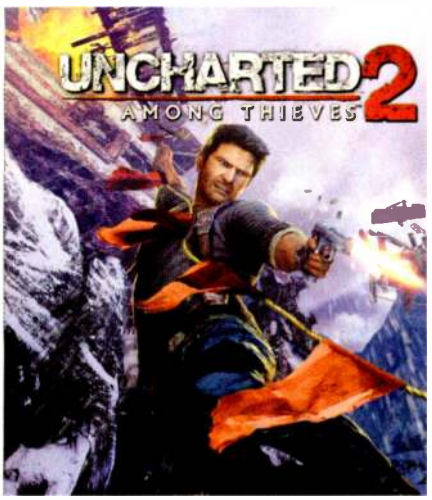
The rear wall of Naughty Dog's Media Room, which incorporates designer Chris Pelonis' trademarked The Edge acoustical system

Videogame sound production has come so far so fast these past few years that it's easy to forget it's still an industry in its infancy. It didn't come of age within a studio or network system, although dominant publishers and platforms have emerged. It didn't start out with any rules of production, such as those that might be handed down by a guild or apprentice system, though a guild has been established to boost the level of professionalism and resources industry-wide. Engineers didn't really have the right tools to do the job in the beginning, instead borrowing from record and TV and film production to get the job done while middleware was being developed to free up creatives from their code-writing brothers and sisters. And the facilities, with a few notable exceptions, didn't really exist to bring all the disparate audio assets together to handle the complexities of the increasingly complex 5.1—now 7.1—surround mixes.

But all that is changing, somewhat slowly over the past decade but definitely accelerating during the past few years. Microsoft built some sweet-sounding rooms to go along with the acquisition of Bungee, built on the success of *Halo*. Electronic Arts has gone through a couple of incarnations now in its audio suites in Redwood City, Calif., and up in Vancouver. But nobody has done it quite like Sony Computer Entertainment of America, which has built a network of powerhouse audio design, edit and mix rooms in California during the past six years, from San Diego up to Santa Monica on through to Foster City. Sony's latest—the Media Room/Theater in the new 45,000-square-foot Santa Monica offices of Naughty Dog, a wholly owned subsidiary—is pictured on this month's cover.

Naughty Dog has been one of the world's premier game developers since emerging in 1994 with the highly acclaimed and huge selling *Crash Bandicoot* series for PS1. PS2 brought *Jak and Dexter*, but it was PS3 that put them over the top with a character named Nathan Drake and the hugely popular *Uncharted 1* and *Uncharted 2: Among Thieves*. The latter, released in October 2009, has sold well over 4 million units and swept awards shows worldwide, including Best Game, Best Art Direction and Best Sound at Game Developers Conference 2010 in February. The demands to keep up with expansion packs and online versions, not to mention new titles, led Naughty Dog into its new digs, which was occupied this March.

The Media Room, a 7.1 presentation/mix theater, was designed by Chris Pelonis, the TEC Award–winning, Santa Barbara–based designer/acoustician who has now designed 45 production and mix rooms for Sony worldwide, most of which house his monitors. Pelonis, a first-rate guitar player and self-taught acoustician, has now designed somewhere in the neighborhood of 500 spaces, from control room/studios to nightclubs to home theaters to dub stages and mastering rooms. He has certainly refined his techniques and implementation during the years, yet he incorporates the same basic principles that led him into the business back in the mid-'80s, when he patented The Edge: a somewhat revolutionary




Justin Monast, Naughty Dog director of information technology

acoustical device with multiple attributes, but primarily a low-frequency control device.

"The Media Room is a relatively large room, about 830 square feet, but it isn't really all that different from what I might design for a mastering room, a control room, a home theater or any critical-listening space," he explains. "Part of my signature, if I have one, is that I like a large sweet spot, and because of my approach to low-frequency control, I don't get the low-frequency buildup and boundary interference that is typical in listening spaces, regardless of the size. Obviously, here we had to accommodate a lot of seating, sometimes up to 30 people on couches, and there is a zone where the energy is more focused, but that has more to do with the trajectory of the speakers and focal point/listening position of the multichannel system. Having said that, everyone in the room is still intimately involved in the playback. The combination of consistent off-axis phase and frequency response of my speakers [35-plus degrees] and well-designed acoustical control is the recipe for 'not a bad seat in the house.'"

"Chris did an awesome job," says Justin Monast, Naughty Dog director of information technology, who has been with the company since *Crash Bandicoot* 1. "And he had to teach me about sound. We had mixed in conference rooms before, with steel doors leaking into the offices. This time around, we wanted to do it right. We gave him a predefined space for six 5.1 production rooms and a 5.1/7.1 theater, and he worked within our constraints. We couldn't float all the floors, for example, and we had to use metal studs, not wood like he would prefer. But he really wants to build a room that he would listen to."

Naughty Dog occupies a full floor within a five-story building in Santa Monica's Water Garden area. Isolation was a focal point from the early meetings, as was HVAC and electrical. (Pelonis is an avowed fan of balanced power.) From the first meetings, Naughty Dog made it clear they needed the Media Room to be something for everyone. It had to be able to show dailies, host training exercises and serve as a meeting place for brainstorming between and within departments. It needed to show the latest titles and updates in press previews and serve as a final mix room. And, of course, people needed to play games. But it was clear they wanted a first-rate theater, not a multipurpose room.

"One of the things I really pushed for was couches in segments instead of the typical seating in a theater, with director's chairs and captain's chairs and the editor and three or four people discussing a movie," explains Monast. "With games, you might have 30 employees talking about certain aspects of the levels with animators and programmers. So for that many people, it's a much more inviting and comfortable area. There are actually two sweet spots in the room, for 5.1 and 7.1, and his subs are just amazing. We've had the composers who scored the *Uncharted* games come in, and they were just blown away."

"Low end is a given any time you work with a game company, and they definitely need to hear it correctly," Pelonis says, calling it, with a wink and a nod, a 7.2 room because of the two Pelonis Signature Series subs. "The stuff that these guys play isn't wimpy. The low frequencies are the most difficult and problematic to deal with in any room. They're also the big determiner of whether you get a nice, wide sweet spot or a small, confined sweet spot. By reducing boundary interference with well-designed and well-located acoustical systems, the typical bass buildup—the pressure zones as I like to call them—is mitigated."

The "acoustic system" Pelonis refers to is The Edge. Basically, it provides a very gradual transition from absorption to dispersion and diffusion as the frequency rises. As the system becomes more reflective, it transitions into dispersion as a result of this faceted geometric condition, similar to the varying well depths of a Quadratic Diffusor. While he has never been a big proponent of back-wall diffusion, he says there is an inherent diffusion and dispersion characteristic in The Edge without the splash-back in the mid to high frequencies.

"You will find some diffusion occasionally on my back walls, and I'm not at all saying that is a wrong approach," Pelonis explains. "But you have to be cognizant that if you get in the proximity of where all this phase gradient is occurring, you will find your head swimming in a comb filter. That said, I do have some of Peter [D'Antonio's] diffusors back there, but probably less than a quarter of what you might see in other rooms. If you think of The Edge creating a 'W' on the back wall, in this case, the valleys of the 'W' are where I added diffusion. Over the past 25 years, I've learned to blend the rest of the room into the system so that every aspect of the room is more meaningful acoustically than maybe what it was when I started."

Pelonis had just shy of 12 feet height to work with within the isolation shell. There is trapping in the ceiling, as would be expected, and he incorporated some proprietary new techniques for dealing with absorption along the soffited speaker wall, a common trouble area where front meets side.

Pelonis Signature Series speakers, built and distributed by Tannoy, are used throughout the room, with three passive PSS110s across the front and two on each side, placed for optimum 5.1 and 7.1 listening positions. ("I don't like them less than 100 degrees off the center of the front wall for 5.1," Pelonis says. "And I prefer in the 115 to 117-degree range.") The PSS12LF subs are flush-mounted as well and were doubled up to maintain the impact throughout the room. All amplification and processing is also by Pelonis.

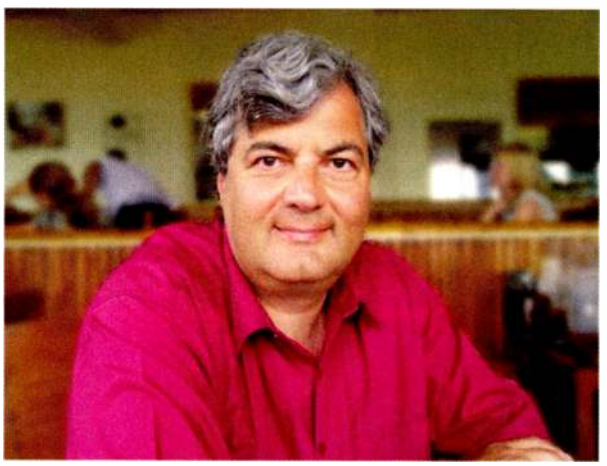
"The team at Sony Computer Entertainment is really top-shelf, and we're pretty fine-tuned at this point," Pelonis concludes. "They're extremely efficient from a design-build perspective, and I've learned to value working with people who not only have experience, but who understand what I'm after when I sit down to listen to a room." III

Tom Kenny is the editorial director of Mix.

CURRENT

compiled by Sarah Benzuly

Albert Leccese, 1953-2010



Albert Leccese, the co-owner and VP/director of engineering at Colorado Springs, Colo.–based Audio Analysts, lost a five-year battle with lung cancer and passed away on July 17, 2010, with his family at his bedside.

Leccese became involved in professional sound reinforcement in 1973 and was a pioneer in developing large-scale, high-performance live sound systems. Widely regarded as one of the world's leading audio system designers, Leccese worked on more than 2,500 live events during his successful career, including major tours and one-offs for clients such as Bruce Springsteen, Joel Osteen Ministries, the 1976 Olympics, Woodstock 1994 and two Papal visits. He also collaborated with many pro audio manufacturers over the years on developing and beta-testing technologies that are now part of many pro audio products and services.

Aside from his audio expertise, Leccese was well-liked, with many friends throughout the pro audio and music industries. He will be missed and long remembered as a caring individual who was generous with his time, often offering to share his expertise and experience at educational seminars and industry events.

Leccese is survived by his wife, Denise, and two sons, Paul and Steven.

In lieu of flowers, contributions can be made in the memory of Albert Leccese c/o University of Colorado Hospital Foundation, 12401 E. 17th Ave., Mail Stop F485, Aurora, CO 80045. All donations will be used in the fight against lung cancer.

Last Call: Calrec Analog Consoles

Calrec Audio is discontinuing production of its analog audio consoles as of November 30, 2010. Until then, the company is offering an opportunity to make final purchases of its S2 (pictured), C2 and M3 analog consoles, as well as modules and card assemblies. The company will continue to provide component spares and repair services for the S2, C2 and M3 consoles for a minimum of 10 years from shipment date. Should original components or parts become unavailable, Calrec will offer alternatives, including hardware/software solutions.

The decision to stop making analog consoles results from the broadcast market's general adoption of digital technology, which has reduced demand for analog products and made dedicated analog components difficult to come by. Calrec had already stopped manufacturing its T Series and Q2 analog consoles.

GearFest a Hit

Sweetwater Sound's GearFest 2010 (June 25-26, Fort Wayne, Ind.), an end-user-oriented music and pro audio festival, featured manufacturer exhibits, workshops, clinics, seminars, live demos, special performances, a musicians' flea market and more.

Featured events included the Producer Forum, a panel of producers led by Sweetwater editorial director Mitch Gallagher; the story behind Gretsch Guitars with Fred Gretsch; and a presentation by Russ Berger on home studio acoustics. Other highlights included producer/engineer Fab Dupont's workshop on mixing, producer/engineer Jacquire King's seminar on mixing with plug-ins, and recording engineer/producer Ross Hogarth's presentation on recording techniques. GearFest wrapped up with a seminar featuring daytime television stars/recording artists Kurth & Taylor, who gave a special concert and discussed how they created their D.I.Y. album and video releases.

Industry News

John McMahon

DTS (Calabasas, CA) promotes **Brian Towne** to executive VP/COO...**Shure** (Niles, IL) news: **Ron Thompson**, senior VP of operations/COO, and **Avi Vaidya**, senior VP of product development/CTO...New VP worldwide sales and support at **Audinate** (Portland, OR) is **John McMahon**...**Andrew Calvo** fills the newly created VP sales and marketing position at **Keith McMillen Instruments** (Berkeley, CA), while **Christen McFarland** is the new marketing director...**Focusrite Novation** (Buckinghamshire, UK) adds **Ralph Goldheim**, director of U.S. sales...**Karl Chapman** joins **Midas Klark Teknik** (Worcestershire, England) as sales manager, EMEA (Europe, Middle East, Africa) while **Erikson Audio** is tapped as sole distributor in Canada...In **Elias Arts**' New York office is **Kala Sherman**, executive producer...Oxford, UK–based **Sonnox** brings on **Ruth Almgill**, support engineer...Distribution deals: **Primacoustic** (Vancouver) taps **RCK Marketing** (Northern California, Northern Nevada) and **Metro Joe's Marketing** (Louisiana, Arkansas, Oklahoma, Texas); **dBTechnologies** will be rep'd in South Korea by **Dongyang Tave**; and **Alliance Audio Group** will handle **NEXO** (Buena Park, CA) gear in Southern California, Southern Nevada and Arizona.

Studio Unknown Update

The term "sound for picture" is most often associated with audio post-production for feature films, but it has multiple meanings for small and mid-sized studios outside of the Hollywood game. Find out just what kinds of sound-for-picture projects these studios are working on, where they're coming from and what they're doing to land them. Visit mixonline.com/studio_unknown.

onthemove III

Who: Bobby Ferrari, International Academy of Design and Technology (IADT, Las Vegas) Studio Manager

Main Responsibilities: co-design, install and manage IADT's studio, which is currently in development with Yanchar Designs.

Previous Lives

- Odds on Records & Studios co-designer/studio manager
- Platinum Sound Labs, Studio Vegas and now-defunct LP Studios chief engineer
- Touring bass guitarist

The most interesting thing about working in a studio is... interfacing with other veterans like Candace Stewart, Kevin Churko, Jason Cropper, Allen Sides, Ernie Woody and other talented folks.

What I'm currently listening to...the Stones (duh!), Brandon Flowers, Alicia Keys, The Gorillaz, BEP and AOL streaming Brit pop.

When I'm not in the office, you can find me...texting the gorgeous but elusive Cindy K.!

L-R: Troy "Roc" Peebles, Candyce Jenkins, ES Audio studio manager Donny Baker, Michael Panepento, Otis Williams (from The Temptations) and artist Marc Alanzo

Elephant Symphony = ES Audio

After six years in the business, music and post recording studio Elephant Symphony Studios has become ES Audio Recording Studios (Burbank, Calif.; esaudio.com), a division of Open Call Productions. ES Audio continues to offer the same services and has retained Elephant Symphony's Donny Baker in the role of chief engineer/studio manager.

"Our name and ownership has changed, but we still offer some of the best in vintage front end and a laid-back vibe that keeps clients coming back," Baker said. The studio features five recording suites, two voice-over booths, drum room and lounge.

Correction

In the June 2010 article on sound for *Robin Hood*, the facility used to premix the music score was Todd-AO West, Santa Monica, not CSS Lantana West. The correct spelling of Gary Hecker's assistant is Nerses Gezalyan.

Triangles, Tubes and UFOs

FEELING BOXED IN

I found it up in an oven-hot attic in the middle of summer. The place reeked of bird crap. I was rummaging for treasure in an old music store, tip-toeing around in an area that was strictly off-limits to anyone but shop personnel, and I found this massively crazy amp literally stuffed between a pile of old marching-band tubas and a stack of Chinese violins. I knew it was something weird and special, covered in a thick layer of gray dust and pigeon excrement. A big old wood thing, built like a classic console television or something. It had an instrument jack on the front and two large round speakers pointing outward from a large tube. It looked to have been stored there since it was new, with original store tags still attached, but someone had cannibalized every control knob off of the front. I excitedly dragged the huge thing down three flights of stairs, as whisperingly quiet as possible, before presenting it to the old geezer at the counter. "How much is this?" He looked at me covered from head to toe in sweat and soot, knowing I'd been snooping around where I shouldn't. "Well," he said as he gave me the stink-eye, "for you, $200." I couldn't resist. This was to be my biggest guitar amp discovery of 1994.

Sylvia checking out the 3rd Power HLH 312 speaker ultra-stack at NAMM

I am bored with the typical. We all wake up in our boxy bedrooms and pour cereal out of a box, turn on the box to watch the news, climb into our box to drive to work. We tolerate our mundane existence as we pull our guitars out of boxes, connecting one box to another to make sound come out. Stomp on another box to make it sound groovy. So I was lucky to find a real gem that had nothing to do with traditional square guitar amplifier construction. My attic treasure was called a "Tuned Tube" and was like nothing I'd ever seen before. Either this designer was a genius or he was really freakin' high. (Somehow, I think the latter applies here.) Built to fit into the modern look of the early '60s living room, it was a solid-state amp designed around a large physical "tube" with speakers mounted at both ends pointing outward. It had cabinet-quality wooden reflecting panels on hinges used to aim the sound coming out of the tube, controlled with small adjustable ropes. (Ropes?!) With these "reflectors," you could set up the amp in your living room, carefully focusing the sound at your favorite chair. Despite its strangeness, the Tuned Tube really did sound amazing! Deep tremolo and spring reverb made this a favorite clean tone played by Mike Campbell during our Johnny Cash sessions, among many other great projects.

Teisco's Check Mate 30 end-table amp design

PHOTO COURTESY BRIAN CHARLES

Maestro's Rover amp

More than just choosing the type of wood and speaker element used, the construction of a speaker cabinet for guitar is an art that can take many forms. And why not? Some shapes have purpose. And some seem to be experiments with no reality behind them. Vox had some interesting designs in the late '60s and early '70s, incorporating stylized angled cabinets, and the Acoustic Corporation (best known for its successful folded-horn bass rigs in the '70s) had some really unusual designs, including my Tuned Tube.

Japanese company Teisco also had an amp that was designed to fit into your living room décor. About the size of a small end table, the cylindrical Check Mate 30 amp had the speaker pointed straight up, reflected out to the sides with a plastic cone. This clean, solid-state amp also had a strong tremolo and sounded real good, but with its cheesy '70s fake-plastic wood wrap, it was hard to take the

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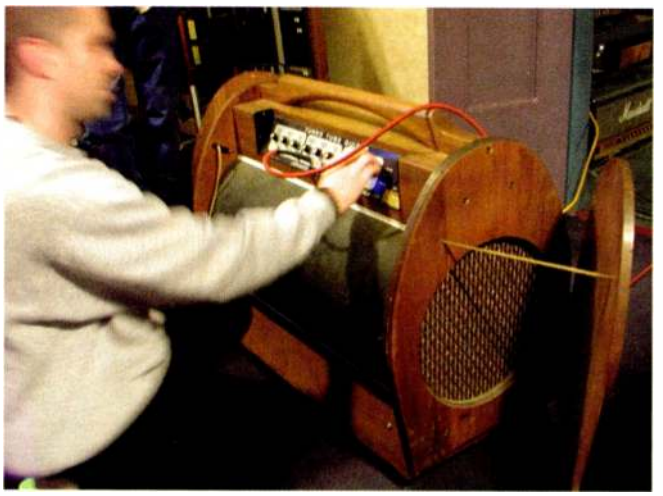

The Acoustic Tuned Tube amplifier in action during the Lustra sessions

amp seriously. Similarly, Maestro had a cylindrical UFO hatbox type of amp in the '70s that could be mounted on the top of a mic stand. The Rover sales pitch boasted a compact design that would spread the sound throughout the room, similar to the Bose speakers of the era. Both of these instrument manufacturers attempted to buck the trend and come up with the geodesic dome of guitar amplifiers that would revolutionize the way speakers were built, but like the domes, they never really made that big of an impact. But this is not a reason to give up on ingenuity!

Not quite yet. Like any great restaurant, each manufacturer has its own way of dishing up the guitar amplifier/speaker combination—and some meals are downright unusual and exotic! Take 3rd Power, for instance: Here is an American company that is known for its use of triangles in the amplifiers' design, and these rigs look very different. Jamie Scott, the company's founder and head designer, has a very specific reason why the speakers are shaped the way they are. He explains that professional recording studios are built with no parallel walls, so why would you have parallel walls in guitar cabinet construction? Good point—though I never stuck to that "no parallel walls" rule in my studio. Needless to say, these triangular guitar cabinets are made from Baltic birch loaded with vintage 30 speakers, and they sound terrific. The biggest drawback to having the 3rd Power HLH 312 speaker cabs would be that they are awkward as hell to carry around, and you need at least three of them to have a proper stack to set your head on. Ahhh, but they look super-cool and have been big hits at the NAMM shows.

The truth is, big old square cabinets and combos actually sound good. They push air. They resonate. They are structurally sound. They fit along a wall. They stack nicely. Boxes are okay, after all. They are hard to avoid. They make us feel safe. And when all is said and done, we will probably be spending eternity in the ground in one anyways. ■

Sylvia Massy is the unconventional producer and engineer of artists including Tool, System of a Down, Johnny Cash, Red Hot Chili Peppers, Tom Petty and Prince. She is a member of the NARAS P&E Wing Steering Committee and Advisory Boards, and is a resident producer at RadioStar Studios in Weed, Calif.

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Mike Hedges and his crew created the soundtrack for Universal's King Kong attraction at Park Road Post in Wellington, New Zealand

BEYOND 5.1

THE RACE FOR GREATER PLAYBACK DIMENSIONALITY HEATS UP

By Blair Jackson

New Zealand–based re-recording mixer Mike Hedges has plenty of experience crafting superb multichannel film mixes. He's earned Oscars for his work on two of director Peter Jackson's most complex films, *The Lord of the Rings: The Return of the King* (2003) and *King Kong* (2005). Each of those films clocked in at more than three hours and required many months of audio post work. Yet one of the most intriguing jobs Hedges has worked on recently is a film that lasts just 90 seconds—but required an entirely new approach to mixing. That's because that minute-and-a-half is not for a conventional theatrical film, but is the audio component of the new 3-D King Kong portion of the famous "backlot" tram ride at Universal Studios Hollywood theme park. It's a job that required Hedges to mix 22 discrete channels for twin 120x40-foot curved screens that sit on either side of a tram during the Kong episode, in which our gorilla hero saves the helpless tourists from a T-Rex attack!

This is part of a trend that's been growing for some time: upping the audio ante—more channels, more speakers—to make sound appear more dimensional. Certainly, the new generation of 3-D films has fueled the urge to fill auditorium spaces with more realistic and enveloping sound. But it's also affecting the sound design in other spaces—from videogames to thrill rides to museum exhibits. What if, instead of a film soundtrack being delivered in a theater in six channels through 12 to 20 speakers, it came at the audience through 32 discrete channels and more than 60 speakers? What if sound reproduction environments started dealing with the height dimension? All of these things are happening and at an ever-accelerating pace. Mixers have a wild new world awaiting them and cinema loudspeaker manufacturers must be salivating at the prospects for increased business.

Right away, we should acknowledge that where the mainstream movie theater is heading *right now* is probably toward Dolby Surround 7.1. With the greater penetration of 5.1 in homes, it's important that commercial exhibitors stay ahead of the curve by providing an experience less accessible to consumers; though a form of 7.1 is also available to consumers through some Blu-ray discs, it is in its infancy as a home format. Dolby's 7.1 was developed with Disney/Pixar and was debuted in select theaters this summer on a pair of 3-D releases—*Toy Story 3* and the live-action dance film *Step Up 3-D*. The 7.1 format features eight discrete channels: front left, center and right, a sub (low-frequency effects), left surround, right surround, and left and right *back* surround (the last two marking the difference between 5.1 and 7.1). "It's another color, another thing in the palette," *Toy Story 3* mixer Tom Myers told

Kong mixer Mike Hedges (right) with Brent Burge

Iosono studio technologies VP Brian Slack at a Digidesign ICON

Mix shortly before the film opened. "You can localize things more and put them directly by your side and something else behind you. Still, in this film we're trying to do it so it feels natural and draws the audience into the action. We're not throwing [sounds] around just because we can do it and it's cool. Though it *is* cool."

Not surprisingly, Tomlinson Holman—sound reproduction innovator and developer of the THX system back in the early '80s—is also promoting, through his TMH Corporation, a playback format that increases dimensionality: 10.2, which uses 12 speakers, including two "height" channels (actually, upper-front, 45 degrees above the audience); in front there are left wide, left height, left, center, right, right height, right wide; three surround channels (left, back and right); and two LFE/sub channels (hence, the ".2"). So far, 10.2, which was developed by Holman and USC's Chris Kyriakakis, has been demo'd only and does not exist in any commercial facilities, but the early word-of-mouth has been encouraging, and certainly Holman's track record speaks for itself.

And we would be remiss not to mention that IMAX, which has become the "premium" format of choice (i.e., people will gladly pay extra to view films on the giant screens), employs *dozens* of speakers throughout its theaters—especially behind the mammoth screens—though the audio is still a 6-channel surround mix.

But let's go back to Park Road Post Production in Wellington, New Zealand, and see how the requirements of Universal's King Kong attraction affected Hedges' approach to the mix. On the visual side, this was completely new Kong footage created at Weta Digital (New Zealand) to Jackson's exacting specifications, though the sound team did employ some of the original Kong and T-Rex roars from Jackson's film, created by David Farmer, Brent Burge and others. "We had to rebuild the ambiences from scratch again," Hedges offers. "You've only got 90 seconds, so you don't have time to be massively inventive in terms of creating new groundbreaking audio, but it has to *work*. You have to engage the audience in a scenario and take them on a journey and get them out of there quickly."

Because of the ride's unusual format—with two huge parallel screens being filled by 16 projectors, sandwiching the tram—Hedges and his team devised a way to mix to that configuration: In Theater One at Park Road, "We constructed a third-scale model of what the Universal soundstage was going to be, so we had screens on both sides of the room as opposed to where the screen normally is at the front." Working from animatics and armed with knowledge acquired from visiting the cavernous space the tram would pass through, the team took the mix as far as they could, working in New Zealand and eventually heading to L.A. to refine the mix within the space. "The biggest thing we had to adapt to was the spatial aspect of the sound," Hedges says. "The room reverb time is like 12 seconds—how do you deal with that? It was horrendous! Obviously, we wanted to add size to Kong's roar and the most common way to do that would be by adding reverb, but the natural 'verb meant we didn't have to, though we did add some slight delays that were timed to reinforce Kong's roar in the distant speakers. What we found when we got to L.A. is that we had to shorten specific elements of the roar, and the sub was overpowering, so to make it more immediate we halved the length of our sub signal."

In terms of the speaker configuration for Hedges' 22-channel mix, to each side (left and right) of the three-car tram, "We have two ground stacks of five speakers, which is a left, inner left, center, inner right and outer right. You have an image in the middle of the screen so the complexity of it was, we had to take the speakers that were below us and add a left-center-right above for each side, so then we had to balance how much of Kong was in the uppers and the lowers to generate the effect of him being in the middle of the screen. Our main challenge was, how do we make Kong sound like he's right in your face? The proximity of the speakers is too far from the tram so we had to build speakers into this effects wall that runs down either side of the tram, so when Kong roars, you've got sub sets that rock your intestines and your core being, and then you've got these reinforcement speakers that bring him to life. Those are stereo pairs—two stereo pairs for each of the three trams—12 sets of speakers, individually fed, so when we wanted sound to come at you, we were feeding into those speakers. Finally, we have two sub channels of two speakers on the ground, front and back." The speakers are a combination of L-Acoustics and Meyer Sound models. Over the course of about five days, Hedges and his team—which included Brent Burge and Universal veteran Peter Lehman (*The Simpsons Ride, Revenge of the Mummy: The Ride, The Amazing Adventures of Spider-Man* ride)—did most of the final mixing "in the box" on a Pro Tools rig inside Tram 2.

Dealing with left and right screens was difficult enough, but the ride has another wrinkle that posed an interesting sonic challenge, Hedges reveals: "At one point, Kong throws the T-Rex from one side to the other and it bounces off the top of the tram. With the movement of the tram, you're getting quite a lot of dynamic in that movement, and what we tried to do with the sound was re-create it by panning, say, on the left-hand side from the ground stack to the high stack to the right-high stack and down again, all in a split second. We were writing that pan, and we found that the best way to make it feel like the sound's right above you is to mono up those stereo pairs in the walls and fire that at the tram, and you get this amazing effect of scraping and rattling as the tram does this movement and you really feel like he's going over the top. We wanted to try some speakers above, but the tram has a roof on it so the sound has to get to you from the side. Mono'ing up the center and top speakers from either side did the trick."

"YOU'VE ONLY GOT 90 SECONDS, SO YOU DON'T HAVE TIME TO BE MASSIVELY INVENTIVE IN TERMS OF NEW GROUNDBREAKING AUDIO, BUT IT HAS TO *WORK.*"

—MIKE HEDGES

(We also wanted to write about the well-reviewed multi-environment Forbidden Journey ride at Universal Orlando's *Wizarding World of Harry Potter*, but were informed that the powers-that-be did not want the "secrets" of the ride revealed.)

A hop, skip and jump from Hollywood's Universal theme park, a company called Iosono, a division of Germany's Fraunhofer Institute for Digital Media Technology, is looking to revolutionize film sound through experimental installations at Mann's Chinese Theater (also in Hollywood). According to Brian Slack, Iosono's senior VP of studio technologies, the company's latest installation at Mann's involves around 60 speakers placed strategically in a 450-seat theater. "For that particular sound system, we're going to end up with 10 channels behind the screen—they have five now—and roughly 50 surround speakers, so literally twice as many as they have now," he says.

A major difference between Iosono and other companies, however, is "We want to literally remix the film," Slack says. "We've done mixes with a lot of mixers in studios in Hollywood. Overture Pictures gave us clips of *The Crazies*, which was a very good demo because the film was not in 3-D. When people hear about our system, they intuitively think it will be perfect for 3-D, but in the case of *The Crazies*, it added a whole other aspect to a 2-D film. However, we also did a demo of a reel from *Cloudy With a Chance of Meatballs*, which was in 3-D. On that one, we worked with Geoff Rubay, who was the sound supervisor, and he brought in all of his sound effects predubs, which is one step earlier than the stems, but we had all the stems accessible to us, too.

"What we're delivering to movie theaters is kind of unique in that Dolby, DTS, SDDS were delivery formats; they were a new way of delivering a 5.1 or 7.1 to a theater, but essentially the sound system was exactly the same. What separates us is we are a completely new sound system, so the delivery format is its own thing. We have two separate products—one is a 3-D sound system and one is a universal delivery format—and literally what we're delivering to a movie theater is a 32-channel print master. So in addition to the added number of speakers, we're also adding to the number of channels we're sending to movie theaters, which allows us to get more precise placement on where we can put things in the theater and it inherently gives us a lot more headroom. By the nature of the way we're delivering the soundtrack, we also have a lot lower noise floor, we have lower distortion because we're not building up so many tracks on the same six channels—we're distributing it over a larger number of channels."

Slack prefers the term "multidimensional" to "3-D": "It's not, strictly speaking, 3-D because we're not actually dealing with height at the moment." He says that "we definitely think of ourselves going into more premium theaters. It's going to be a premium experience because by the nature of the sound system, it's going to be expensive. We're financing the first 50 screens, so by the end of the year we hope to have 50 theaters across the U.S., and before that we're doing a limited release of a film we haven't announced yet, but it will be for industry advertising to get people to understand what the format is."

Sound and acoustics are just one small aspect of what the international design, planning, engineering and consulting firm Arup is involved in. Calling Arup "a world leader in 3-D spatialization," Raj Patel, leader of Arup Acoustics, says his company is trying to develop true 3-D sound environments by using an Ambisonic system, "which allows you to reproduce aural environments in complete 3-D so you have complete control over the angle from which a sound comes.

"We've gone from a world of recording that started mono and went to stereo and then to what people generally mean when they say surround—5.1 or 7.1; whatever it might be. But the big drawback of all of those systems is that they mainly have loudspeakers at the front and at the side, and you can really only make sounds move from front to back by panning them to the left and right. An Ambisonic arrangement can make sound appear to come from all directions, so the perceptual impact of listening to audio accompanying video increases several-fold, especially if you can get sounds coming from the upper rear.

"If you record surround in the field in the first place, which requires a relatively complex mic, you can make field recordings in 3-D and then you can potentially apply that in a Foley studio or a mastering studio to create a true 3-D effect, which you can't do with a 5.1 scenario because 5.1 is only taking mono recordings and placing the sound in particular locations and panning them from one place to another."

Arup Acoustics' Raj Patel

If a world where surround mics are commonly used to create film soundtracks doesn't seem to be right around the corner, Arup knows that this practice will be part of the acoustics business for a long time to come. His firm is also exploring many applications that are not based around conventional theaters.

"The computer gaming industry is interesting because they really are trying to figure out how to heighten the individual experience," Patel says. "Having audio in 3-D connects you much more viscerally to what's going on in the game environment and is really becoming quite popular. In fact, there's a company that's about to come out with the first game that is 3-D audio only; it has no video.

"Music and education clients have been looking at 3-D, too. For example, the New World Symphony has been wanting to create a quality master-class series for their students where they can experience it and feel it in 3-D and hear it in 3-D and be able to play along with it in 3-D. And the scientific community wants to understand the interaction between light and sound, or the psychology of behavior as it relates to sound, and you can really only do that if you work in 3-D. So in places like Queens University in Belfast, they have what they term their Sonic Arts Center, which is a multilevel space with three floors where you can have sound coming from above, below you, the sides. Working with social scientists and psychologists, people have been building these sorts of spaces that are for much more than just entertainment." ■

Blair Jackson is Mix's senior editor.

Cloud Microphones JRS-34

Cascade Microphones Knucklehead

MXL Microphones R-77

SE Electronics RNR1

Cascade Microphones C77

The Revival Continues

WHAT'S NEW IN THE RIBBON MICROPHONE LANDSCAPE

By George Petersen

Royer Labs R-101

It's been nearly 80 years since RCA engineer Harry Olson filed his patent (#1,885,001) for the first ribbon (velocity) microphone, and the audio world hasn't been the same since. Long a mainstay of instrumental and vocal recordings, the popularity of ribbon microphones is at an all-time high. The number of users who appreciate the flexibility of these figure-8-patterned mics continues to grow, and in the past 18 months more than two dozen new ribbon mics have come on the market, resulting in more models, more options—such as onboard active electronics or mics ruggedized for live sound applications—and a greater selection at nearly every price range. With a lot of activity in the market, we checked out what's new.

Unveiled at last year's AES show and now shipping are the AT4080 and AT4081, the first ribbon mics from **Audio-Technica** (audio-technica.com). These hand-built, active ribbon designs feature onboard phantom-powered electronics that bring their output to near-condenser levels, allowing for use with any pro preamp. Both the larger AT4080 ($1,245 with shockmount and carrying case) and the low-profile AT4081 ($895 with isolation clamp mount and windscreen) feature powerful neodymium magnets and innovative dual-ribbon construction for smooth bidirectional response with high SPL handling. The company's MicroLinear ribbon design minimizes lateral flexing for durability and freedom from ribbon distortion. (See Russ Long's review on page 64.)

The **Apex** (apexelectronics.com) 215 combines two low-mass aluminum ribbon elements to provide greater output sensitivity. List price is $249, including shockmount. Also with a $249 list is the Apex 210, a single-element design with a 2-micron ribbon that handles 165dB SPLs. It has an integrated yoke mount with internal shockmounting and ships with an aluminum carry case.

ART's (artproaudio.com) M-Five has a 35mm low-mass/low-tension, 2.5-micron corrugated aluminum ribbon handling 148dB SPLs and a dent-resistant, stainless-steel mesh windscreen atop its black aluminum body. The M-Five retails at $199 and includes a shockmount and aluminum carry case.

Wes Dooley of **Audio Engineering Associates** (wesdooley.com) almost single-handedly began the modern ribbon mic movement with his reissues of classic RCA ribbon mics, starting with the R44 in 1998. Now, AEA has expanded its extensive offerings with two new models. Optimized for recording instruments and ensembles in stereo, AEA's R88 ribbon mic has been redesigned as the R88 mk2, with improved shockmount and cable connections. Its two undamped, long ribbon elements are angled at 90 degrees to each other in the Blumlein stereo configuration, and the mic is finished in stealth black for unobtrusive use in live applications. Retail is $1,895, including a high-quality soft-sided case, cotton mic bag, 4-meter stereo XLR breakout cable and variable-angle stand adapter. AEA is also now shipping the R84 Silver Limited Edition (SLE) of its R84 with chrome-end caps in a run of only 125 units. The R84 SLE's output is 3 dB higher than the RCA 44, and its 11.5-inch-tall silhouette is reminiscent of the RCA 77. The R84 SLE is $1,225 (or $2,550 in match pairs) with hard-wired 3-meter output cable, stand adapter and upright hard case.

Previewed at Summer NAMM 2010, the Knucklehead ($225 list) from **Cascade Microphones** (cascademicrophones.com) takes the element from the company's Fat Head mic and

Shure KSM353

Audio-Technica
AT4080 and AT4081

Sontronics Delta

AEA R88mk2

Apex 215

ART M-Five

Coles
Electroacoustics
4050

incorporates it into a brass-and-aluminum body with an integrated swiveling shockmount. The mic is offered in a 2.5-micron version and live application–ready 5-micron model. Both can be ordered with a Lundahl transformer as a $125 option. Also intended for SR applications—and used on recent tours by Steely Dan and Pat Metheny—is the Fat Head II Live, which has a 5-micron aluminum short ribbon and ships with an aluminum carry case, wood storage box and shockmount. In addition to the $225 standard Fat Head II Live, it's also available with either Lundahl or CineMag transformers for $335. The C77 features a 2.5-micron, short ribbon element routed to a Lundahl LL2913 output transformer with Evidence Audio internal solid-core copper wiring and Switchcraft XLR jack. It's assembled in Olympia, Wash., and retails at $499, including swiveling yoke mount, padded case and upright aluminum storage/travel case.

After 20 years of servicing and restoring vintage ribbon mics (skills learned from his father, ex-RCA engineer Jon R. Sank who designed the BK-11 ribbon mic), Stephen Sank of Cloud Microphones (cloudmicrophones.com) has launched a new line of mics. Handmade in Tucson, Ariz., the JRS-34 features a hand-cut, corrugated aluminum ribbon in a radiused, rounded neodymium magnet structure that reduces internal reflection/diffraction effects. The ribbon output feeds an onboard, phantom-powered JFET preamp to add 20 dB to the signal. The JRS-34 has a brushed-nickel finish with a nickel-plated screen and retails at $1,799, including a custom wooden storage box. It's also available as the black-finished JRS-34-TV. The same ribbon element—without onboard electronics—is also used as the passive JRS-34-P ($1,499) version, which is gray with nickel screens and a silver logo. All Cloud mics are fitted with CineMag output transformers.

For the 4050 ($2,500), its first stereo ribbon microphone, Coles Electroacoustics (coleselectroacoustics.com) took the element developed from its 4040 model and set it into two mono mics that use magnetic closures to snap them into a single unit. The system allows a full 360 degrees of rotation adjustment for a variety of stereo configurations, or the two can be used separately for spaced-pair placements. As each mic uses a standard XLR-3 connector, no stereo adapters or specialized breakout cabling is necessary. Price includes a custom shockmount and carry case.

MXL Microphones (mxlmics.com) has two new ribbon models. Designed to emulate classic RCA ribbon mics and priced at $599 (or $749 as the R-77L with Lundahl transformer), the R-77 has a chrome body and gold-mesh windscreen with a 1.8-micron aluminum ribbon element. It ships with an integrated swivel yoke mount, wooden storage box, desktop stand and 25-foot Mogami XLR mic cable. The R144 sports a distinctive purple body with chrome grille, a 1.8-micron ribbon and internal Mogami wiring. Retail is $159, including shockmount and carry case.

A dozen years after leading the modern ribbon microphone revival with its popular R-121, Royer Labs (royerlabs.com) continues developing innovative new products. Debuting this month is the R-101, featuring a 2.5-micron aluminum ribbon motor based on the R-121 model, but in a 1.5-inch diameter cylindrical body with no protruding pole pieces. Retail is $895, including shockmount and carry case. Another recent entry, Royer's SF-24V ($6,195) is a stereo mic with twin head amplifiers using mil-spec 5,840W pentode tubes (wired

in triode configuration) and custom Jensen output transformers delivering a high -38dB output to dual XLRs on the external power supply. The SF-24V is two matched 1.8-micron ribbon mics placed one above the other in the classic Blumlein coincident pair configuration.

SE Electronics' (seelectronics.com) RNR1 is an East-West collaboration, with Rupert Neve handling the electronics of this active ribbon mic and SE's Siwei Zou handling the transducer design and manufacturing side. The result is a ribbon mic with an extended response that's stated to be an unprecedented 20 Hz to 25k Hz, due in part to the design that features dual custom-designed input and output transformers (before and after the active single-ended discrete electronics section) and the 2.5-micron element itself, which is set into a elongated slanted body that reduces diffraction interference. Retail is $1,995 with shockmount and case. Also new from SE are the Voodoo VR1 and Voodoo VR2 models, which feature a stated 20kHz bandwidth based on a new Zou-designed ribbon element. The latter extends response by creating a resonant cavity formed by thin, perforated high-frequency–compensation plates on either side of the magnetic structure, with the effect of reducing the time differences between sounds arriving on the front and rear sides of the 2-micron ribbon. The $799 VR1 is a passive version; housed in a slightly longer body, the VR2 ($1,199) uses the same ribbon element but is an active model with phantom-powered electronics that boost the mic's output by 16 dB.

Shure (shure.com) created classic ribbon mics from the 1950s through '80s, and high-performance ribbons are back in the company's catalog in the form of the Crowley and Tripp–rebranded El Diablo and Naked Eye ribbon mics, now offered as the KSM353 and the KSM313. Both feature tough Roswellite ribbons, which are said to provide improved shape memory over conventional materials. The KSM313 ($1,619, with wood storage case and swivel mount) has a "Dual Voice" design. The front side of the mic has a brighter character while the rear side is darker, so users can choose from two variations when recording different sources. Retailing at $3,369 (with shockmount and wood storage box) and suited for solo use or paired for M/S or Blumlein stereo miking, the KSM353 has matched front/rear performance from 30 to 15k Hz at up to 146 dB.

Following its Sigma ribbon mic, Sontronics' (sontronics.com) Delta is designed for high SPL handling, with a mid-emphasis response tailored to keep guitar cabs and horns upfront in the mix, either onstage or in the studio. Its active, phantom-powered electronics offer high output and low-noise (14dBA) performance, while its effective shockmount removes stage rumble and vibration. Retail is $899 with aluminum flight case. III

Mix executive editor George Petersen is an avowed ribbon mic fanatic.

Ribbon Mic Manufacturers

Audio-Technica, audio-technica.com
AEA, ribbonmics.com
Apex, apexelectronics.com
ART, artproaudio.com
Avant Electronics, avantelectronics.com
Avlex/Superlux, avlex.com
Beyerdynamic, beyerdynamic.com
Blue, bluemic.com
CAD, cadmics.com
Cascade, cascademicrophones.com
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By Bryan Reesman

Neil Kernon at Rax Trax Recording, Chicago

Neil Kernon

ADOPT, ADAPT, IMPROVE

Neil Kernon is a man driven by passion. He has worked with acts ranging from Queen to Hall & Oates to Cannibal Corpse, collaborating with musicians he likes, regardless of the dollar signs attached to them. Based in Chicago since 1997, the British native says he has worked on more than 500 albums, including at least 350 that he has produced.

Born into a musical family—both his parents played piano and encouraged him to start around age 3—he picked up guitar by age 7 and played in bands throughout his school days. Later, a gig at publishing company Essex Music lead to him working at Trident Studios (London), where he ascended from tea boy to tape op to engineer. He got the chance to work on Queen's II and Sheer Heart Attack albums. In the '80s, his co-producing work with Phil Collins' fusion group Brand X eventually led him to produce three hit albums for R&B crossover stars Hall & Oates, two releases for progressive-metal progenitors Queensrÿche and two big records for Sunset Strip rockers Dokken. By the early '90s, his sensibilities shifted to harder industrial metal and thrash acts (such as Clay People, and Flotsam and Jetsam), and by the turn of the century, he was tackling progressive metal and helping death-metal veterans like Cannibal Corpse and Nile gain a thicker yet also clearer sound.

Even though he began his career in the major-label world, Kernon is steadfastly indie these days. He has often turned down more lucrative offers to focus on the music he loves. In this interview, Kernon talks about some of his classic recordings and death metal, and why drive, passion and enthusiasm will always win him over.

You did three albums in a row with Hall & Oates. What are your best recollections of working with them?

I was already a big fan, which has always been very important to me. The ideal situation is if you're really digging the music, then you're always going to do a better job. So this was perfect because I loved the band and the music. I was a big fan of what they had done prior, so I was getting involved with something that was a dreamlike situation rather than something that you're hoping you really can turn into something special.

They were very professional. I think the first album I did with them was actually their tenth record, so they knew that what they were doing as far as the process. It was really natural and instinctive. We didn't spend ages and ages going over the stuff. Daryl [Hall] had sketches that he would bring in on cassette and play for the band—which was Jerry Marotta, John Siegler, G.E. Smith and Larry Fast—and knock together the arrangement right then and there, on every song. It was like that on three records.

You gave them a beefier sound, particularly with the drums on a track

like "Private Eyes." It's something that you applied to many different recordings throughout the '80s with rock and metal groups like Streets, Kansas, Queensrÿche and Dokken. What inspired this approach to drums and percussion?

It's kind of funny. Coming from Trident there was always something of a tradition to uphold, which was the Trident drum sound, even though the drum sound that I preferred—the drum sound that I would hear in rehearsal with my band—sounded nothing like what was coming out from Trident, because back in the '70s, everything was really dead. Space was created with reverbs and stuff. The walls of the Trident drum booth were carpeted so there was no liveness to the sound at all.

PHOTO COURTESY ROBERT LANG RECORDING STUDIOS

With Degree Absolute's Aaron Bell at Robert Lang Studios, Seattle, Wash.

After my time in Trident, I did a bunch of other things, including going on the road. I did front-of-house sound for Yes for a year-and-a-half. I had this feeling that the liveness was important. I started working in a little demo studio in London doing a lot of punk and new-wave stuff, which was one of the things that Jerry had pointed Daryl toward when talking about me. He just liked the punchy, more aggressive, in-your-face [sound]. It wasn't metal, but it was aggressive and still poppy, and Daryl wanted to get away from the slick, polished approach that they had been using, which was almost like disco.

I was given free rein in that they wanted something that was powerful, which meant that drums were going to be prominent and probably not too terribly guitar-heavy, but at least more guitar-heavy than their old stuff was, which was very slick and kind of L.A. It gave me something to bring in that they'd never had before.

To be honest, after three albums, so much of that element—the excitement, the live approach—had been strangled out of the stuff. There was pressure from management and the label to concentrate on the crossover. We had a few songs that had done well on R&B radio like "I Can't Go for That," "Your Imagination," "Kiss on My List" and "One on One." It was starting to get a bit soft, and the guitars were coming further back, and the drums were not so bombastic. It was pretty much smoother, and it was at that point that I opted to [leave]. There was never any bad feeling, but we were growing apart a bit. I wanted it to be more aggressive, and it wasn't going to happen because they were seeing this gigantic crossover success. *Private Eyes* was probably my favorite in terms of it just being bashy and having lots of guitars in there, but we were still able to get on the radio because it wasn't an offensive amount of guitar, if you like, which was always the issue back then.

You produced two of the first three releases for Queensrÿche, including* Rage for Order, *which was heavy on sound design. What did you learn from working with them?

Rage is still is one of my absolute favorites and might still be my favorite collaboration. The thing about that record was the timing of computers becoming really a part of music. I was really big into computers anyway and carried my own Mac around back in those days and was getting into the integration of MIDI with live stuff, and sequencing. With *Rage for Order*, we were really able to experiment and explore those lines by integrating all of that stuff into pre-pro. That whole album was heavily sequenced—not in terms of the way to do it these days because everything was played live—but we had underpinnings of sequencing.

That was the beginning of a very optimistic phase for me in the sense that I'd always wanted music and computers to somehow align or help each other. I wasn't really a fan of using computers for mixing, just because they were really underpowered back in those days, and I wasn't convinced that they were replaying all my moves correctly. I would rather have done it manually because I knew it would be right. Of course, slowly as systems became more powerful, it was obvious that it was doing exactly what I'd put in. It was a very exciting time in that we were able to embrace the new technology.

When we met before working together, Queensrÿche had wanted to make a record that was essentially cold sounding: cold and high-tech and cyber. It was before that really existed in music. There was a certain amount with Gary Numan and artists like that, but that all really sounded programmed. They had the drum machines, and we wanted to do it with live drums and still have sequenced elements that meshed with that. With *Rage*, everything we tried worked. It was incredibly positive. We would try it, and it would work. So the whole thing went from strength to strength.

Have you been asked to do a lot of songwriting for people in the studio?

Yeah, I actually co-wrote several albums over the years. I was working on the Aviator record for three or four years. I also worked very closely with Michael Bolton on his record [*Everybody's Crazy*]. I call myself a one-stop shop. I'm able to help out with song arrangements or come up with parts if they need them or lay down the foundation or set people off with homework to do between pre-pro. I can do as much or as little as necessary. With one of the Dokken records that I worked on, it was really a matter of cobbling all the ideas together because they were pretty fragmented at that point. If a band's really got their stuff together, it might just be a matter of fine-tuning bits here and there, but if there's a lot of work to be done, I'm more than happy to get my hands dirty.

How much credit do you get for that?

To me, it's all part of the same thing. Admittedly, if someone says they'd like to write an album with me, I go in with a different mind-

set. But if they ask what the song needs, if it's a little bit that I can help out with, I don't mind. For me, it's all part of getting the job done. It's easy to do. I'm not really a credit grabber.

You worked for Chicago-based label Slipped Disc, which led you to producing death-metal band Macabre in 1997, which in turn led to work with Cannibal Corpse, Deicide, Nile and other groups of that genre. At the same time, you jumped into the prog-metal world. How did that dichotomy work for you?

When I got the opportunity to work with Nile, I had already done the *Spiral Architect* record. It was very technical. It's all inextricably involved in a sense. I've always gravitated toward technical music, which I suppose is where the prog stuff comes in. I don't like to do only one thing; I like to do lots of different things. It keeps me fresh and makes sure I don't keep making the same record over and over again. I don't like two bands to sound alike. I like the bands to sound like themselves rather than like a Neil Kernon production. So I go down these rabbit holes for a while where I'm sort of oblivious to what's going on in the rest of the music world. My focus is really intense in a certain area, but then when I come up for air and discover what's been going on, I have to backtrack and learn what else has been out there.

Given your preference for indie releases, how do you balance things out financially and how do those decisions affect what you work on?

I'll give you an idea of pay scale. My first solo production in this country was for EMI for a band called Spys in '82. It was a great, fun record. It was the band's first album, and they had the Foreigner connection [with two former members], and the budget for the album was $150,000. That was kind of typical, to be honest. That was the budget for a couple of months' work. Fast-forward to the Skrew album I did in '95, and the budget was $30,000. Obviously, Metal Blade had never really had huge budgets other than for bands that were a complete dead cert. I think the budget for the first Flotsam and Jetsam record was $7,500. If I wanted to work on it, then I'd have to adjust my fees accordingly. Of course, I had been over the years, from the $300,000 Lynch Mob budget to the $30,000 Skrew budget. If you want to work on something, you've got to make it work. I'm more than happy to do that. As long as I'm working on stuff that I like, I really don't mind how much I make as long as I can survive.

The sixth and latest Nile album,* Those Whom the Gods Detest, *is your third straight collaboration with them. This one has resonated with many fans who think it is their best-sounding album ever. It definitely is their fullest-sounding record. How did you transform them this time out?

It's been a process of learning for me and for them. They had done their previous records at the same studio with the same production team. They were getting better and better sounding as they went, but I remember in my discussions with [group leader] Karl [Sanders] they were looking for the sort of clarity I got from Cannibal Corpse and Macabre. They still wanted to be as heavy as they are, but they wanted to be clear.

I had never worked with anything that was as crazily fast and involved in terms of the drumming or the riffing as Nile when I worked on *Annihilation of the Wicked*. But I knew what we had to compete with because I was also making Cannibal records. *Annihilation* was a step in the right direction, but I knew even as we were finishing that record that there had to be ways of making it clearer, so the next record ended up being way, way clearer.

The band had lived with the previous one and felt that maybe it was a bit too bass-heavy, so we tried to thin it out and have lots of guitars, drums and vocals, but be easy on the bass. While the second album [*Ithyphallic*] is definitely clearer and you can hear everything, apart from the bass, it just sounded a little anemic, so this third one needed to have fat low end but super-clarity. This album [*Gods...*] took 80 days to do—66 days of tracking and 14 days of mixing—with a lot more work and attention to detail. Just getting it right was the key. There was no blurring. We went over and over the stuff. Carl even said in a couple of interviews that I really pushed them on this record. We would get a really good take and keep it, but then we would have another go at it. That music is so fast—there are speeds up to 280 bpm—with insane riffing. We recorded four tracks of guitar, so it's got to be tight; otherwise, it just becomes so messy. The guys worked really, really hard on what they do, and for me it was a matter of going bit by bit and perfecting every section.

Do you work at home at all?

One end of my living room is where I do my mixing. I do lots of mixing at my house, which is why I can still remain competitive in terms of cost. With Nile, I mixed at the local studio just up the road from here.

But you recorded the last Nile album at Karl Sanders' house?

Yes. I took all of my gear from my studio down to South Carolina. We did the drums in Florida, and then we moved to Dallas' house to get the drums all sorted and reinforced. And then to Karl's house, where we had two rooms. We had a little control room that I spent a day soundproofing and treating so we wouldn't get weird reflections. Then I set up my Pro Tools rig in that place, and we were there for two months. I mix many albums in my house. I have been using the same monitors and amps for 30 years. Adopt, adapt, improve. This little Singaporean guy once said to me, "You know what you need to do, Neil? Keep your head down and think a lot." I always thought that was so wise. You don't wander around clueless. Just make sure that you're prepared, keep your head down and get yourself together and hunker down. You've got to do that, especially in this day and age. ■

Bryan Reesman is a freelance writer based in the San Francisco Bay Area.

Pat Thrall Producer/Engineer Beyonce

Marco Migliari Producer/Engineer Robert Plant

John Seymour Producer/Engineer Santana

Tony Mangurian Producer/Engineer Willie Nelson

Chuck Ainlay Producer/Engineer Vince Gill

Bob Bullock Producer/Engineer Shania Twain

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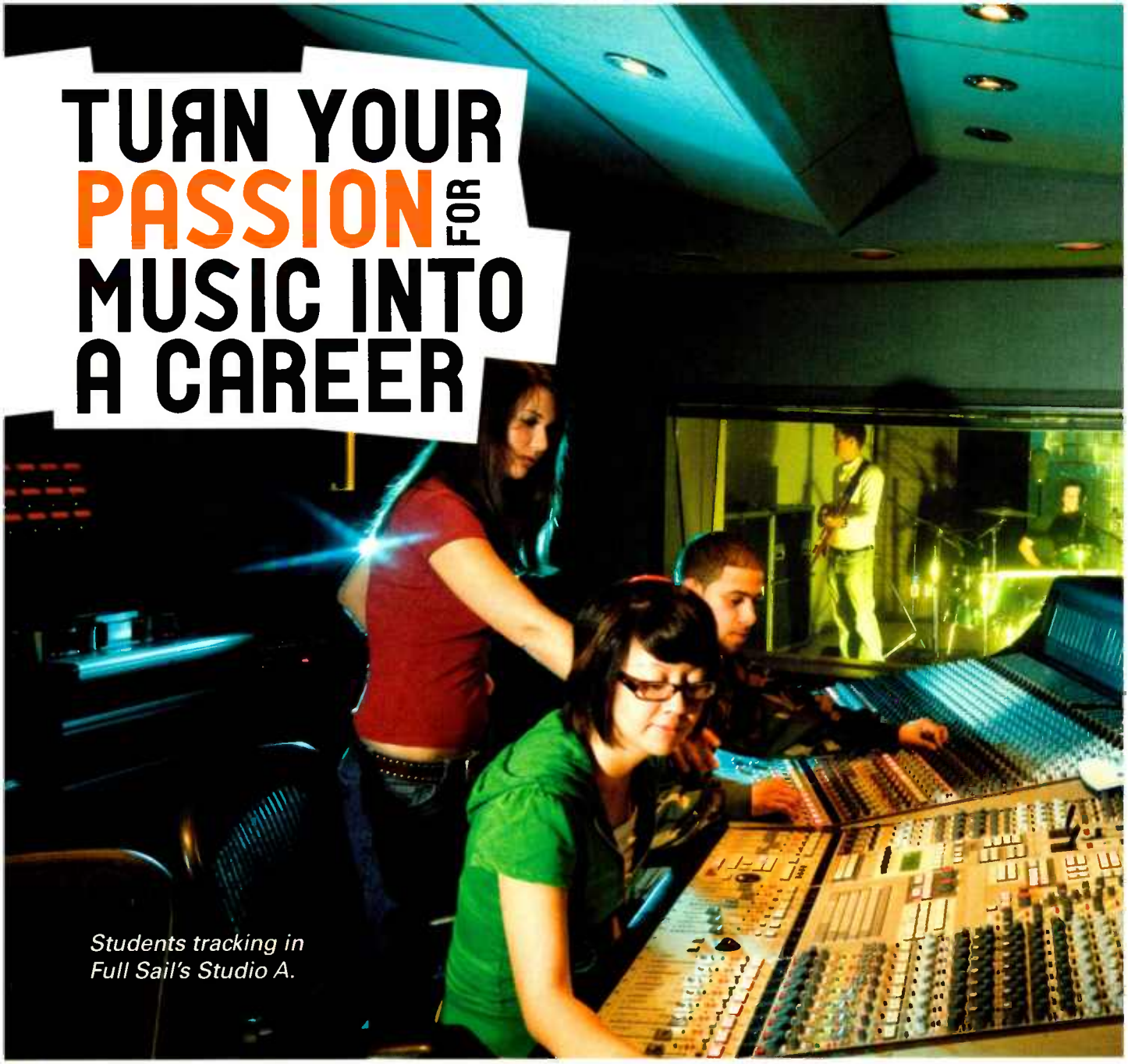

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PHOTO: DREW REYNOLDS

Los Lobos, from left: Louie Perez, David Hidalgo, Cesar Rosas, Conrad Lozano and Steve Berlin

By Blair Jackson

Los Lobos

BACK IN EAST L.A. FOR 'TIN CAN TRUST'

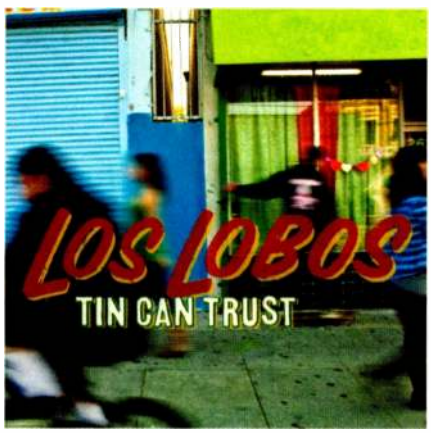
Even though Los Lobos have been around for more than 35 years and cut more than a dozen albums—each a gem in its own way—every trip to the recording studio is still an adventure for this band. That was certainly the case for their newest disc, *Tin Can Trust*, the group's first album of original material in four years, and their first on the Shout! Factory label. The band arrived at Manny's Estudio—in East L.A., the area that spawned the group—with almost no material written, but armed with the faith that great songs would emerge over the course of the sessions, as they have so many times before. Because they had a deadline from the record company, there was a little more pressure on the group than on some of their previous albums, but at this point the way they work together is so ingrained and instinctual they weren't at all daunted by the process.

Not only was the band working in an unfamiliar room, they were also breaking in a new engineer (for them): Shane Smith, who had done a little work with the group on their cool 2009 album, *Los Lobos Goes Disney*, but never a full project with them. Smith, who has engineered for such acts as Amos Lee, Health and Ben Harper & the Innocent Criminals (among many others), has used Manny's Estudio as a base of operations since the room opened in 2008, often working with owner Manny Nieto on projects.

"Manny did a build-out a couple of years ago and turned this huge warehouse space into a working studio," Smith explains. "I first discovered it as a player—I was with a group and we were literally the first band he was recording in his new studio. From the

first downbeat I was floored by the sound of the room—it's an amazing-sounding live room. It's a combination of drywall and cement and a kind of textured stucco on the walls. The control room is upstairs and looks down on the room, kind of like Studio B at Abbey Road. The vibe is right and the room sounds gorgeous."

"I really love the drum sound in that room," comments guitarist/singer/songwriter David Hidalgo, who had never laid eyes on the place until the night before the sessions began. "It's got a high ceiling—probably about 18 feet—and it's very live-sounding, but, of course, we could



also baffle it off or put rugs down if we wanted a tighter sound."

There are actually two recording rooms at the studio, and Smith says for this project Los Lobos rented both of them: "One became a sort of rehearsal hangout and then we'd be tracking in the other room." The control room has a Neotek 3c console, which Smith describes as "the last of the Neoteks before they went to the Elites. It has great EQs, beautiful mic pre's. It's a board that not a lot of people are that hip to, but it really does sound good."

As usual, the songwriting team of Hidalgo and guitarist/lyricist Louie Perez came up with the lion's share of the material for *Tin Can Trust*: seven new tunes covering myriad styles to guitarist/singer Cesar Rosas' three, which, true to form, include two fine Spanish-language numbers, plus a collaboration with former Grateful Dead lyricist Robert Hunter. The 11th song is a cover of the Dead's snakey "West L.A. Fadeaway," written by Hunter and Jerry Garcia in the early '80s and sung here by Hidalgo, who was one of Garcia's favorite musicians.

Hidalgo says he did have some rough musical ideas he'd recorded on his home 8-track Tascam Portastudio cassette recorder (!), "and in some cases they had a certain vibe or feel to them," Hidalgo says, "so we ended up using them, actually adding to them. That's a thing we've learned to do—to make the cassette [music] bigger—mixing new hi-fi tracks with it."

Well, Shane Smith, how did you like suddenly having to blend cassette recordings with Pro Tools HD tracks? "I had just spent 17 grand upgrading my Pro Tools rig about three months before the boys came in! When I was pulling the first tune off the 8-track, I was thinking, 'I can't believe I spent all this money on a Pro Tools rig when all I *really* wanted was a $400 Tascam!' [Laughs.] The tape saturation on those older machines is *ridiculous*. It sounds so good to me. And I realized immediately, 'This is how they made *Colossal Head* [one of Los Lobos most sonically adventurous albums]. This is that sound.' Not to take anything away from Tchad Blake or Mitchell Froom [engineer and producer of that album]."

Speaking of Froom and Blake, it was under their tutelage that Los Lobos first became an experimental band—and not just a great roots-rock group—beginning with the pair's groundbreaking work on the 1992 album *Kiko*, still one of Los Lobos' acknowledged masterworks. When I ask Hidalgo about their influence on the group's aesthetic, he notes, "*Kiko* is where we learned freedom. Up till then, we were kind of intimidated by the studio. We'd rehearse a lot before and try to get things so we could just go in and record—get all the basic tracks and then go back and start doing overdubs. But *Kiko* was the first time we went in with ideas that weren't completely fleshed-out. We would finish each track as we went, trying out different things, experimenting, and that's how we've learned to work since then.

"The way we did a lot of [*Kiko*] is, if it was just a song with a basic acoustic guitar, I'd play it for them and then we'd make up a crazy drum set or grab some other instrument and try it out, and that's how it went down. It was a revelation for us that you could work that way. I remember joking once that backward guitar might sound good on this track, and so Tchad goes in, flips the tape, and says, 'Great!' I didn't know we could do that! So now we're not afraid to take chances with parts or the sound. We'll try things out and some of them work and some of them don't."

On the songs that Hidalgo wrote from scratch in the studio, Smith says, "Dave might be down there fooling around on the guitar or piano, and he'd yell up [to the control room], 'Hey, I think I've got something.' Conrad [Lozano, bassist] and Cougar [Estrada, drummer] would go down and start working on the rhythm section and then the three of them

Engineer Shane Smith: "The tape saturation on those older machines is ridiculous. It sounds so good to me."

would get something that felt good. They'd play it live, we'd print it and move along.

"Once we had that basic bed, I would bounce down a rough mix for Louie, who would take it home and he'd come back to the studio, typically within 48 hours, and present a vocal idea to Dave. Dave was always, 'Yeah, that's cool!' And we'd go out there and we'd usually get it within five takes, if not one, or two or three." As always, Perez's lyrics are moody and evocative, filled with interesting characters and images, like the impoverished fellow in the title track; or his impressionist re-telling of the story of Juan Diego and the Virgin of Guadalupe in "The Lady and the Rose"; the vision of early Mexico on the intriguing "27 Spanishes"; or the unearthly "Jupiter or the Moon."

"We've been writing together a *long* time," Hidalgo says, "so I think there's a trust we've built over the years. We talk things over. I'll play my [musical] ideas for him first and see if he thinks it's something we can go on or develop. I might have a line or an idea of the chorus, or he'll get it to a certain point and he'll tell me what he's working on, and we go back and forth a little bit. And sometimes these things just *arrive* and they're right! The way our lives are these days, there's isn't a lot of time for us to sit around and *ponder*."

There was considerable experimentation with both guitars and amps when it came to doing overdubs, although "Dave most often had a good idea of what he wanted," Smith says. "He would show up in the morning, often with a new guitar we hadn't seen in the room yet that was designed for the song he had in his head that day." Typically, Smith would close-mike the amps and also go for a room sound—both are apparent throughout the album—"and there were some solos where we'd mike the actual electric like an acoustic, almost like pretending that the Tele is a Martin 6-string acoustic, so I'd reach for my Gefell mic or perhaps a

[Neumann] U87 with the 'inner tube' mod and put that around the 15th fret, maybe eight inches off, like I might with an acoustic, and then blend that signal with the amp signal that's run in a different room, probably with a 409 on it. You get this immediate clean closeness, this pristine attack, and then the amp carries the weight of the note essentially.

"There were so many possibilities for the guitars. And with the drums, as well," Smith continues. "Cesar tended to prefer a drier sound for his songs, so for those I would move the baffles in, drop the overheads a bit, close off the room a little. I still had room mics set up and they were recording, but in the end they never got used for Cesar's songs. Hidalgo definitely preferred the more roomy sounds."

Smith says that keyboardist/saxophonist Steve Berlin, who's always heavily involved in the recording and production of Los Lobos' records, served as "my liaison with the band through the whole process, down to the day-to-day 'What should I start with tomorrow? What should I work on tonight?'" Adds Hidalgo, "Steve's also into the Pro Tools stuff so he'll comp vocals, and he always has a lot of ideas."

As a working band that has to tour much of the year just to make ends meet, Los Lobos had to leave the confines of Manny's at some point and do finishing work on *Tin Can Trust* at a variety of other studios, including Eagle Audio in Fort Worth, Texas, Mission Bells in San Francisco, John Macy Sound in Denver and Hinge Sounds in Chicago—the last studio is where singer Susan Tedeschi cut her harmony vocals on the churning rocker that kicks off the album, "Burn It Down." Hidalgo says, "[Cesar and I] were on the Hendrix tribute tour [Experience Hendrix] and we had one day off and she was kind enough to come down and sing on that. It turned out really well." That song also features a standup bass, electric bass and a *bajo sexto* "miked up and run through some old guitar stomp box pedals," Smith says. "I was asked to make it sound 'wrong' in the right way."

Dave McNair, who has done engineering work on most of Hidalgo and Rosas' projects since the first Los Super 7 album in 1998, mixed nine of the 11 songs at Albert Hall II in Montclair, N.J.; Rosas and Smith mixed two of Cesar's songs at the guitarist's home studio in Walnut, Calif., east of L.A. McNair then mastered the disc at Sterling Sound (New York City).

"Now we have to go back and learn all the songs," Hidalgo says good-naturedly. "They usually change once we get them on the road. That's a different process, but it's fun to see how they evolve." III

Mavis Staples—Recording and Mixing in Wilco's Loft

The electronic press kit for Mavis Staples' new album, *You Are Not Alone* (Anti, out September 14), includes video of Staples and her producer, Wilco's Jeff Tweedy, talking about the sessions in Wilco's Loft studio in Chicago. "This session for me was the most joyful and uplifting and spiritual," Staples says. "I feel this was meant to be."

Truly, it's an inspired collaboration. Tweedy suggested all of the material on the album, and he clearly has the utmost respect for the gospel tradition that spawned the Staple Singers 50 years ago, but he also brought in two of his own great songs (including the title track): one by Randy Newman and one from John Fogerty. It's singer/songwriter meets gospel/blues with Staples at the mic. What could be better?

The sessions were recorded and mixed by engineer Tom Schick, who definitely enjoyed his first experience in the Loft: "It's a big open space with no control room, no booths or anything," he says. "Everybody was set up live in the room. It's just a big, beautiful space filled with great instruments, great amps and a pretty simple recording setup."

Schick captured most of the sessions live, with Staples singing in the room with her touring band. Only the drums were baffled off somewhat. "Jeff had seen them play and wanted to keep it to what they do," observes Schick, who says that easily 60 to 70 percent of his work these days is analog. He recorded these sessions to Wilco's Studer A827 (Quantegy 456 tape at 30 ips). The studio is fitted with Genelec monitors and a Sony MXP 3000 console, but Schick largely bypassed the board, using it for monitoring only.

"There's a rack of about 20 API mic pre's, which we used on pretty much everything," he says. "And just some basic compression. We had dbx 160s on drums, Tube-Tech stereo compressor on drums, Chandler TG1 on electric guitars. On her voice, we used a Shure SM7 mic into an 1176. The SM7 helped because she was in the room with the band, standing five or 10 feet from a guitar amp. If I'd had a [Neumann] U47 or 67 on her, the guitar and drum bleed would have been too uncontrollable. And, honestly, you could put anything in front of Mavis Staples, and she's still going to sound like Mavis Staples."

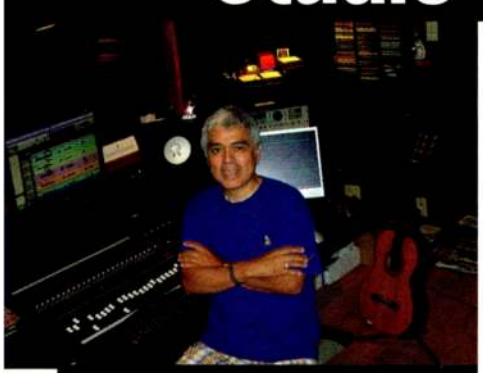
You Are Not Alone is the first project to be mixed in the Loft, as well. "We were a little nervous because it's just a big, raw open space, so we took a couple of rough mixes to a different studio just to see what the difference was, but we realized that what we were getting at the Loft was just as good."

Schick, who will be returning to the Loft in October to work with Wilco on the band's forthcoming album, says the mix was done in Pro Tools because they couldn't find a half-inch machine to use quickly enough: "So, [mastering engineer] Bob Ludwig at Gateway transferred the mixes to half-inch for us and mastered off that. We kept it as close as we could to all-analog."

—*Barbara Schultz*

Studio Profile

V-Music



Gilbert Velasquez inside V-Music's control room

San Antonio–based producer/engineer Gilbert Velasquez (velasquezmusic.com), a member of the Recording Academy's Texas Chapter Board of Governors, reached a few personal milestones in 2010. He is looking back on 40 years as a working musician; 30 years in music production; and 15 years as the owner and operator of Velasquez Productions, which encompasses V-Music, a full-service turnkey production house, his live-recording services and Velasquez Music Publishing.

His recording career began simply enough in 1980: "I was a studio musician, and the owner [of Amen Recording Studios] says, 'Hey man, I'm really swamped; do you think you can do this,' pointing at the console. And I said, 'Sure.' So I became very familiar with analog recording techniques, along with *Mix* magazine, and I went to the library and educated myself on the physics of sound."

During his career, Velasquez has been at the forefront of Tejano or Tex-Mex music, working with artists such as Selena y Los Dinos, Little Joe, Jay Perez, Latin Breed and Mazz, and winning a combined total of eight Grammy and Latin Grammy Awards in the Best Tejano/Mexican American categories. He has also garnered dozens of local accolades. "I'm very blessed, and

Post Haste Remasters 'The Rocky Horror Picture Show' for 7.1

Post Haste Sound (L.A., posthastesound.com)—a five-studio complex focusing on audio remastering and restoration for surround projects—created the 7.1 Blu-Ray edition of *The Rocky Horror Picture Show* being released by Fox this month.

Senior mixer and lead remastering engineer Randall Smith worked on the project in Stage 1, a dual D-Command room running Pro Tools 7.3 and outfitted with JBL three-way theatrical speakers.

Randall Smith, senior mixer and lead remastering engineer (left), and Allan Falk, co-founder of Post Haste Sound

"This is a unique title," Smith says. "It's not something we get all the time, but the original 2-inch, 24-track recording of the music was available. We transferred everything at 24-bit/96k, and did whatever restoration we needed—mostly using Sonic Solutions plug-ins for Pro Tools and iZotope Spectral Repair—and matched levels to the original 5.1 [released 10 years ago]. Then we could play with the placement a lot more. We didn't fully break out all the songs, but did on eight of the numbers because moving you into a big surround field like that allows better placement of some of the pieces. I also used the DTS Neural UpMix software to help create both the side surrounds and the rear surrounds. It doesn't replace the job of an editor, but it helps make the audio tracks nice and big, which is what we were going for.

"Among the biggest songs that people will notice are 'Time Warp,' 'Bless My Soul' and 'Science Fiction Double Feature,'" Smith continues. "When this movie was originally done in mono and then again in 5.1, it was very front-heavy. We were able to spread a lot of that really great instrumentation out, making it more enveloping."

Post Haste, which was founded in 2003, also recently completed surround remastering of *CSI* Season 1 and restoration of rare Bing Crosby radio broadcasts for the CD *So Rare: Treasures From the Crosby Archive.* —*Barbara Schultz*

American Hi-Fi Rocks On in Los Angeles

PHOTO: ADAM ILMAKIAS

From left: Drew Parsons, Brian Nolan, Stacy Jones and Jamie Arentzen

In 2008, drummer/guitarist/songwriter Stacy Jones reconvened American Hi-Fi, the powerhouse pop-rock band he formed in Boston in the late '90s, to record *Fight the Frequency*, the band's sixth album and first since 2005. Jones summoned band mates Jamie Arentzen, Drew Parsons and Brian Nolan to L.A. to work on the project in The Deathstar Studios, a private facility co-owned by Jones and his partner, Bill Lefler.

Jones says the band "worked on it in first and starts" around Miley Cyrus tours; Jones is Cyrus' musical director on the road and Arentzen is her guitarist. The band would quickly flesh out final song arrangements, with Jones and Arentzen engineering, recording to Pro Tools with minimal outboard processing. "We cut this record live off the floor," Jones says, "so when we got a drum track, we got bass and two rhythm guitars at the same time." For guitars, Jones used Marshall and Bad Cat guitar amps miked with a Royer R-121 and either a 421 or an SM57. "You get the chunkiness from the Marshall but you keep the chime from the Bad Cat," he explains. "Dial in a great sound from the amp and then you've got a lot of options in terms of blending the mics."

—*Matt Gallagher*

Send "Sessions" news to bschultz@mixonline.com.

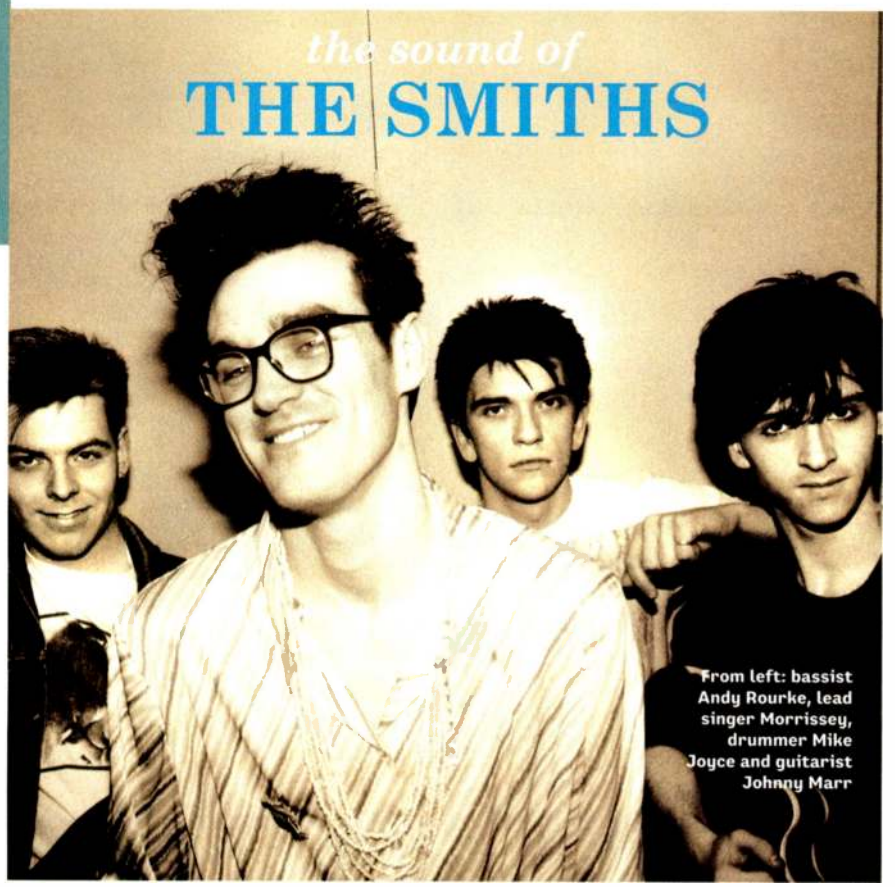
by Matt Gallagher

I've always felt that the work that we do here has a certain quality to it," he says. "When I got that first [Grammy Award], I said, 'Hey, somebody out there notices what we're doing.'"

Velasquez travels nationally and internationally to produce artists in multiple genres of music, but makes his home in the comfortable surroundings of V-Music, which he built inside a converted warehouse near downtown San Antonio and operates with a staff of three. "I spend a good 10 to 12 hours a day here," he says. "In this part of the country, I'm very well known and because of that my door is open and I keep busy. Selling studio time is a small percentage of what I do. Mainly, I do turnkey production work. I created this environment for myself, and I have no complaints. My mixes translate well so something's right here."

V-Music comprises a 30x20-foot tracking room, a pre-production suite, a break room and a 20x15-foot control room housing a Windows-based Pro Tools system and Mackie D8B digital mixer. Velasquez notes that he often records to an Alesis HD24 hard disk recorder. "I use Pro Tools more for editing. I have yet to totally move into Cubase, but I'm going that way eventually. It works real well with the rest of the Steinberg stuff that I work with."

While Velasquez works primarily in the digital domain, and says that the advent of DAW systems enabled him to invest in his own facility, he embraces an old-school production philosophy that promotes the art of capturing live performances with minimal editing and processing. "The art and science of recording is getting lost with all these programs that you can buy," he says. "Every kid with a laptop under his bed is calling himself a recording engineer. Pro Tools is a dangerous program because you can line up every nuance of a recording to where you're taking away the heart and soul of a performance. It sounds too perfect. Music breathes, and it moves. We're not lining up audio files here." III



From left: bassist Andy Rourke, lead singer Morrissey, drummer Mike Joyce and guitarist Johnny Marr

The Smiths

"WHAT DIFFERENCE DOES IT MAKE?"

By Barbara Schultz

Depending on whom you ask, The Smiths were either the most important British indie band of the '80s—bringing great guitars back to a synth-weary new-wave audience—or they were self-indulgent posers who disdained their own fans. Love them or hate them, The Smiths made quite an impression when their eponymous first album was released in 1984.

The lead singer was Morrissey, ever the enigmatic, ironic poet: "The devil will find work for idol hands to do/I stole and I lied, and why? Because you asked me to/But now you make me feel so ashamed because I've only got two hands/But I'm still fond of you hu-ho/So what difference does it make?" Johnny Marr was a modern guitar hero, layering brilliant riffs that served the song rather than celebrating his own virtuosity. And the tight rhythms of bassist Andy Rourke and drummer Mike Joyce kept unusual songs like "This Charming Man," "Hand in Glove" and this month's "Classic Track," "What Difference Does It Make?" on firm ground.

The now-familiar versions of these songs that appeared on *The Smiths* were produced by John Porter, who was also a frequent contract producer for BBC radio at that time. But Porter was actually the second producer to work on this album. The songs had already been captured with producer Troy Tate, but when Rough Trade label head Geoff Travis heard some rough mixes, he had misgivings, and when he asked for Porter's opinion, Porter didn't hold back. "I said, 'Yeah, I'll give it a listen, but I'll need to listen to the master tapes,'" Porter recalls. "So [Travis] booked a studio—I think it was Regent Sound—and they had 14 or 15 songs. I said, 'There's a lot to my ear that needs to be redone here.' To be quite candid, I didn't think it was very well-recorded. A lot of it was out of tune and out of time, and I said, 'I don't know how much money you have left, but I think you're better off starting again. Everything needs to be fixed.'"

The next thing Porter knew, he was being offered next to nothing to start from scratch and produce The Smiths himself. "I can't remember what they gave us," Porter says, "but even by today's standards, there was hopelessly little money. I think it was probably the equivalent of $3,000 or $4,000 because they'd spent their money already. So we booked a studio in Manchester called Pluto Studios, and we had something like five or six days to cut the record."

Porter remembers little about Pluto, except that the facility had a helpful staff. However, at the time Pluto was known in some circles as a happening mid-level place off the beaten path; it had hosted sessions with The Clash, Cabaret Voltaire and others. "For the time, it was a very busy studio," says Phil Bush, then chief engineer at Pluto. "Manchester was a very up-and-coming place, and there was a lot of music about. The proprietor, Keith Hopwood [former rhythm guitarist/backing vocalist for Herman's Hermits], was writing jingles for TV and radio commercials. The average working week would be jingles three or four days in the week and then you'd get a band in the evening. I was working 18 hours a day sometimes."

Pluto featured an acoustically dead tracking room and a control room outfitted with a Trident Series 80 console and Studer A800 24-track. Bush engineered The Smiths' sessions, which comprised basic live band recording to the Studer machine, "more or less with a guide guitar until they had a decent rhythm track," Bush says. He remembers using a fairly standard mic setup for drums: a pair of Shure SM57s or SM58s on snare, Sennheiser MD441s on toms, a KM84 on hi-hat, and AKG D12 or D24 on kick. What Bush remembers most vividly about hosting Porter and The Smiths is the former's guitar collection: "It was guitar heaven," he says. "I'm a guitar player myself, so that's one thing I do remember is the wealth of wonderful guitars that were there. In particular, a '54 Telecaster that was absolutely gorgeous!"

After spending a work-week in Manchester, Porter took his guitars and the band down to Eden Studios (London) where staff engineer Neill King manned one of the first SSL 4000 consoles for some extensive overdub and mixing sessions. By the time the band reached London, Rough Trade had cut a distribution deal with Sire Records, and a bigger budget was found to flesh out *The Smiths*. This was when the songs really took shape, as Porter added guitar parts and effects to construct dynamics within songs. "What Difference Does It Make?" was one of the tracks that most benefited from Porter's careful arranging and building.

"When they started playing 'What Difference Does It Make?' it was very linear and, for them, it was a long song," Porter recalls. "It was a 30-bar sequence, which is unusual, and it didn't have any verse. It was just this thing that started and went. They would start playing and Morrissey would sing, and whenever he didn't sing they would just carry on and then he would sing again. On a re-

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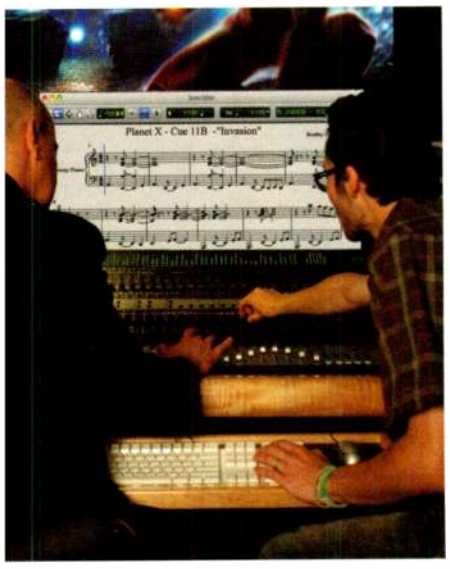

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cord, that's not necessarily great because there's not enough structure, so the first thing I did was put an intro on it."

Porter's intro has Marr playing that beautifully recognizable riff before the drums come in. Along with Morrissey's vocal, it's the most memorable sound in the track, but it's only one of the guitar parts that gradually came together for effect. "Every time there's a particular section, something was added," Porter says. "On the A section, the second time, we added the harmony guitar on the lick. The second time the B section happened I added another. I'd added two parts to the B section the first time but then we added another harmony. And then on the C section, the same, and then the last time the B section came we added some sound effects, like kids playing in school or something. The first time they played me this song, it was nearly four minutes of licks with no dynamics. Now it starts off with one guitar, and it ends up with 15 or 16 guitars on it."

Some of those various guitar sounds come from Porter's guitar arsenal, which King also remembers well. "Back then, they were a struggling band and I think Johnny Marr had *a* guitar," King says. "I think a big part of the sound is, because John is a good guitar player himself, he had that collection of different instruments—semi-acoustic, solid body, all kinds of things—that we could experiment with [to get] different sounds."

"We also put on a backward piano note," Porter adds. "They were very interested and excited about that. That was something we did subsequently on loads of their records—add a little backward part. And all the time we were doing this, Johnny was very interested in the process, which was great."

"And then, of course, I remember vocals with Morrissey," King says. "That was always kind of a kick. We had the studio and control room at Eden linked by a window, and he wouldn't allow anybody else but John and I to be in the control room and the studio had to be blacked out. He would sit on a stool and turn his back to the control room. That's privacy for you."

Morrissey also let his opinions be known regarding any processing of his vocal: "In the early days, he didn't like any effects on his voice," Porter says. "As soon as you could hear an effect on his voice, it was a bit of a battle. But I think there's probably a bit of delayed reverb on that track—it probably was the EMT 250, which we used to call the Tram Driver. It was a 3-foot-high box with levers on top, and it was the first digital reverb. But we would have kept any delay on Morrissey's voice very, very in the background. I would use loads and loads of effects, but very little of each."

As for mic choices at Eden, King recalls using a Neumann FET 47 on Morrissey's voice and a Shure SM57 on Marr's cabinet, plus an 87 in the room. In contrast to Morrissey, Marr liked to play in the control room with King and Porter close by, while his amp was out in the tracking room. "And all that would go straight into that SSL's horrible mic preamps in that early board," King says. "And then, when we got to mixing it, that was the first board with an onboard quad compressor in it so you could just squash the whole track as you were mixing it. We definitely played with that quite a bit."

"I wasn't mad about the sound of the SSLs at that stage," says Porter, who had used SSL boards extensively at the BBC. "The sound wasn't big, but it was real fun to be able to trigger everything, and you could plug anything into anything with an SSL: the kick drum driving the gates on guitar parts, and percussion parts driving gates that would drive another guitar part, and then chop it up so it sounded like Morse Code."

Even if some of the technical machinations that went into The Smiths' recordings were gratuitous, there's little question that Porter's production of *The Smiths* took a really good indie band to great heights sonically. Though the band didn't really crack open the American album charts till they made their third album—the Morrissey-produced *The Queen is Dead*—*The Smiths* went to Number 2 in the UK and "What Difference Does It Make?" peaked at Number 12. After U.S. fans embraced the group's later albums, interest in their earlier recordings also grew, and "What Difference Does It Make?" became a staple on modern rock playlists.

The Smiths disbanded in 1987 after releasing the Porter-produced *Louder Than Bombs*, but the bandmembers each carried on successful music careers—Morrissey most famously. Producer Porter later moved to L.A., where over the course of 20 years he produced projects for B.B.King, Buddy Guy, Ryan Adams, Los Lonely Boys, Bonnie Raitt and more; he recently moved his studio to New Orleans. Phil Bush is still a sound engineer, musician and composer working in Manchester. Neill King, who has worked with artists from Aha to Celine Dion to Green Day, has moved on from the recording industry and is now happily employed in the wine business in Northern California.

"I was lucky enough to work on a handful of huge albums in my career," King says, "and each time you can tell something special is happening. Recording Elvis Costello, Green Day, The Smiths—you know this is more special than everyday recording studio stuff." ■

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~ **Tony Levin**
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~ **Jim Messina**
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Front view of Massey's mix room with Harrison Trion console and QRD diffusers along sidewall. The monitors (JBL 4648A LF boxes with BMS HF drivers on Community horns) and a Meyer 650 subwoofer are located behind perforated screen.

By Bruce Black

Acoustics in Paradise

CREATING A STUDIO FOR FILM MIXER PAUL MASSEY

It was a dream come true for a guy like me: Not only would I design the acoustics for a major player's personal mix room, but I'd be working in a dream location—a wooded hillside in Ojai, Calif.

My first visit to Paul Massey's future film mixing room revealed only a 40x22-foot concrete slab and a partial course or two of Perform Wall blocks that would comprise the walls of the studio-to-be. (For information on Perform Wall, see the sidebar "Perform Wall—What the Heck is That?") My goals were simple: I wanted a neutral room so the mixes that Massey heard would match what he was recording. And because he normally mixes in the Cary Grant Theatre at Sony Pictures Entertainment (Culver City, Calif.), it was imperative that mixes from his new studio translate to that room.

Step One: The Shell Game

Usually, I'm presented with the dimensions of a shell in an existing building. On this project, I could optimize the room size. The best acoustic performance starts with proper room dimensions—get them right, and the room modes will be well-distributed in the frequency domain, thus avoiding a lot of problems.

The room's width was set—literally—in concrete, but I could adjust the height and length by adjusting the ceiling elevation and the rear-wall position. Using a spreadsheet designed to calculate room modes, I plugged in initial dimensions and calculated the modes. Like all first iterations, the modes weren't distributed very well. I adjusted the ceiling elevation and the rear wall position by a few inches until the modes were evenly distributed. With a decent idea of what the room would do in the LF region, Massey and the architect were notified of the changes and the contractor finished

the shell to these specs.

It is commonly thought that non-parallel walls and a canted ceiling are the way to go in a sonically sensitive room, but I disagree. Flat, plumb and square can be good. In a rectangular room, you have a better idea of what performance to expect. You can predict the room modes and their location, and they won't be distorted by varying dimensions. This makes controlling bass response easier, and as listeners move around the room, they'll get a more consistent sonic performance.

In a mix room, this consistency is important so that the mixer and client hear essentially the same thing. But nothing comes for free, so the price you pay for predictable and consistent is flutter echo. Unpredictable and inconsistent isn't fixable—no absorption or diffusion or whatever will fix it—so you own it for the life of the room. You might mask it with a bandage, but the problem is always there.

Reflections and canted surfaces can be calculated and drawn, yet to my thinking the errors and surprises of actual construction make a room with non-parallel surfaces a bit more of a roll of the dice. I'm not a gambler; I like to know what's going on. And after all the calculations, you still have distorted room modes. To me, it's not worth it. Secondly, rectangular rooms are easier and cheaper to build. That will make your client happier, especially if you're the client. Flutter echoes, however, are fixable, and just installing the acoustical elements you'll be using will fix some of them. Meanwhile, a diffusive surface here, a little absorption there, and the remaining flutters are gone—without distorting the room modes.

Step Two: Beyond Calculations

Calculations are the only way to get started. Unfortunately, calculations can have errors, and no room is ever built to an exact set of dimensions, or is perfectly straight and plumb.

Now that the shell is sealed, we know what's happening acoustically in the room. Anything else is just a guess, so it's time for room analysis. From measurements made at multiple positions in both the mixer and client-listening positions, I examined waterfall plots (frequency vs. level vs. time), energy/time curves ("ETC"), third-octave RT60 (reverb time decay) graphs, frequency response, etc. The results clarified what was required to achieve a neutral and honest sonic signature and verified that the room dimension adjustments were a good start.

Step Three: Taming the Lion

Many phenomena that determine a room's sound quality happen in the low frequencies, up to around 500 Hz. (Some say 300 Hz.) The first thing that caught my eye on the waterfall plot was a particularly long decay at 40 Hz and reflected in the third-octave RT60 graph. So my first order of business was to tame that.

Rear view of mix room with fabric-covered absorber panel between QRD diffusers and projector portal

The usual approach here would be to "throw in some bass traps." But rather than apply this indiscriminate fix, I wanted to put my data to work. To tame the long 40Hz decay, a bass trap would need to be around seven feet deep (a quarter-wavelength of 40 Hz). Not practical. I could also use polycylindrical absorbers (a curved shape that looks like a concrete-form tube), which would also add diffusion to the room, but a polycylindrical absorber that's effective at 40 Hz would be far too big for this room. Alternatively, I could use diaphragmatic or panel resonators (a panel over a sealed cavity), but they require more depth to get to 40 Hz than I can afford.

This leaves my favorite LF absorber, a Helmholtz resonator that uses the volume (not the specific dimensions) of a sealed box, the size of a port cut in the face and the depth of the port to tune it to a particular frequency. Enclosure dimensions can be varied to fit the space, and port size adjusted to tune it to the desired center frequency.

So taming the room's wild low frequencies required building a series of ¾-inch plywood boxes into the face of the speaker wall and flush to it. Each box was tuned to one of the frequencies that had a long decay or other problem by adjusting its port size. For ease of construction, the boxes had the same internal dimensions; I then calculated the resonators' center frequency as I nudged the port dimensions. For larger LF problems, multiple Helmholtz resonators tuned to those frequencies were installed.

Step Four: Spread the Good Stuff

The most important thing in making a room sound good is diffusion. It promotes sonic consistency throughout the space; breaks up early reflections that smear the sound and degrade the localization; and helps deal with those flutter echoes we created when we specified a rectangular room. Diffusion preserves sonic energy and spreads it around, while absorption reduces energy with little spreading. In simplistic terms, diffusion affects the room's sound while absorption affects the RT60.

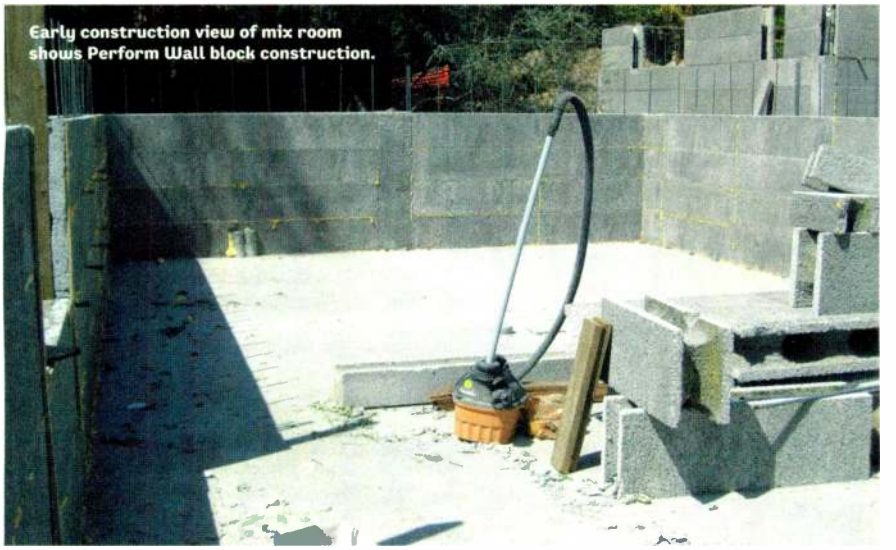
There are a number of different diffusers that can be employed: polycylindricals, geometric irregularities and RPG's Skyline and—my personal favorite—Quadratic Residue Diffusors (QRDs). Diffusers are first placed in the critical reflection points on the room surfaces. And just where might that be? The primary mixer position is our most important listening point. Now catalog the surfaces—left wall, right wall, back wall and ceiling.

Sitting at the primary mixing position, there's a point on each surface where if you place a mirror, you'll see one of the speakers. This is a critical reflection point, where the initial sound reflects back to the mixer, arriving delayed from the direct sound due to the increased distance traveled. In a film room with three front speakers, there are three of these critical reflection points on each of the four surfaces. Don't worry about the surround speakers; they operate at a lower level, with secondary program material.

Now draw an imaginary rectangle on each surface that includes all of the three points. Expand each rectangle to accommodate all the positions that the mixer might listen from—i.e., center console, left console, right console, pushed back from the console. Now expand each rectangle again to accommodate the critical reflection points for the client area and the listening positions there. Finally, expand the area so that it will hold your chosen diffusers without cutting any to fit. That's where you put your diffusers for that surface.

Doing this for the ceiling can be difficult so we installed a suspended T-bar ceiling with 2x2-foot openings. This simplified adding the acoustic elements to the ceiling. We also painted the T-bar frame and everything in it black to minimize light flare from the projector and make the ceiling "disappear."

The primary diffusion element for the ceiling was thermoformed plastic QRDs, placed to cover the critical reflection points. Using the T-bar ceiling made it easy to get proper positioning. Additional diffusion was installed using plastic polycylindricals that fit in the openings.



Early construction view of mix room shows Perform Wall block construction.

Perform Wall—What the Heck is That?

Perform Wall is a very "green" construction material comprising large blocks made from recycled polystyrene, cement and water. While they look like large concrete blocks, they're actually surprisingly light concrete forms that are left in place after the concrete is poured.

To construct a wall, the Perform Wall units are stacked, rebar is installed in the blocks' voids and concrete is poured into the openings. This results in a monolithic, concrete-reinforced wall that provides excellent structural strength, thermal insulation and earthquake integrity, as well as significant sound attenuation. The Perform Wall system also provides extreme resistance to fire, wind, mildew and black mold.

The walls can be laid out curved, and the blocks can be easily formed into any shape by cutting or rasping them using standard construction tools. This allows almost limitless design possibilities.

Plumbing, electrical and other utilities should be installed before the concrete fill is poured, as in normal construction. However, within certain limits, it's also possible to add utilities after the pour by cutting channels and notches in the Perform Wall block to accommodate the required infrastructure.

As Perform Wall blocks have cement in them, standard construction adhesives can be used to attach common materials like gypsum board, stucco, plaster, brick, stone or tile.

Perform Wall is approved by the City of Los Angeles Department of Building Safety, certified by Underwriters Laboratory and carries the Energy Star logo.

More information can be found at www.performwall.com.

Step Five: Suck It Up

I prefer the sound source to emanate from what I call "audio black," where the sound comes from a point source rather than an indistinct blob of a position. To minimize the diffractions and reflections that smear this desired point source (not to mention the reflections off the back of the screen), the speaker wall was covered with Owens Corning SelectSound Black Acoustic Blanket that was two inches thick. Many studios use 1-inch Fiberglas absorbent (commonly Owens Corning 703 rigid Fiberglas panels), so why two inches?

Just like bass traps, the depth of any absorber determines its cut-off frequency, where the thickness equals a quarter-wavelength and they act like lowpass filters. Theoretically, the lowest frequency a 1-inch-thick absorber can tackle is around 3,378 Hz. (For absorbers of varying thickness, I consider the cut-off frequency to be determined by the thinnest part.) Two-inch material lowers the cut-off to approximately 1,689 Hz, making it a more effective absorber. But there are other factors at play here, so it's better to see what actual measurements reveal.

The published data for SelectSound states the sound absorption coefficient for 2-inch material is 0.80 at the 250Hz band and 1.0 through the 500 to 4k Hz bands. It drops to 0.27 around 125 Hz.

The sound-absorption coefficient of 1-inch SelectSound never gets to 1, peaking at 0.91 at 2,000 Hz, with the frequency response knee around 1 kHz. This leaves frequencies from around 300 Hz (the top of the range where Helmholtz resonators are practical to use) to 1 kHz minimally affected by any absorption, and therefore essentially untreated. This can color the response of the room.

The thicker material has a smoother response that dovetails nicely with the range of the resonators. Thus, the absorbent combination (Fiberglas panels and resonators) does its job, with no frequency bands left behind. And smooth and neutral is the goal here. The Helmholtz resonators handle the lows, the 2-inch absorbers the rest.

But how much absorptive material should be used, and where should it be placed? I wanted to bring the RT60 down but didn't want to over-dampen the room, making it uncomfortably dead. A few calculations gave an idea of how much to use, and we installed the first panel on the back wall above the diffusers. Rigid Fiberglas can shed fibers, so all of the absorbent panels in the room were covered in a fire-rated cloth with an acoustically transparent, tight weave. Panels were also installed along the length of each sidewall. This also helped reduce any side-to-side reflections at the console and client positions, aided by the blackout curtains over the windows. Finally, some uncommitted T-bar openings were filled with black cloth–covered, 2-inch rigid Fiberglas squares to absorb console reflections. The remaining openings were filled with black ceiling tiles.

Step Six: Final Touches

With the acoustic treatments in; the console installed; and the amps, speakers, perforated screen and projector installed, Dolby techs came to perform an initial tuning. It was time for the final check: another room analysis. The ETC showed that the reflections were nicely distributed in a random pattern, well below the level of the direct sound. The waterfall plot showed a uniform decay across the frequency spectrum. The frequency response was a bit bumpier than I would have liked, but nothing that final room tuning couldn't easily handle. The RT60 was right where I wanted it—not too live, not too dead.

But the final and most important test remained: the trial by ear. Massey brought in a reel or two of his recent work, hit the Play button and turned to the screen. Minutes later, the playback ended and there was a relaxed smile on his face. This was all I needed to know. He later did some mixing in his new roo, and listened to it in the Cary Grant Theatre. He was still smiling so I knew I had done my work well. **III**

Bruce Black operates MediaRooms Technology, an acoustics/studio design firm based in Southern California.

The Elora Gorge in Ontario, Canada, where Alexander recorded reality show contestants riding a Tyrolean traverse.

A Day in the Life of Reality TV Production

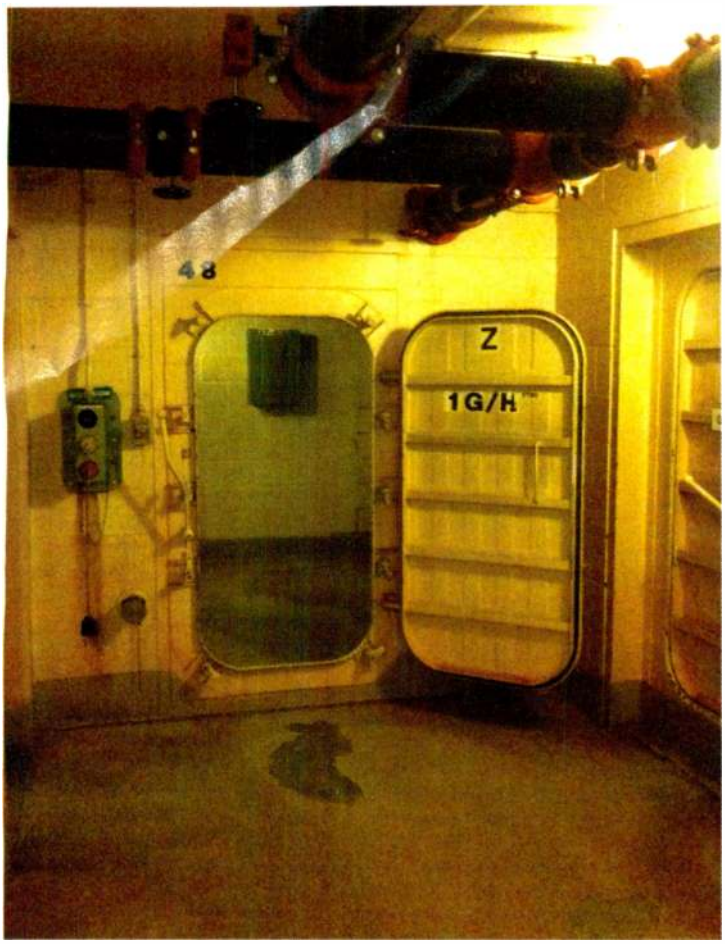
FROM THE ELORA GORGE IN CANADA TO DRAG QUEENS IN L.A.

By Michael Alexander, CAS

Sound mixer and recordist Michael Alexander, CAS provided us with this inside look at the day-to-day challenges of working on location for reality television. This article previously appeared in CAS Quarterly.

I'm typing this on a break aboard a Canadian frigate in Nova Scotia. The cast of the reality show I'm working on is preparing to do a challenge inside a big metal ship that's not RF friendly in the least. Imagine thick steel doors and the cast running up and down different decks. Later today, one of the challenges has the cast entering an emergency repair training room where the military practices fixing pipes and patching up holes in the hull (mimicking what would happen if an enemy torpedo struck). Water slowly fills the room and blasts out of the wall so hard that during the rehearsal, the waterproof Countryman B6s blew clean off the stand-ins. I ended up planting them out of sight, which was probably what I should have done in the first place. Work and learn, right? At least the mics were rentals.

The one thing you can count on in every reality/unscripted television show (and I've done a lot of them): It's seldom boring for the sound department. Of course, "reality" television is created in the field as things are happening, there's no firm script (though—surprise, surprise—sometimes there is a sort-of script) and the shooting schedule is created late the night before. I've found that it's essential to be as prepared and organized as possible. My ex-



Above: A steel door inside a metal ship in Nova Scotia—less than ideal for RF. Right, top: mixing *RuPaul's Drag Race*. Right, bottom: working on sound for a "cooking challenge" in Montreal.

perience in reality television has varied a lot. Sometimes there is a full control room build and I'm working on a stage. This time out, though, I'm doing a reality/challenge-based show that's a cross between *Fear Factor* and *Survivor*. (Okay, what reality show isn't, I guess.)

Here's a sample of a typical Day 1: I tracked 20 kids and a couple of guests on a Tyrolean traverse (sort of like a zip line) crossing the Elora Gorge in Ontario. When they hit the ground on the other side of the tree line, they ran 100 yards to the finish line. We had to contend with the gushing Grand River and the limestone cliffs, but also, when hiding mics, we had to deal with harnesses and other climbing regalia. Of course, the first episode always has the most cast members and setup time is usually tight. I discovered at the scout session that I couldn't set up my rig on the other side of the gorge and have the cast run to me, so I had to figure out my positioning so that I was close enough to capture the send-off but I wouldn't have the cast literally run out of my RF field once they reached the other side. I did have a setup/test day, so I felt pretty confident. Still, it's always challenging to throw RF cleanly that far, and it's more critical this time because there are no ENG mixers on this show (yup, the budgets for reality television have shrunk, too)—just two local A2s and me. Being that this is a competition-based show, the dialog *has to be* captured cleanly during the challenge; there's no do-over. We have a Sennheiser 416p mounted on the camera and that's it. I felt relieved when the first 15-hour day was over and there wasn't a single hit and no transmitters were lost in the waters below. The next day we were off to the Olympic Hockey Arena in Lake Placid, then back to a Montreal restaurant for a cooking challenge.

On this show, I'm using the Shure UHF-R wireless system. I've used the 100-milliwatt setting, gained the paddles up 10 dB and have had amazing coverage. I don't think I could have thrown the RF that far in L.A., though. In Elora Gorge, there was next to nothing in the air, DTV-wise.

I do all of the RF coordination with Professional Wireless Systems software in my hotel room beforehand. Doing the frequency coordination for the entire season takes just an hour or so, and it's super-efficient. The software gives me a very solid place to start with frequency selection. I can choose which brand of wireless systems that I plan to use—Sennheiser, Lectrosonics, Comtek, etc.—and it will recommend frequencies within the band that I'm using. It's based on longitude and latitude, and what is known to be in the air in those areas. I consider it an indispensable tool.

On this show, I'm also using my Pro Tools HD2 rig with a Tascam X48 as a standalone backup. I have 32 analog ins and outs on both units, with a small-frame Midas Venice 320 so it's all very easy regarding clocking and patching. I use Glyph drives for the primary record storage and to copy my sessions to daily. The transfer drive travels with the boxes of videotape back to post-production, and they leapfrog them to

the next hotel for me. I also have a UPS that will switch me from AC to DC power just in case my power gets yanked or the little Honda generator runs out of gas. (I've actually never had this happen yet, though.)

Pro Tools was post-production's request because it works best for their workflow. Before gearing up for any show, I introduce myself to the post supervisor and ask what he/she would like delivered in terms of files and how the show is to be edited. I then design the gear components that will fit that workflow. I don't really feel like I've done my job successfully until I make the ingest process as seamless for them and they are all smiles.

I'm a Pro Tools nut, so I'm very comfortable with that platform. If there's any drawback at all in using Pro Tools, it's when the session gets really long (eight hours and beyond). In this case, it may take Pro Tools longer to find a sync point before it can be put back online. It hasn't been an issue on this show, though, because our scenes haven't been long by reality standards. We roll for 45 minutes and then cut. I do a quick save and put the transport right back online. In general, I try to keep the Pro Tools sessions shorter rather than longer. I create a new session at lunch to keep any session from going 12 hours or longer.

Typically, all of the cameras have Ambient Lockit boxes and I also have one. This time, I'm using the word clock out of the Ambient to supply word clock and to drive timecode to both Pro Tools and the X48 via my Sync I/O. Video is using the Panasonic HD900s, all outfitted with Sennheiser 416p shotguns. There are 10 of those cameras with a bunch of smaller Z1Us and seven very small HD cameras called the Go Pro.

Outside of what time lunch is being served (that's crucial, right?), sync is a primary concern. All has been pretty smooth considering how many cameras get slated before action is called. (They seriously do call "action" and "cut" on this reality show.) The first day was crazy with the slates and making sure everyone was on the same page. But it was mostly because I'm the only one from the U.S. and this is a primarily French-speaking part of the world! Why did I spend all of my youth playing drums when I could've been learning to *parlez vous francais*. But it has worked out fine, and it helps that this crew of Canadians is one of the kindest I've ever worked with. They've made what ends up being organized chaos actually fun.

I'll be back home in Los Angeles in a couple of days, mixing/supervising a stage gig called *RuPaul's Drag Race*. On that show, we have 32 inputs and I'm using the Metacorder—again, post's preference. I'm using the Yamaha DM2000, and sending out nine mixes to nine cameras wirelessly, which is kind of crazy at times, but it's fun and challenging and also makes the day fly by. By the way, if you haven't caught the show, don't prejudge. It's actually crazy funny and, honestly, RuPaul is hilarious—besides being an extremely cool person to work with.

Mine is really a strange job with very long hours, eccentric personalities, challenging work environments and a bunch of technical hurdles to jump over. But then again, what other career offers so much diversity? III

Michael Alexander is a sound mixer and Pro Tools recordist/mixer who lives in Westlake Village, Calif. A CV and contact info are available at www.minegoesto11.net.

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PHOTOS: STEVE JENNINGS

Rihanna performing one of her hits during the Shoreline Amphitheater (Mountain View, Calif.) show

By Sarah Benzuly

Rihanna

HIP-HOP DIVA BRINGS EDGINESS TO THE STAGE

Despite sagging ticket sales—a malady that is festering across the majority of this summer's tours—Rihanna's Last Girl on Earth tour showed no signs of slowing down when *Mix* caught the act at Mountain View, Calif.'s Shoreline Amphitheater in mid-July. "We've never done a tour to this capacity," Rihanna said during an interview with AOL. "The production is unbelievable and the costumes—we just took it to a whole new level. Visually and sonically, it's going to be a big step up from the last time. We just keep growing, and this time it is a massive production that I cannot wait for."

True to that statement, the 22-year-old hip-hop songstress enthralled the mostly female crowd with a solid set list that belies her youth—accentuated with numerous costume changes, select songs performed at a more "intimate" Stage B and an incredible stage set. Sonically, from "Umbrella"—which blasted her onto the scene, thanks in part to the collaboration with Jay-Z—to her most recent, "Love the Way You Lie" from *Rated R*, a tune with Eminem that's burning up the radio airwaves, Rihanna and backing band/vocalists sated the crowd's hunger to get the most out of their ticket.

And this starts at ground zero, with front-of-house engineer Tony Blanc and monitor engineer Vish Wadi—engineers new to Rihanna's tour, but longtime engineers in their own right.

Blanc is mixing on a DiGiCo SD7, which he calls "the best board of its

Monitor tech Dustin Deluna (left) and monitor engineer Vish Wadi at the DiGiCo SD7. "I do not believe there is a style in mixing monitors. You give a mix of what the artist or band needs."

Front-of-house engineer Tony Blanc at the DiGiCo SD7. "My mixing style, the only one I know, is to make it the best possible."

type on the market. I do have a rack of outboard gear, which is mainly a personal taste in compressors. Once the Waves package [SoundGrid/MultiRack] becomes available for this desk, I may be tempted to leave my old AMS and Crane Song units at home." Using 70 inputs, Blanc mixes the show in such a way that when concertgoers look at the stage, they can see what they hear. "My style, the only one I know, is to make it the best possible," Blanc says. "I can't stand it when the bass drum is all that you hear at a show."

To create this smooth and consistent mix, Blanc uses sidechain EQ and multiband compression on Rihanna's vocal so it sits nicely in the mix. "We tried various caps for her and found the new Sennheiser large-condenser capsule 965 works great for her vocal style and range," Blanc says. Background vocalists Ashleigh Haney and Kimberly Ince sing through wireless SM58As. Any guests sing through an SM87C. In addition, the engineer has created snapshots, although the EQ and dynamics stay the same from soundcheck on through the final song. "Each day is saved as a city," Blanc explains, "and I roll through the show from the Start page."

Blanc is also recording the show, using Nuendo running through an RME Express-Card. The SD7 allows him to do a MADI patch so that he can group the 70 inputs in the 56 MADI lines available. Also in his personal outboard rack are TC Electronic D2s; Klark Teknik DN6000 spectrum analyzer; AMS RMX16 reverb; Crane Song Trakker, ST8 and HEDD 192; DPR 901 frequency-band comp; a Wendel drum unit; Waves MaxxBass; SPL Transient Designer 4; and dbx 120X subharmonic enhancer.

The Clair Global–supplied rig is a standard i5/i3 package for arenas. According to Blanc, depending on the building, there are eight to 14

Clair Global systems tech Paul Jump

i5s per side and four to 12 i3s per side.

Drum mics include AKG D12s and Shure SM91s on kick; SM57s on snare; 460s on hat, ride and overheads; and Beyer Opus 88s on racks and floor. "There is no rocket science to microphones; it's about the placement," Blanc says. "The drum tech [Chris Achzet] is ridiculously good, so it sounds huge—period." Bass (Eric Smith) and keyboards (Kevin Hastings and Hanna Vasanth) are DI; guitars (Nuno Bettencourt and Adam Ross) take Sennheiser 421s and Shure 57s.

Over at monitor world, engineer Vish Wadi is also manning a DiGiCo SD7, using onboard effects such as reverbs on drums, background vocalists and acoustic guitars. He's also using a TC Electronic M5000 reverb unit on Rihanna's vocal. Asked about his mixing style, Wadi says simply: "I do not believe there is a style in mixing monitors. You give a mix of what the artist or the band needs." Enough said.

Like Blanc, Wadi has most of his presets dialed in before the band hits the stage, but is making small changes due to room acoustics—the tour is hitting mostly amphitheaters—and any tweaks Rihanna needs, which she denotes to Wadi via hand signals.

The band and Rihanna are on in-ears (Ultimate Ears' UE7s for the band; UE11s for Rihanna); sidefills are Clair R4s. "Stage volume has not been an issue," Wadi says, adding that he has run into some frequency problems but can easily find a new frequency. "I like working with Rihanna. She's a very professional artist."

Blanc echoes Wadi's description of Rihanna: "The whole project is a blast to be involved with. All is good. I'm looking forward to hopefully many tours to come." III

Sarah Benzuly is Mix's managing editor.

SOUNDCHECK

V-Mixing Tour Countdown

Held this month and next month, Roland Systems Group's six-city V-Mixing System Tour features the latest V-Mixer, the M-300 (pictured), and the entire REAC (Roland Ethernet Audio Communication) lineup of products (digital snakes, Merge Technology, MADI Bridge, personal mixing and multichannel recording).

Each event is divided into two parts. Part I covers multiple applications for operators and system administrators, while Part II focuses on system design, expansion, implementation and support.

Because seating is limited, advanced registration is required. Currently scheduled dates include September 14 (Seattle), September 21 (L.A.), September 28 (Austin), October 5 (Atlanta) and October 19 (Boston). To register or find out more information about this tour including guest speakers, times and locations, visit rolandsystemsgroup.com/vmixtour.

tour log

PHOTO: DANNY CLINCH

Gov't Mule

FOH engineer Ed Hopson

Gov't Mule

Touring for their latest, *By a Thread*, Gov't Mule continues to offer "Mule Tracks" for download a few days after the show. *Mix* recently talked with FOH engineer Ed Hopson about the tour and the recordings.

How much gear are you carrying?

A Clair 48-track recorder running Nuendo, two 96kHz/48 bit-DVD recorders and two CD-Rs. And then there are the Mule Tracks, but that is a secret formula.

What is the most important part of your mix?

The mix is a great big image that is accomplished with mics everywhere. I try and replicate what the band hears onstage without losing control of the system or my mind. There is a lot of percussion, and that requires condensers above the drum set. At one point in the evening, I have to match handheld shakers with double kick drums. The bass is composed of two 4x12-inch cabinets with a 421 each. I use the delay time on the input until I get some meat out of it. We have an Avalon DI that I get the low lows from. The keys are two amps and a Leslie; two SM81s and 441 for the Leslie. On Warren's amps, there are two KSM 32s and two SM56 Betas. I don't have to really do anything to Warren's rig but set the highpass filter.

Where can we find you when you're not on the road?

At home in Atlanta watching TV—or advancing upcoming Mule shows.

fix it

Addams Family Engineer Nevin Steinberg

We are addicted to "auto-update" for our cueing. The show has nearly 200 cues in the [DiGiCo SD7] desk, so we couldn't imagine tracking through all the changes we make at any given moment. The workflow doesn't stop; we just grab a knob and keep going. We make a ton of input delay time changes, sometimes even within a scene, and auto-update's smart handling of various control points allows us an intuitive and transparent use of this feature. Aliases are another big component of our toolset, and we use them extensively for alternative input/output routing or special EQ or dynamics processing tracking. The console macros are also very useful—both for big gestures like full console muting and small ones like choosing alternate inputs for emergency backup microphones. We make good use of 24 control groups on this show for high-resolution active control of the orchestra mix.

Procol Harum Takes Out BlackBox

The first AES/EBU digital variant of the JoeCo BlackBox Recorder debuted on the recent Procol Harum North America tour, linked to a Yamaha PM5DRH console. Front-of-house engineer Graham Ewins explains how the 24-channel multitrack live recorder proved itself on the road:

PHOTO: GEOFF DUNN

Procol Harum with the BlackBox recorder

FOH engineer Graham Ewins

"Hookup was simplicity itself: Connect the looms, connect the hard drive, power up and off you go! We had to configure our new hard drives for FAT32 file handling, but once this was done, we were up and running very easily. Procol Harum [total channel count was] 22, with channels 23 and 24 used as a stereo pair for audience capture, so it's ideal for creating a one-scene 1- to 24-layer on the PM5D and for capturing the whole show using a single BBR unit.

"The BlackBox Recorder remembers all the shows and puts them into a file by date. It also tells you how much disk space you have left and just gets on with it. I had fun telling the system techs how much 24-track audio you could record with a Terabyte hard drive—80 hours. Unbelievable! I recorded at 24-bit/48kHz because that's what we archive at, and it's also what my studio runs at. I am looking forward to hearing the results and quality of the WAV files. A very easy-to-use and configure piece of kit, it also proved easy to transport, fitting into a 1U rack bag with the looms still attached."

load in

Gand Concert Sound (Glenview, Ill.) brought a Nexo Alpha system to the top of the Wit Hotel (Chicago), the Roof open-air bar, for a performance by Missing Persons and Letters to Cleo; a Yamaha LS9-32 console was used at FOH.

The Sound Image system for Erykah Badu's international tour included a Soundcraft Vi6 console and JBL VerTec arrays, handled by production manager/FOH engineer Kenneth H. Williams...APB-DynaSonics Spectra Ti consoles were on hand for monitors and FOH at the recent Jazz Fest, supplied by production company SOUNd CHeK MUSIC...FOH engineer Paul David Hager and monitor engineer Robert Windel chose Sennheiser and Neumann wireless and wired gear for the Goo Goo Dolls current tour...EAW loudspeakers were selected for the Moomba Festival (Melbourne, Victoria, Australia), powered by Powersoft K10 amps...One Systems' Russia-based distributor, Avallon Ltd., headed an installation of 20 212IM-100 speakers at the Poklonnaya Gora, a World War II memorial in Moscow for Russia's 65th anniversary of victory with the Allied Forces celebration.

road-worthy gear

Audio-Technica AT2021 Condenser Mic

The new AT2021 condenser microphone from Audio-Technica is designed for both live and studio applications, and offers a wide frequency response of 30-20k Hz as well as the ability to handle high SPLs (145dB max). Its compact 4-inch body is ideal for tight placements. The AT2021 requires 48VDC phantom power, features a cardioid pickup pattern and has a low-mass diaphragm for fast transient response on piano, drum overheads or acoustic instruments. MSRP is $139, including stand clamp and carry pouch.

www.audio-technica.com

Adamson Eklipsa

Shipping at the end of the month, the Eklipsa array is available in two-way, 12- and 15-inch bi-amped versions that pair a neodymium woofer with a 4-inch diaphragm neodymium compression driver. Offering 18x60-degree (VxH) dispersion, Eklipsa is intended for horizontal arrays, but multiple cabs can be vertically arrayed using additional hardware. The 11-ply Baltic birch trapezoidal enclosures are finished in textured acrylic and have a 14-gauge rolled steel grille.

www.adamsonsystems.com

DiGiCo/Waves SoundGrid

Waves' SoundGrid is offered as a new option for DiGiCo SD7/SD8/SD9 consoles, integrating Waves plug-ins directly into the mixer via a simple Ethernet Stealth-Waves link to a rackmounted external PC, that has plug-in parameters available on the console's touchscreen. Session settings can be transferred to another SD7/SD8/SD9, or users can save the console settings and Waves tweaks onto a memory stick. And combining the board's powerful FPGA processing with Waves' MultiRack keeps plug-in latency low.

www.digico.org

Soundcheck Nashville

By Tom Kenny

Back in Business

PHOTO: RICK MALKIN

The extended family of staff and tenants at the newly reopened Soundcheck Nashville

It would be hard to overdramatize the events surrounding the middle Tennessee floods of early May. And for anyone who checked in on the Soundcheck Nashville blog those first days, with the water still rising and aerial pictures coming in, it would be hard to imagine that the three buildings off of Cowan Street, butting up against the Cumberland River on the near east side, would be back up and running less than three months later.

But they're back and hosting rehearsals daily. Fresh paint. New floors. New curtains. New Meyer Sound systems in all nine rehearsal rooms, and six new Avid Pro Tools HD rigs. The tenants are back in—Fender, Shure, Meyer, Digital Console Rentals, DiGiCo, Tour Supply, Stage Call, Peavey, MooTV and others—and the lockers are open. They had a soft reopening on a Thursday in mid-July, and that Friday Kenny Chesney was in for rehearsal, with bookings by Reba McEntire, Kelly Clarkson and others soon after. The company handled backline for the CMA Music Festival in June and then the CMT Awards. Yamaha hosted a two-day live sound event August 11 and 12. And *Mix* will be there September 13 and 14 for Mix Nashville.

"It's not how I would have chosen to repaint," says owner Ben Jumper, with a trace of gallows humor and only a slight hint of exhaustion. "But we did it with the help of our manufacturers, and we will forever be indebted to them for helping us get through what we got through."

Jumper is a bit of a throwback. He deflects credit and passes on the praise to his staff and the volunteers who came out in droves as the waters receded. When we talk to him about the magnitude of what happened to his facility, and the millions of dollars lost in guitars, amps, keyboards, tour gear and artists' collections, he responds, "We just lost stuff. Thirty-one people died, two are still missing, and three months out we still have 2,000 out of their homes."

He's right, but that doesn't discount the fact that on Sunday, May 2, driving to the Chattanooga airport, he suddenly found himself knee-deep in crisis management. "We had rehearsals scheduled for Saturday and Sunday, and there were huge storms going on, but there were no warnings of possible flash floods. I've been here 35 years and never seen water like that. I was on my way to the airport when I got a call from Matt Herzer and Case Jumper, my son, who were opening up for rehearsals. They were driving down Cowan Street and the water was up to the headlights on a Subaru. I called back 35 minutes later after I had my bags on the curb, and the water had risen a foot-and-a-half and was rising fast. I told them to leave the facility, got in my car and made it to Nashville in 2 hours and 10 minutes. I was able to exit on the Jefferson Street offramp, but there was a police car blocking our street. It was flooded up to the stop sign, and it was still raining. We got 22 inches of rain in 36 hours, the most since records have been kept. And it crested at 52 feet 9 inches. The water was out of the Cumberland banks by 32 feet."

With nothing to do but wait for the crest, Jumper brought his 17-person staff to his home in Germantown on Monday and began scouting warehouses for dry storage, preparing for removal of client gear. On Tuesday, he was finally able to reach Soundcheck's front door—by bass boat—and get a first look inside. "My heart literally broke that first day back," Jumper recalls. "Water across 160,000 square feet in three buildings. And my floors are five feet above the floodplain. I've seen tornados rip through concert sites, but this was just shocking and overwhelming."

By the weekend, Jumper and his staff had put together a highly organized plan to get client equipment out and drying in three warehouses out near Clair Global's facility. Guitar and amp triage commenced, and luthiers volunteered their time to salvage what they could. Tour Supply, a tenant, handled amp repair. Stage Call, another tenant, was hired for transportation. There was never any question they would reopen, and after talking with tenants, the landlord and the remediation team in their Hazmat cleanup suits, it was decided that they would rip back to the shell and rebuild right there. Same footprint.

Jumper is effusive in his praise of the staff and his tenant support. He's equally supportive of Nashville mayor Karl Dean, who mobilized 14,000 volunteers the day after the crest. But he's most appreciative of the support from NARAS through MusiCares. "They did an amazing job here in Nashville," he says. "The ones who really lost everything were the musicians, and NARAS put instruments and gift certificates in their hands. They helped sound engineers and lighting engineers with rent and car payments and food. That will be one of the charities I give to the rest of my life. It was just really cool to see the community together and help each other out. It's an honor for us to be a part of that community.

"And I have to add that I have the privilege of working with the most amazing team here at Soundcheck. They really run the place, and we feel blessed today to have what we have." III

ALL ACCESS

Photos and text by Steve Jennings

Bassist Jessie Quin's twin Ampeg amps have a DI and a Shure Beta 52 on the cab.

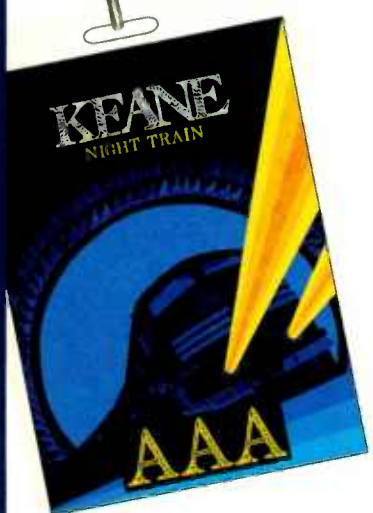
Keane

With three hit albums under their belt, Keane is touring under their latest release, an 8-track EP titled *Night Train*, which features collaborations with Somali rapper K'Naan. The alt-pop group is playing to packed venues, including the Fox Theater (Oakland, Calif.), where *Mix* caught up with the crew.

Monitor engineer Simon Hall (above) is using a Yamaha PM5D, using everything onboard. External rack gear is limited, comprising a straightforward signal path of "mic-desk-ears."

"The band's vocal mics are all Sennheiser 935s with Tom [Chaplin, vocals/guitar/keys, above right] on a wireless G3 version. The band purchased a Sennheiser battery-recharging system [BA20152G2 batteries and L2015G2 charger, although they have four-way versions] for all the in-ear packs. They've been fantastic and reliable. The system is now around three to four years old and is still completely reliable, with not a single instance of them losing charge. We plug them in first thing and recharge after soundcheck. Expensive outlay to start, but they have paid for themselves many times over and done their little bit for the environment. I cannot recommend this product enough.

"We're not using any wedges, only stage subs. In the UK we had d&b Q subs (two for bass, one for keys) and in the U.S. we have L-Acoustics DV subs (x2)."



According to stage manager/drum tech Scott Johnson (left), Richard Hughes' kit is miked with Sennheiser e 904 (kick, toms), Shure SM57 (snare top) and Beta 57 (snare bottom), Neumann KM100 (hi-hat) and AKG 414s (overheads).

Front-of-house engineer/studio engineer Matthew Kettle most recently worked on the Corinne Bailey Rae CD *The Sea*. "I'm very proud of that recording," he says. "She approached me after hearing recordings I'd done with the White Stripes, The Raconteurs and Mark Ronson. She wanted to bring some of my 'live' feel and some of the analog elements of those previous albums. She and the other producers really allowed me a lot of freedom to help shape the sound of the record. I'm very pleased with how it turned out."

For Keane, Kettle is mixing on an Avid Profile system, using an assortment of plug-ins such as Waves Mercury and Studio Classics Collection, vintage compressors and FX and more. "I really like the new H-Comp and H-Delay," Kettle adds. "For convenience and portability, everything is 'in the box' this time. No outboard gear apart from a couple of mic pre's for the audience mics. I do archive recordings of the shows using the 18 channels of audio available from a Digidesign FWx card to a laptop running Pro Tools LE."

Kettle tunes the house-provided P.A. each day, trusting his ears to "pick up on obvious problems. We've been lucky on this run and had some good local system providers. With Keane, we've been carrying d&b J Line in Europe, which is a system that I really enjoy mixing on. I generally try not to do much system EQ at all. With new digital desks and system controllers, I think the overuse of EQ has become a big problem.

"With Keane, I think people are often surprised that a band based primarily around a piano can sound so big and rocking!" he continues. "My approach is possibly a little bit unfashionable. I very much believe that music should be powerful and sound 'live.' I really try hard not to clean things up too much, not overprocess; the character and beauty of music comes from tiny imperfections. If you remove every bit of this character, the mix quickly becomes very sterile. I just try to let the live mix be exciting and visceral."

Keyboardist Tim Rice-Oxley has two keyboard setups. His main one, facing stage right (pictured at right) is a Yamaha CP70 ("Completely standard inside with the original Yamaha pickups," says Johnson), with a Nord lead on top. Downstage, he has a Korg Triton with a CME MIDI controller on top. He has multiple Line 6 Pod XTs with floorboard controls onstage. Off-stage, his rack gear comprises MOTU 828 Mark 2s that are with Muse Research Receptors, and it has multiple MIDI switching and audio switching gear. There's also Line 6 gear for both keyboard setups, along with some Radial SW8 auto-switchers.

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Borrowing the amp circuitry from the acclaimed ELA M 251E and C-12, the AR-51 provides a sonically superb and versatile tube mic option for the budget-conscious.

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"The Hammer is all about gorgeous smooth top and high mids. It's just awesome. It totally opens up the top and brings high mids forward in a really pleasing way. The Hammer is crazy good!!!"
- Ronan Chris Murphy

A Designs

Millennia HV-3D Mic Preamp

"An excellent value offering impeccable audio specs, first-rate construction and sonic transparency under any conditions. The Millennia Media HV-3 is for those who seek absolute purity in reproduction." - George Petersen, Mix Magazine

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APOGEE

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The Weiss DS1-MK3 compressor / limiter / de-esser is not only used by top mastering engineers, but top mixers too! Try it on the mix bus and you won't turn back. New presets by Bob Katz make it "plug and play."

weiss

Retro 2A3 Dual Channel Tube Program EQ

"The Retro 2A3 has become my new 'go to' on kick. Clean and open but big and with lots of character. Everything Retro makes is just quality tone."
- Joe Chiccarelli

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Apogee **Symphony I/O**

Apogee's (apogeedigital.com) new Symphony I/O boasts compatibility with Logic Pro, Core Audio and Pro Tools HD, and offers an impressive array of user-configurable I/O options. Symphony I/O's base chassis can accommodate up to two I/O modules, creating a variety of analog and digital I/O. Options include eight analog I/O + eight optical I/O; eight analog I/O + eight AES I/O; eight mic preamps; 16 analog inputs + 16 optical outputs; 16 analog outputs + 16 optical inputs; and plans for more. The included Maestro 2 software offers integral control of Symphony I/O from routing, mic pre adjustment, input and output calibration, and hardware control. Pricing starts at $3,690 (base unit, plus one I/O module).

Preamps Plus

Focusrite **ISA428 MkII**

At $1,799, Focusrite's (focusrite.com) ISA428 MkII 4-channel mic preamp and A/D converter, which replaces the existing ISA428, features four of the company's transformer-based ISA pre's with phantom power, phase-reverse controls, switchable input impedance and an adjustable highpass filter. There's also an optional 8-channel A/D converter upgrade that operates up to 24-bit/192kHz. Other features include DI instrument inputs, switchable balanced insert points and six-step metering for all input channels, including the four additional A/D inputs.

Slight Yet Mighty

MOTU **MicroBook**

The MOTU (motu.com) MicroBook ($269) is a USB bus-powered 4x2 audio interface offering balanced I/O, a single mic preamp, 10-bus digital mixer, and modeled analog EQ and compression. It features four pairs of outputs: balanced TRS main outs, stereo "mini" line out, S/PDIF digital out and headphone mini-jack. MicroBook provides a wealth of tools for audio analysis and diagnostics, including real-time FFT, spectrogram waterfall, oscilloscope, X-Y plot and phase analysis, plus a test tone and noise generator that can be independently assigned to any output. It's compatible with all current and recent-generation Macs and PCs, and includes AudioDesk DAW software for Mac, USB cable and mic cable adapter.

Crunch With Punch

Slate Digital **FG-X Mastering Plug-In**

Slate Digital (slatedigital.com) FG-X ($299) promises clarity and openness by analyzing each individual peak in a waveform to optimize the process of gain enhancement. Using a process called "Intelligent Transient Preservation," the plug-in raises the overall level while maintaining the original mix's punch, balance and character. In addition to adding gain, the FG-X also offers users precise control over transient levels and dynamic perception.

Double-Wide Gain Control

Alta Moda **Hippo Compressor/Limiter**

The latest in Alta Moda's (altamodaaudio.com) 500 Series rack products, Hippo ($1,295) is a VCA-type compressor/limiter housed in a two-rackspace 500 Series–compatible module. Features include expanded control ranges, sidechain filters, a Warmth function for added harmonics and a wet/dry blend control for parallel compression. It can also run in Dual Mono mode that unlinks the sidechains and allows the channels to operate independently.

I/O Beast for Broadcast

RME **ADI-6432 BNC Converter**

Based on RME's (rme-audio.com) ADI 6432 64-channel MADI-AES/AES-MADI converter (dist. in U.S. by Synthax, synthax.com), the newly developed ADI-6432R BNC ($5,999) affords fail-safe operation through the utilization of standard BNC connectors and dual-redundant power supplies. The ADI-6432R BNC uses the AES-3id standard, which carries the exact same AES data but uses the broadcast-standard, 75-ohm unbalanced RG-59 cable (1V, p-p) with BNC connectors. Each AES-3id connection carries two channels of digital audio up to 300 meters. The MADI signals also use RG-59 and can send 64 channels of audio a distance of 300 meters.

Four for Your Ears

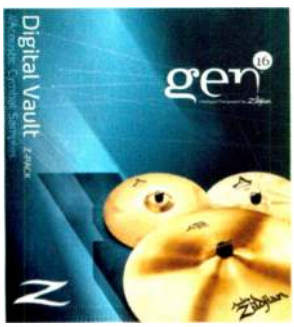
iKey **M-v2 Series Monitors**

iKey's (www.ikey-audio.com) newly redesigned M•v2 Series active studio monitors feature a front-firing bass port, soft-dome tweeter and glass-aramid composite woofer. There are four different models: M-505v2 (5-inch woofer, 50W/25W bi-amped; $209), M-606v2 (6-inch, 65W/25W; $239), M-808v2 (8-inch, 100W/25W; $319) and the 175W M•10Sv2 10-inch subwoofer ($399). All have HF or crossover adjustment and a rear panel volume control.

In Your Phase

Sound Radix **Auto-Align Plug-In**

Sound Radix (soundradix.com) has created a new plug-in ($149; free demo online) that promises to automatically align two microphones in phase. By instancing the plug-in on a channel, the feed from the other signal to be matched is introduced through the sidechain input. The plug-in's metering displays level and frequencies that correspond to the color bar scheme: lower frequencies represented by wider bars, higher frequencies by narrower bars. Controls include noise-floor faders, Next/Previous buttons for choosing the best matching point to another, a delay display, polarity reverse, on/off and Detect.



Splashes, Crashes and Rides—Oh My!

Zildjian **Gen16 Cymbal Library**

After more than three centuries of making great cymbals, Zildjian digs into its vast collection to offer the Gen16 Digital Vault (www.gen16.com, $249), a 2-DVD set with 24-bit samples of its rarest, most coveted "reference" cymbals, meticulously recorded by sampling guru John Emrich and presented in a custom version of FXpansion's BFD Eco (Mac/PC) sample playback engine. Also included in the Digital Vault are libraries of drum and percussion groove tracks (in audio and General MIDI formats) from in-demand drummers, such as Michael White, Dave DiCenso and Peter Michael Escovedo. III

Audio-Technica AT4080 Active Ribbon Mic

High-Tech Design Offers Smoothness, Extended Top End

In just more than a decade, the migration of ribbon mics into manufacturers' product lines has rapidly increased, Audio-Technica unveiled its first ribbon mics—the AT4080 and AT4081—last year. The AT4080 (reviewed here) is a bidirectional, side-address, phantom-powered ribbon model that delivers the natural sound and warmth of a classic ribbon design with the extended top-end response and gain typically attributed to a condenser.

What's Inside

While ribbon models have a smooth, warm sound unequaled in the world of dynamic and condenser mics, they traditionally have had two serious flaws. First, they are intrinsically fragile; second, they have low output levels. With some significant research in its R&D department, Audio-Technica has resolved both of these issues, resulting in 18 pending patents.

The heart of the dual-ribbon 4080 is a pair of 1-micron-thick aluminum ribbons placed back to back with a small gap between, and folded several times to create an element capable of accurately handling SPL levels up to 150 dB. The company's MicroLinear™ ribbon imprint minimizes ribbon distortion, yielding accurate sound source reproduction and durable performance. This process increases ribbon strength to the extent that Audio-Technica offers a five-year ribbon warranty, something not typically encountered in the ribbon microphone market. Lightweight, yet powerful N50 rare-earth neodymium magnets and the dual-ribbon design are responsible for the 4080's high output. The two ribbons are arranged back-to-back, working to provide an additional 3 dB of sensitivity without adding noise. Stated frequency response is 20 to 18k Hz, and the 4080 has a nominal open-circuit output voltage of 11.2 mV at 1V, 1 Pascal. The 16.7-ounce body is seven inches long with a 2.1-inch diameter and a balanced, low-impedance (100-ohm) output.

Not unlike several new-school ribbon designs, the AT4080 requires 48-volt phantom power to supply the mic's active electronics, which bring its output to near-condenser mic levels. The stable impedance and high output of the 4080's active circuitry make it easy to integrate with a wide variety of microphone preamplifiers. The microphone's housing is sturdy and robust, and it ships with a dust cover, protective carrying case and the AT8449/SV shock-mount.

At Work

The AT4080 is an extremely versatile mic, and Audio-Technica recommends it for use on vocals, horns, strings, acoustic instruments, drum overheads, orchestras, ensembles and guitar cabs. Its robust design makes it a contender for road applications, as well as in the studio. As an obsessed ribbon microphone fan, I couldn't wait to put the mic to the test and was pleased with its performance. I received the pair of AT4080s in time to put them to work on the final stages of the Kopecky Family Band project I was producing and engineering with Nashville top-knob Chris Grainger. We used the mics to record acoustic guitar, vocals and xylophone, and loved every minute of it. The first noticeable characteristic of the 4080 is its top end. While still sounding like a ribbon, the mic has an extended HF response with wonderful detail and sheen reminiscent of a condenser microphone and a solid, tight—yet massive—low end.

Recording vocals and acoustic guitars, the 4080 has a smooth, natural sound with a balanced response across the entire frequency spectrum. I initially had some reservation

The Audio-Technica AT4080 features dual-folded ribbons and other innovations allowing the mic to take up to 150dB SPL.

PRODUCT SUMMARY

COMPANY: Audio-Technica
PRODUCT: AT4080
WEBSITE: www.audio-technica.com
PRICE: $999 street

PROS: Wide range of uses, high output, five-year ribbon warranty.

CONS: Shock-mount is difficult to work with.

about the dual-ribbon design, as I've heard compromised results from other dual-ribbon microphones that I've used in the past. This was not the case with the 4080, which has no noticeable artifacts resulting from the dual ribbon. In addition to a prominent proximity effect, the mic is very forgiving about placement, and in every instance it truly captured the intimacy of being in the room with instrument or voice being recorded.

I put the mics to work as drum overheads while tracking Knoxville rockers After Elvis and the result was astounding. The mic's clear and sparkling top end and natural, warm midrange wonderfully captured the sound of the cymbals, as well as provided the backbone to the basic sound of the drum kit.

I used the 4080 with the Hardy M-1 mic pre and Empirical Labs Distressor to record electric guitars and was equally pleased with the results. Across the spectrum, from sparkling clean to beefy distorted, the 4080 is perfectly suited to recording electric guitars. Due to the proximity effect, I found that I had the best outcome when placing the mic six to eight inches from the cabinet (further than the 1 to 3-inch distance I typically adhere to when using a ribbon mic).

The performance of most ribbon models is extremely varied, depending on the impedance and gain of the microphone preamp used. The active circuit in the 4080 ensures that the mic's performance will not be compromised by a lesser mic pre. Using the mic to record acoustic guitar and vocals with a stock preamp in my Mackie 1604, I was amazed that the result was still of acceptable quality.

I used a pair of 4080s routed into a pair of Hardy M-1 mic pre's to record a jazz quartet comprising Charlie Peacock on Rhodes, Chester Thompson on drums, Jeff Coffin on sax and Calvin Turner on bass on the small stage in Nashville's Bluebird Café. Placing a mic on either side of the stage about seven feet in the air with each mic focused toward the center of the stage yielded a wonderful recording with amazing separation, detail and clarity, and a rich, full bottom end.

The 4080's shock-mount leaves a bit to be desired. While it does a wonderful job of isolating the mic from vibrations, it's quite the pain to put on/take off—the same complaint I've had about the 4033, 4047, 4050 and other A-T mics with a similar body style. Users who keep the mic at their studio can simply leave it in the shock-mount, but I lug my mics from studio to studio so I have to deal with this every day.

Recap

The 4080 is a marvelous microphone that is easily adaptable to a wide variety of situations. Users in the market for a ribbon microphone or anyone simply wanting to expand their sonic palette should give the AT4080 top consideration. III

Russ Long is a Nashville-based engineer who's worked with Wilco, Allison Moorer and Dolly Parton, among others.

By Kevin Becka

Focal CMS40 Powered Monitors

Desktop Speakers With Superior Imaging and Low End

Focal makes automotive, pro audio and audiophile speakers that range from the Grande Utopia EM monitors, which cost as much as a house, to the company's latest—and most affordable—studio speaker, the CMS40. Each CMS40 unit weighs in at 11 pounds and carries the same look and many features of the rest of the CMS near-field line, including internal magnetic shielding.

The front of the unit provides a large rotary gain control, power switch, 4-inch Polyglass cone woofer, split front-firing bass port and the same 1-inch aluminum/magnesium inverted-dome tweeter found on the the CMS50 and CMS65s. The rear carries a sensitivity switch (+4 dBu, 0, -10 dBv), low-frequency shelving (-2, 0, +2 dB; tunable from 0 to 450 Hz) and high-frequency shelving (-2, 0, +2dB; variable from 4.5k to 20k Hz). Each individual driver is powered by a 25-watt Class-A/B amplifier, and XLR and RCA inputs are included.

In My Ears

My first listening test was in a small space with the CMS40s placed on upfiring Primacoustic Recoil Stabilizers nearly three feet apart. I previously had the Focal CMS65s (6.5-inch woofer) set up in the same place, so I wasn't expecting much when I truly fell in love with the larger speaker's balance, smooth top end and extended lows. To my surprise, for such a small enclosure, the CMS40's low end was full, while the top end and midrange were balanced, smooth and never strident.

Sure, they didn't go as low or as loud as the CMS65s, but in this situation they were musical and perfect for the room. The stereo imaging was spot-on, with the center-panned items seeming to come directly from the wall in front of me. I liked how the speakers "disappeared" when I listened to a variety of source material and raw tracks.

I had the CMS SUB on hand so I decided to find out how the CMS40s would fare in a larger room with the subwoofer. The space I used is a medium-sized control room that houses an SSL 4056 G+ console and has proper acoustics. I set up the system and used Rational Acoustic's Smaart software to adjust the polarity of the sub so that it was accurate at the listening position.

While listening to a variety of sources, including a live drum recording, I quickly found that the CMS40s' 25W amps became labored when I tried to gas the system to a point where I'd do critical loud listening, especially during transient peaks. There was some audible distortion as the clip light showed that I was pushing the level above the amp's comfort level. To be fair, I thought this would be the case but wanted to see what these speakers could do when they were required to perform at high level.

Tiny Tone King

The CMS40s were surprising to me: It was a "wow" moment from the beginning. For starters, they produced an impressive amount of low end for this size of a cabinet. In addition, the CMS40s absolutely mimicked the consistency of mid- and high-end balance and detail that I had grown accustomed to in the CMS65s.

And I was not the only person who felt this way. In the process of a product review, I often like to invite other engineers whose ears I trust to a listening session to make sure my experience is verifiable. I simply put them in the room and step back with my mouth shut and my best "inscrutable reviewer" face on. To the last person, everyone noticed the imaging and the range of the system; some seriously asked me, "Where's the sub?"

I often get asked the question, "What's the best pair of monitors for less than $500?" My answer is always: "Save your money for a better pair in a higher price range or else you'll end up buying your monitors twice." With this in mind, the CMS40s are a great next affordable step up if you have a small studio space and you need an accurate transducer you can bet your career on. III

Kevin Becka is Mix's technical editor.

Focal's CMS40s feature a 4-inch woofer and the same tweeter as found in the company's CMS50 and CMS65s.

PRODUCT SUMMARY

COMPANY: Focal
PRODUCT: CMS40
WEBSITE: www.focalprofessional.com
PRICE: $495 each

PROS: Great stereo imaging and low end in a small monitor. Good range of controls.

CONS: Insufficient power for high-volume listening.

By Michael Cooper

2CAudio Aether 1.5 (Mac/Win)

High-End Algorithmic Reverb At a Low-End Price

I've been a big fan of 2CAudio's Aether algorithmic reverb since its introduction last year. Version 1.5 boasts improved sound quality and terrific new features, and is a free update for owners of previous versions. I reviewed the AU version of Aether 1.5 in Digital Performer V. 6.02 using an 8-core Mac Pro running Mac OS 10.5.4. The plug-in is also available in VST format (it's a 64-bit native Windows plug-in); an RTAS version is forthcoming.

How High Can You Go?

To satisfy even the most persnickety audiophile, the latency-free Aether 1.5 offers 64-bit internal operation and lets you choose from multiple levels of oversampling and modulation and interpolation quality. The result is more than 144 dB of noise and alias suppression at the highest quality settings. Aether supports mono-to-stereo, L/R stereo and M/S modes of operation, and you can use different modes simultaneously for its early (discrete) and late (diffuse) reflections. M/S processing allows, for example, adding reverb to only the mid or side channel of a completed mix, a mastering application.

The well-organized GUI offers dozens of parameter controls. Begin by tweaking the gain, wet/dry mix and various filters (shelving, HPF and LPF) for the input signal. Then choose one of 33 Space presets from a pop-up menu to load a patch of early reflections (ERs). Controls in the GUI's ER section give you the ability to change the size, complexity of shape, timbral coloration and damping to construct your own virtual spaces.

PRODUCT SUMMARY

COMPANY: 2CAudio
PRODUCT: Aether 1.5
WEBSITE: 2caudio.com
PRICE: Aether 1.5, $249.95; Integrity and Creativity Expansion packs: $24.95 for one or $39.95 for both packs

PROS: Superb sound quality. Deeply programmable. Well-organized GUI. Inexpensive.

CONS: No gated reverb. Steep learning curve.

Independent controls for Aether's late reflections (LRs) adjust the size, shape, pre-delay, decay time, diffusion, attack, sustain, spread (echo-like ripples), HF shelving cut, LFO modulation and 3-band damping for the diffuse reverb tail. ERs and LRs can be chained in parallel, series or both ways at once in varying proportions. ERs and LRs can be independently bypassed. For example, bypassing the LRs can fashion a complex ambience patch devoid of any reverb tail.

Aether's well-organized GUI offers deep and completely independent control over early and late reflections.

Using Presets

A Frequency Profile menu offers a choice of 100 presets that recall settings for 15 filter controls at once. This streamlines the editing process and you can store your own frequency profiles and custom presets. Aether makes the comparison of presets easy. From the new browser page, you can audition presets while locking controls for wet/dry mix; input, ER and LR gains; size; and RT60 (decay time) to whatever values you deem appropriate for your current production. On the main page of the plug-in's GUI, you can also lock the bypass state and input mode (mono, true stereo or M/S) independently for the ER and LR sections so they don't change while you browse presets. And if the roughly 200 stock presets aren't enough, 2CAudio offers its excellent Integrity and Creativity Expansion packs, each of which provides some 150 additional presets.

Give Me Space

Using Aether's highest-quality modulation setting and enabling 4x oversampling, the sound quality went from great to superb yet demanded only about 5 percent of my Mac Pro's resources with a single instantiation.

Aether sounded outstanding on drums. After loading the Studio ER pattern in the Space menu, dialing in moderate size and decay-time values for the LRs, and cranking the diffusion and sustain, the sound was ultra-smooth, realistic, detailed and 3-D. I was disappointed that Aether does not provide gated-reverb programs, an inexplicable oversight for an algorithmic reverb plug-in.

Muting LRs and riding the gain on "parking garage" ERs on select phrases of a lead vocal track lent a lush, wide automatic double-tracking effect that sounded fantastic. The Creativity Expansion pack's Fathom preset—with its highly diffuse and nearly infinite reverb tail—transformed volume-pedal swells on an electric guitar track into a haunting celestial orchestra. Church and concert hall presets sounded realistic and gorgeous on piano. The inability to solo mid and side channels, however, made it difficult for me to get good results using Aether's M/S modes in a mastering context.

Aether's overall complexity imposes a fairly steep learning curve. But the extra effort is worth it. Aether offers world-class reverb at a great price. III

Mix contributing editor Michael Cooper owns Michael Cooper Recording in Sisters, Ore. Visit www.myspace.com/michaelcooperrecording.

Shure Super 55

Shure Super 55
Live Vocal Microphone

After more than 70 years in production, Shure's (shure.com) Unidyne 55 Series is surely the longest-running product in audio history. The story begins in 1937 with Shure engineer Benjamin Bauer looking for a single-capsule approach to create a unidirectional microphone.

Experimenting with capsules having openings that allowed sound waves to reach the diaphragm, Bauer partially blocked the rear openings, yielding a short phase delay that cancelled the sounds from the rear, and the Unidyne was born. Debuting in 1939, the first Unidyne model 55 was an immediate hit and a standard for decades to come. With retro looks fully in vogue, Shure rechristened the mic as the 55SH Series II in 1996, bearing the model 55S body introduced in 1951, but with a modern SM48-style element. And like the 1939 version, the cardioid 55SH Series II was also a hit, showing up on stages, music videos, movies, TV shows—just about everywhere.

The latest generation is the Super 55, which keeps the cool chrome-plated, die-cast zinc body, but with such updates as a new capsule based on the successful Beta 58A, marking a substantial upward leap in performance.

The Super 55's new supercardioid capsule works best with stage monitors placed slightly off to the side, with lobing at the 120-degree off-axis position rather than the straight-on cardioid approach. Also, the Super 55's -53dBV/Pa sensitivity results in an output that's approximately 5 dB hotter than that of the 55SH II, providing increased gain-before-feedback. As another plus, the frequency response extends out to 17 kHz, allowing for some extra air and articulation. At the other end, the Super 55's bass response is smoother and seems more controlled, while retaining the 6 to 7kHz presence boost that lets vocals cut through the mix. Another appreciated change is omitting the on/off switch, which could inadvertently get switched off, leaving vocalists starting a show with no voice in the mix. The Super 55's "no switch/no problem" approach definitely makes life easier for the audio engineer.

The Super 55 retails at $311 ($249 street), and the original $199 SH55 II remains in production. The company recently announced a Special Edition Super 55 ($299 retail) version with a striking black body and red windscreen—offered exclusively through Guitar Center. Sometimes, a classic just keeps getting better.

—*George Petersen*

Primacoustic Kickstand
Acoustically Isolated Mic Stand

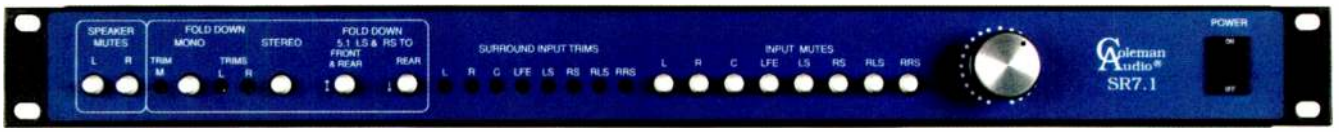
Kickstand (primacoustic.com) takes the concept behind Primacoustic's Recoil Stabilizer speaker platforms and applies it to a mic stand. While the name hints that it is targeted for recording kick drum, it works for any instrument-recording applications near the floor.

The Kickstand comprises a dense foam base with a quarter-inch, heavy steel top that lets you attach a microphone boom arm (not included). I'm a longtime Recoil Stabilizer user and fan, and have no doubt that the concept enhances the listener's experience. Whether this translates to a mic stand was a question I sought to answer.

No surprise, my first application was on kick drum. Out of the box, attaching a boom to the Kickstand via the large threaded adapter and lock washer was easy. It's the perfect height to place a mic either inside or outside a kick drum. It's attractive and takes up a lot less floor space than a three-legged short stand. I used a Shure Beta 52 on the Kickstand on the inside of the drum and a JZ V67 outside using a traditional three-legged stand. The combo sounded great, as did the individual mics. This was a draw in my book because there was no way to A/B the Kickstand with another mic inside the drum.

I got a better idea of what Kickstand does by setting up two SM57s on a Marshall guitar amp cabinet with both mics precisely placed left and right of the speaker's dust cover. One stand was a three-legged boom and the other was the Kickstand. In two sessions with separate setups, I confirmed that the 57 on the Kickstand offered more low end and better

Primacoustic Kickstand



Coleman Audio SR7.1

midrange definition than the mic mounted on the other stand.

At $90, Primacoustic's Kickstand is an inexpensive and easy way to take your recordings to the next level by providing a more stable and acoustically isolated base for a microphone. A definite buy.

—Kevin Becka

FXpansion BFD Eco
Virtual Drum Instrument

Over the years, FXpansion (fxpansion.com) has built up a huge fan base for its BFD virtual acoustic drum module, available libraries and expansion packs in every style. Now the company reaches out to a wider audience with BFD Eco, an entry-level "starter set" with a selection of the best BFD2 sounds (recorded at London's AIR Studios using high-end mics, a vintage Neve console and top-end Prism converters).

Offered for Mac or PC with RTAS, AU and VST support (or stand-alone operation), BFD Eco has an intuitive GUI with presets that get you going quickly, or you can dig in with 15 onboard effects (EQ, filtering, dynamics, drive, reverb and more) and a huge, well-organized groove section, with advanced humanization and customizable keymaps to create your own sound. The level of control is impressive, with features like a Bleed knob that lets you tweak the amount of sounds entering into adjacent "mics"—just like a real kit—or adjust the individual top and bottom "mics" on a snare sample, along with the amount of overhead and room mics in the mix. Other features, like "Anti-Machine Gun," add realism to rolls and fast repeated sections, while "Drummer Perspective" flips your entire mix to hear it from the player's angle.

The Groove section has more than 1,500 patterns to loop and or/edit and then drag/drop as a MIDI file or as stereo audio mixes to your DAW, sequencer or sampler. Quantize, Humanize Time and Swing controls offer fingertip variations on your sequences, while a Simplify function strips out certain hits in complex sections to instantly create back-to-basics breakbeats.

The variety (and quality) of drum sounds is impressive without becoming overwhelming. It's "just" five kicks, six snares, 12 toms, three hi-hats, 11 cymbals and various percussion—but top-notch stuff and completely expandable with more sounds from FXpansion and third-parties. At $199 ($99 street), I highly recommend BFD Eco as an affordable entry into the world of BFD instruments.

—George Petersen

FXpansion BFD Eco's mix screen

Coleman Audio SR7.1
Eight-Channel Level Control

Whether mixing in stereo or surround, finding a DAW with a high-quality monitor control, channel mutes, speaker mutes and instant fold-down checking to stereo or mono is a tough call, especially for 7.1 production. Fortunately, the SR7.1 from Coleman Audio (colemanaudio.com) is a single solution that does all that and handles it well.

Housed in a single-rackspace chassis, the SR7.1 is a straightforward, no-nonsense unit. The rear panel has two 25-pin D-sub connectors (in standard Tascam format) for the eight channels of balanced inputs and outputs. In addition to the mutes for the individual input channels and left/right speakers, there are switches for selecting various fold-down options, recessed input trim pots and a large ganged volume control. The latter is a precision 23-step attenuator designed to match a logarithmic audio taper, with all channels matched within a tight 0.05dB tolerance.

The build quality is excellent throughout and is in line with the SR7.1's ultralinear response (20 to 20k Hz, ±0.25 dB) and no perceptible noise. All switching is noiseless and the performance is near straight-wire, almost as if the unit doesn't exist at all—clean and sweet.

But the SR7.1 offers a few tricks up its sleeve. In addition to the mono and stereo fold-down switches, two other switches can re-route the left-surround and right-surround signals to the rear RLS and RRS monitors, or the left and right surrounds can be brought up to the L/LRS and R/RRS speakers, respectively.

This is great for a quick check of the rear signals without having to crane your neck around. And under the hood are two internal switches for customizing operation to your preferences. One determines whether mono fold-down selected from the front panel routes to the center mono channel or to the left/right front. Another internal switch determines whether the LFE signal is included in stereo or mono fold-downs.

One broadcast trick for easily monitoring multiple language tracks involves folding down the signal feed to stereo and then muting all the inputs. Then, unmuting the L/R plays a stereo English track; unmuting C for mono language 2; LFE for mono language 3; and LS/RS and RLS/RRS for stereo languages 3 and 4, respectively. But the best trick of all is that the SR7.1 can do double-duty as an 8-channel analog summing box; in this application, the unit's transparent audio performance really comes into play.

If you do a lot of 7.1 work, the SR7.1 is an affordable solution, especially at $1,550. But it also makes a lot of sense in the 5.1/stereo production environment. I do a lot more 5.1 (and stereo) mixing in my studio than 7.1 sessions, so the SR7.1's flexibility in also doing the occasional analog sum is a real plus, while if a 7.1 gig comes up, it's simple enough to bring in a couple RLS and RRS speakers and be ready to go.

—George Petersen III

By Eddie Ciletti

Servicing Vintage Audio Gear

When It's Not the Tube, Transistor or Op Amp

When tube gear is unhappy, the easiest thing to do is swap tubes—not necessarily because they are the problem, but they're often accessible and (except for subminiatures) are always socketed. The July 2010 column detailed the key components around the tube, but not the schematic. Before picking up that thread, let's take a few steps back.

Despite the hazardous voltages of tube circuitry, part of vintage gear's charm is simple design and generous real estate—units are easier to work on and learn from. Vacuum tubes, transistors and op amps can all be configured as amplifiers—gain stages that are often plagued by similar problems, such as noisy resistors and capacitors. (See Fig. 1.)

Shrink to Fit

The short-term goal is not to be intimidated by technology, but to dive in—tinker, geek out and be merry. Familiarity with the simple stuff makes it easier to migrate from signal flow and block diagrams to schematics. Organization and troubleshooting skills can be used to eliminate the "dumb stuff," after which we can dig deeper at the component level.

An analog console is the perfect example for comparative analysis. Interrogating each channel with an oscillator and a patch cord (plus lots of repetition) is a huge help toward understanding signal flow (and signalis interruptus) when you combine your best troubleshooting skills with known good spares, such as easily swappable plug-in items like tubes, op amps, modules and cables.

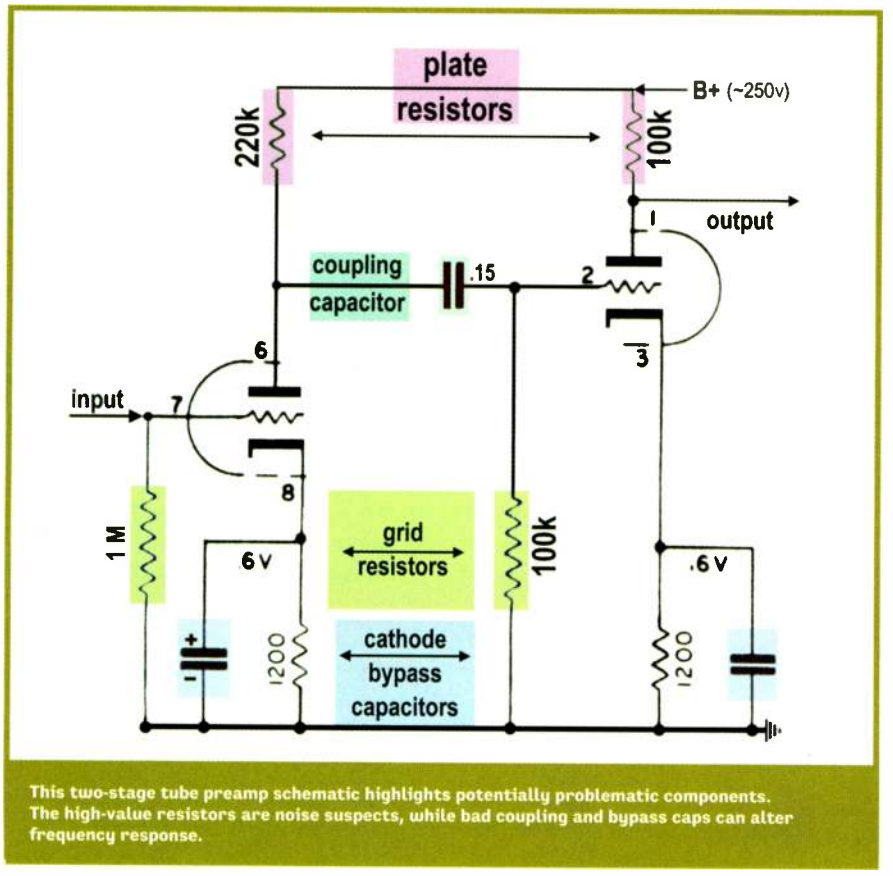
From tweed-era instrument amps to USB/FireWire converters, the obvious trend of putting more technology in less space has resulted in decreasing serviceability. This is why I encourage readers to hunt, gather and save schematics, and study and repeatedly draw them until they're etched into your brain. Familiarity with schematics allows for comparisons; as with music, there are many variations on a theme. Know these potential variations and you can amaze your friends by using "The Force" to diagnose basic problems. Even when a schematic is not available, you'll know, for example, that between two gain stages will likely be a capacitor, which, if bad, will act like a highpass filter.

Cramped Quarters

In the '60s and '70s, transistors and op amps were socketed, but as confidence in circuit design and component performance improved, the sockets went away. By the '80s, smaller component parts and large-scale integrated circuits (LSICs) further increased component count, density and heat. Up until this time period, the majority of these parts had "legs," or "leads" as they're known in component parlance. Such parts can be used in everything from point-to-point vintage tube gear to early digital equipment using through-hole–style PCBs.

The past three decades brought major advances in miniaturization and automation. A "pick and place" machine can quickly "stuff" a PCB with surface-mount components (SMCs), of which the Application Specific Integrated Circuit (ASIC) can be added to the list. Unlike through-hole components that are soldered on the opposite side of the PCB to which they are mounted, SMC parts (with minimal to no legs) are soldered on the same side to circuit board "pads."

In that same 30-year time span, the use of



This two-stage tube preamp schematic highlights potentially problematic components. The high-value resistors are noise suspects, while bad coupling and bypass caps can alter frequency response.

A soft wire brush is useful for burnishing tube contact pins.

ETLIVE

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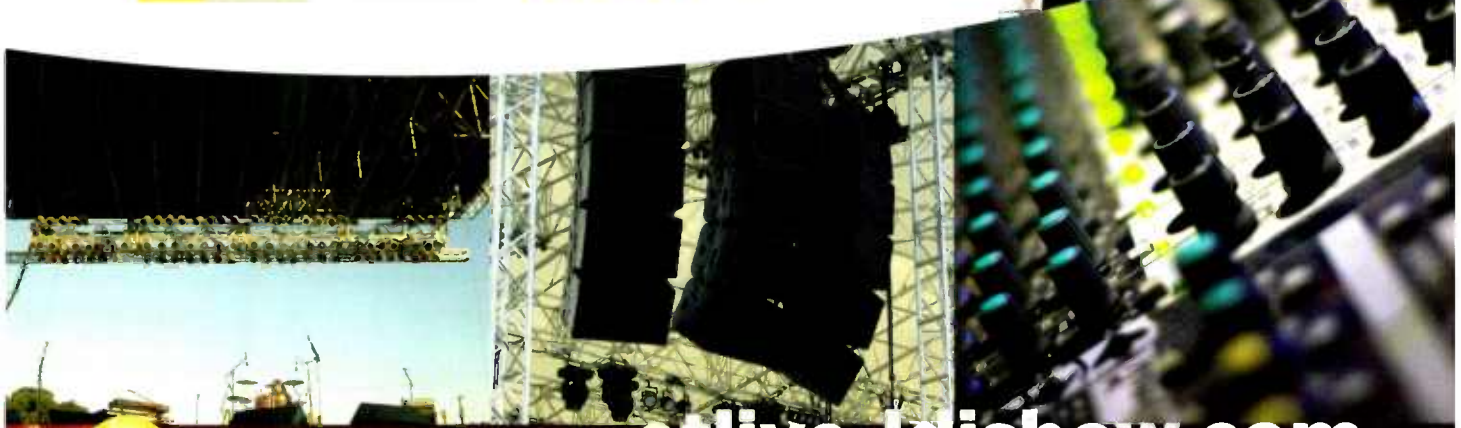

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plastic, PCB-mounted connectors has repeatedly been the Achilles heel of most electronic devices. From the Walkman to the iPod, personal multitrack to laptop computers, a little pressure on external connection plugs—such as eighth-inch headphones or DC inputs—can damage the jack, its soldered connection or the PCB trace(s). Back in the day, if a guitar amp fell over with the instrument cable connected, the plug would get bent or break.

Snap? Crackle? Pop?

When a faulty instrument, line or speaker connection isn't the cable, the crackles can be due to loose or tarnished input/output connectors. Don't be lulled into a false sense of security by nickel-plated phone plugs. They may look shinier than brass patch plugs, but some non-conductive "films" can be transparent—almost like satin-finish lacquer. The off-the-shelf solution is to burnish the plug with a 3M Scotch-Brite scrubber pad (or equivalent).

Visual inspection of XLR males is easier when the connectors are removed from their shells. Silver-plated connectors can oxidize black, which is not only visually obvious, but can also turn the connection into a diode, rectifying the audio into a mysterious, distorted nightmare. Limited space makes burnishing XLRs a second choice to chemical treatment, aka Silver polish. I haven't tried Hagerty products, but I have used Tarn-x and it's very effective. As with all chemicals, heed the warning and work in a well-ventilated area.

A toothpick or bamboo skewer is handy for cleaning tube sockets.

Don't overtighten plastic jacks; take the time to pop the cover to see that the opposite side isn't obviously damaged (or spinning or unsoldered). As mentioned earlier, if the connector is soldered to a PCB, it's important to inspect for both broken traces and a "cold" (weak/poor) solder joint.

If swapping tubes makes nasty crackles, the socket or pins might be dirty. A soft, fine-bristled (0.1mm) brass-wire brush (see Fig. 2) works well on tube pins. To clean the 7- and 9-pin tube sockets, start with a round toothpick dipped in anhydrous (99-percent alcohol) or denatured alcohol. (See Fig. 3.) Don't push too hard, but do rotate. If the toothpick comes out gray-black, then it needed to be done. Follow up with a fresh pick dipped in a contact cleaner/preservative such as Stabilant 22 or Caig DeoxIT. If cleaning reduces but doesn't eliminate the crackle, a fatigued socket or cold solder joint might be at fault. If a replacement is necessary, consider using ceramic sockets. Physically strong and with low capacitance, these are a better choice than plastic sockets.

You may not be ready to dive directly into component-level servicing, but by following a logical approach to signal flow and paying attention to simple details (such as clean connections), you've come a long way toward keeping your vintage gear in prime operating condition. III

Visit Eddie Ciletti at www.tangible-technology.com.

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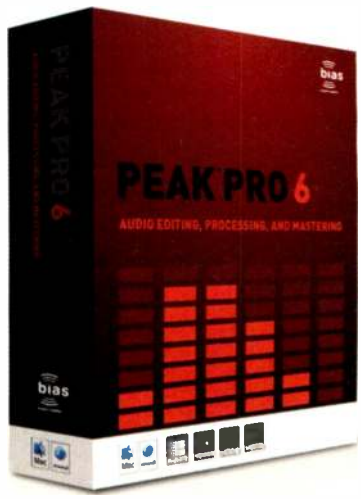

Miktek CV4
Large-diaphragm tube condenser microphone

The heart of the Miktek CV4's sound comes from its AMI BT4 transformer and original NOS Telefunken EF800 tube — producing a classic sound you'd expect from the earliest vintage tube microphones. The CV4 delivers that artist-pleasing, producer-pleasing "big sound." The bottom end is warm, tight, and big, complete with present and even mids. And the highs? Sweet and airy, indistinguishable from the most expensive mics in its class.

Genelec 8040A
Active bi-amplified studio monitor

With performance comparable to much larger systems, but in a compact package, the bi-amplified Genelec 8040A is ideal for use in many MOTU studio situations where wide frequency response is needed but space is limited. Use the 8040A for nearfield monitoring in project/home studios, edit bays, broadcast and TV control rooms, and mobile production vehicles.

Q&A

By Tom Kenny

John Coffey and Robert Kennedy of Coffey Sound

Navigating and leading technology changeovers in location sound.

Motion picture production is up, it's down. Reality TV is big, it's slowing. How is business?

John Coffey: We got hit like everybody else in '08/'09, but seem to be coming out of it okay. There is labor peace and contracts have been signed. For a while there, it was a novelty to watch YouTube viral videos when it was seen as the entertainment of the future. It is not. A good product takes money and the time to make it. I think we're coming out of this fine and we're looking at the best film year in our history. The industry in general has done well. I'm a big believer in following worst-case scenarios, and the Great Depression represented a golden age of filmmaking.

Have you seen any trends emerging in either technology or staffing?

Coffey: The new trend, and it's not all that new, is to put a wire on every actor, especially in reality TV, so that anybody might speak and at any time. Take a show like *Extreme Makeover Home Edition*: They have three guys out with eight radios each and all the equipment that requires over the shoulder. Right now, reality audio guys have the hardest job in the world. They're almost like pack mules. It used to be that you never carried more than four wireless transmitters with you, and you felt like you failed if you used all four that day.

We're lucky in production in that once there was a move to two-man crews. But now there is more work than ever on the set and a third man is not only necessary, but often a fourth man is needed to wrangle all the wires and run everything down. While audio equipment has gotten smaller and cheaper, fortunately the sound crews are not really shrinking.

Robert Kennedy: I liken it to moving around like a pregnant woman. The technology has advanced to a level where you can carry a 10-track, or even a 16-track, recorder over your shoulder and all the wires. Unfortunately, all those extra mic sources and the time needed to keep them at 100 percent leaves less time for mixing.

What about technology?

Kennedy: The centerpiece of any production cart or bag is the mixer and the recorder, and the recent evolution is the merging of those two pieces so you no longer need the audio connection from mixer to recorder—half the number of connections and half the number of fail points. And now both Sound Devices and Zaxcom have come out with flat-panel control devices that are really light weight and consume very little power.

Another thing that's interesting is the evolution of digital wireless to where they are remote-controllable. Sony, Lectrosonics and Zaxcom have digital or digital hybrid wireless that gives a sound mixer a higher level of control over the transmitter, which is where the trim for the microphone is. The ability to interact with the transmitter remotely allows for other interesting things like recordings on the unit that are timecode-stamped. That's your multitrack backup in the field—ideal for things like parachutists, or car shots beyond the range of RF, or when the RF evironment is really caustic. When reception is difficult, you have a recording right on the actor, so when they finish a scene you have a playback from the recording and you can download from the memory card on the transmitter or just turn in the card itself as the media—remarkable technology.

With production taking place all over the world and the loss of the "apprentice" system, do you find yourselves becoming educators?

Coffey: More than ever. This is our 24th year now, and we take a lot of pride in adding value to our customers, whether it's a student or a 30-year veteran. There's a new era of technology that's ushered in almost yearly now. Any time there is a major change, like with the move toward digital recording with Deva, we've felt that it's important to be the ones to lead the way, and we have the arrows in our back to prove it! [Laughs] DAT machines are obsolete now, but it wasn't long ago that they were the coolest thing. Now it's hard disk and file-based and workflows, and we see Flash recording coming in a big way.

Top: John Coffey in the field with a beach cart. Right: Robert Kennedy and friend on location in Malibu.

We also put out a quarterly magazine, the *Coffey Files*, and we host what we call a monthly Coffey Klatch the first week of every month. These are often SRO, and we take the videos and post them online each month. We also host forums on our site, so our educational sessions are growing and growing, especially as they involve equipment and the workflow to go along with it. Coffey Sound is now part of a group of post houses, including Laser Pacific here in L.A. A lot of our efforts recently have involved workflow and transferring files between production and post.

The industry has changed so much technically that we have to hire people now just to stay educated so they can teach our customers what it all means. We want to be the ones you call when you're in the middle of a field in Iowa, with one bar left on your cell phone battery and the director is giving you the evil eye because something went wrong. We thrive on turning negatives into positives. III

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