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MIX

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CLASSIC TRACKING

UNRELEASED JIMI HENDRIX

LENNY KRAVITZ: ANALOG ROOTS

MASSY REMEMBERS JOHNNY CASH

KEN SCOTT ON THE BEATLES, ELTON AND MORE

NEW STUDIO CONDENSER MICS

Gregory Town Sound
The Bahamas

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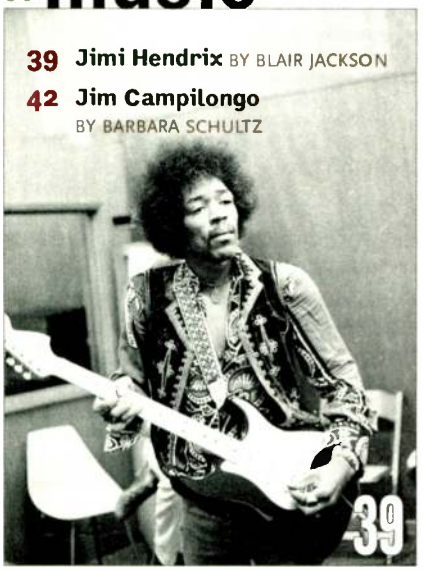

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Lenny Kravitz's Gregory Town Sound features a wrap-around Helios console and an EMI-designed REDD 37 board once owned by Abbey Road. **Photo:** Mathieu Bitton (candy tangerine.com).

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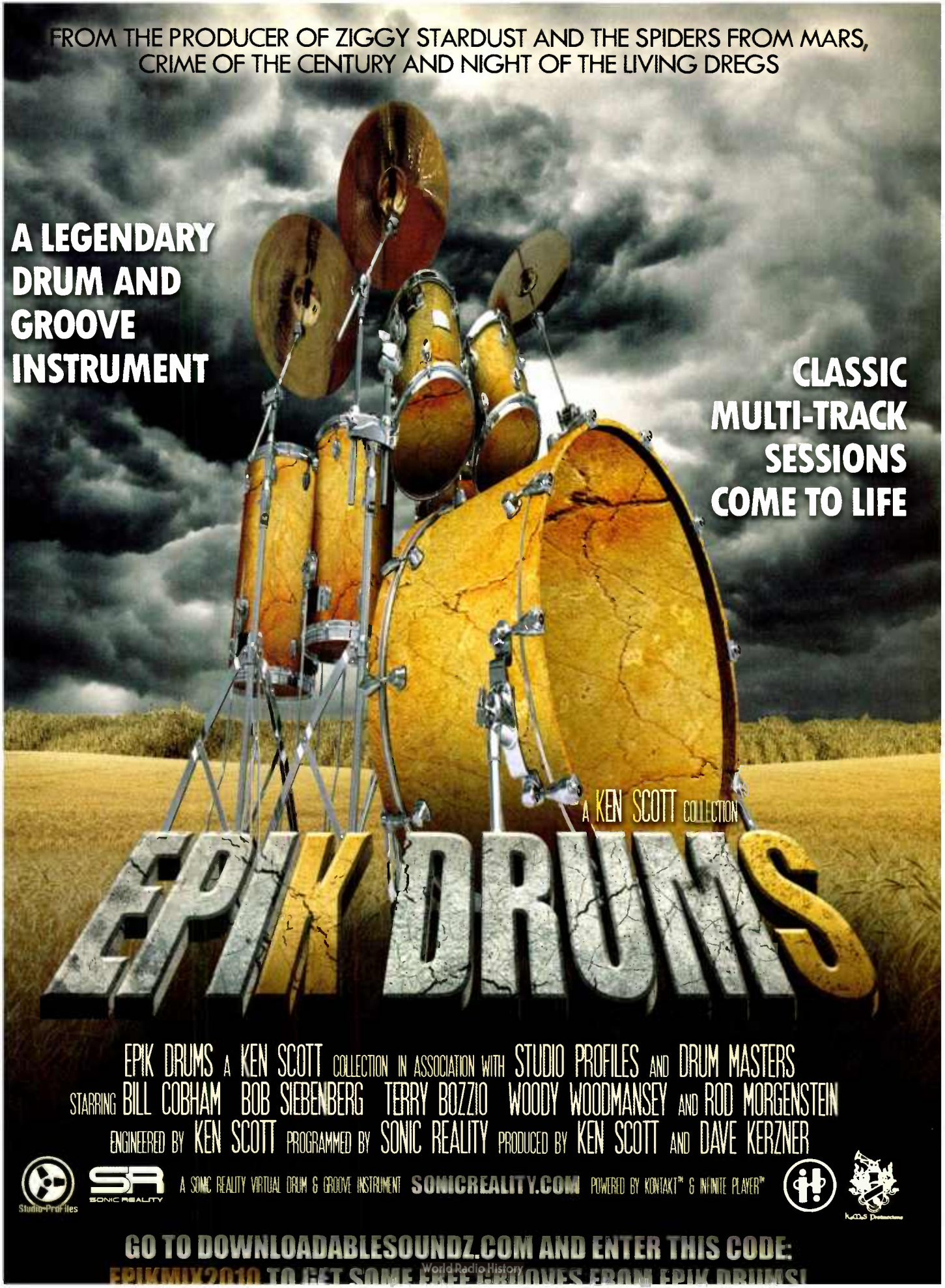
CRIME OF THE CENTURY AND NIGHT OF THE LIVING DREGS



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In Pursuit of Gregory Town Sound

This month's cover was a long time coming. It started a couple of years back in Miami, at a Remix Hotel, when Matt Knobel walked me down Collins Avenue in South Beach to get a sneak peek at this studio he was helping build with Hotel Setai, in partnership with Lenny Kravitz. It's a sweet room, with an SSL C200, Pro Tools and multiple monitoring options, including my first look at Focal. Ocean views, lots of glass. It's meant for an elite clientele. We wanted the cover, and we asked if Lenny would sit for it. He agreed to, but it never quite worked out; we couldn't get the timing right.

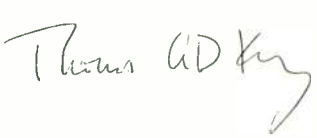
Then a month or so back, we were told that Lenny was in the Bahamas, at his private facility, working on *Negrophilia* for a 2010 release. It's a different kind of room, we were told, one that was built for Lenny's sound.

And that's why we've been pursuing Mr. Kravitz for a cover. His sound. Steeped in old-school influences, raised on an analog foundation, proficient in digital, this is an artist that knows recording. Five tape machines, including a Studer J37 1-inch 4-track once owned by Abbey Road, sit in the control room, with three of those machines tied into the CLASP system to use tape as an effect, recording directly into Pro Tools. The Helios console on page 10 he bought from Leon Russell. And the EMI-designed REDD 37, from Abbey Road Studio One and pictured on this month's cover, he purchased 18 years ago on the advice of Henry Hirsch. There's a Moog Modular, a LinnDrum, vintage mics, ATC monitoring, Fairchilds, APIs—you get the picture.

But this is not a wannabe tale of a celebrity who opened a room, then opened his checkbook. This is an artist who has been pursuing a sound since he first dove into music and recording in his early days in New York City. He bought the REDD 37 before he went Platinum, and it nearly depleted his account. He's picked up pieces all along the way, and then, starting about eight years ago, asked Alex Alvarez and friends to start putting some racks together to build his getaway. He ended up with a one-of-a-kind studio sanctuary.

In many ways, Lenny is emblematic of all that we talk about in this magazine, combining the best of our vintage heritage with the most modern means of production. He works at home and he still books time in studios around the world. He writes, he plays most all instruments and he feels equally at home standing with a guitar, seated at the kit or listening in the control room. He designs his spaces, then hires top-notch talent to bounce ideas off of and fine-tune the acoustics. And he brings in engineers for the duration of a record. When it came time to pick photos to represent his studio in *Mix*, he pushed for the vintage tape machines. He's definitely an artist who has taken hold of his own career.

There are other artists, engineers and producers out there doing the same thing, combining the vintage and the modern, while fighting the good fight to deliver a sound. A signature sound. A dynamic sound. A quality sound. We salute you one and all.



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BY DAVID SCHWARTZ, PENNY RIKER AND BILL LASKI

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Masterful Mastering

In the November 2009 "TalkBack" section and MixLine newsletters, we asked readers to tell us how mastering has helped their projects in the past.

I mixed my solo CD, *Dedication*, at home. I decided to accept a drop in the quality of the end result and have a finished mix that was exactly what I wanted to hear. It would have been too expensive to do it in a pro studio, and my endless changes and nuances would drive a mixing engineer up the wall!

I then had my CD mastered by a pro using old valve technology—mostly German and British—and the sound is just great. I would not have dreamt of doing that myself, and especially not at home. The engineer was very cool and totally on the ball—a massive help when I was confronted with final decisions.

Mastering was probably the most important part of the process after writing the tunes.

Bruce

The Truth About Mastering

That was a strange little article ("From the Editor: The Misunderstood Part of the Record Process," December 2009). I'm trying to figure out who you are trying to convince that mastering is "needed." I think you're mad at the guy who asked [the panelists for the October 2009 AES panel "Mixing With Attitude"] about preventing "a mastering engineer from screwing up their track." But you didn't really need to write a whole article to get even with him, did you? Or was he maybe representing a real truth, and you found him to be scary and threatening?

Mastering a good mix is really not necessary. I do some mastering, and the truth is, all you can do in mastering is change what's already there. Now, if you're in a loudness contest, sure, get that bastard mastered. Or if your mix or your band sucks, sure, give it all the help you can. But really, wouldn't you like to hear what good recordings of good bands really sound like for a change?

But now that "you people" have convinced everybody that they can record themselves with toy software just as well as a real studio can record, it's only a matter of time until you'll have to jump on the approaching bandwagon that proclaims, "Hey, you can do your own mastering, too." Nothing is sacred anymore, brother.

I remember when CDs were first available to small artists, and they would ask me, "Do you think this is good enough to go on a CD?" If we only had a fraction of that respect for our listeners now, what a better world it would be.

So there you sit, saying roughly the same thing, by purporting that mastering makes our world better. Maybe it does, but if so, it will soon be done by home recordists in bedroom studios everywhere, and we'll be able to say goodbye to the current glut of mastering labs, just like we said goodbye to the big studios, good artists, good music, good sound and good record sales.

Randy

Knowledge Is Power

I wish to give kudos for Eddie Ciletti's November 2009 "Tech's Files" column ("To EE or Not EE? That Is the Question") on teaching electronics to audio recording students. I have never seen a stronger, more effective justification for including a basic electronics class in a recording or live sound curriculum.

However, I will speak from my own experience as a sound engineer/designer who went to a four-year school to learn audio (Columbia College Chicago, class of 1995), who has had training in both electronics and music, and who has been steadily employed in various aspects of pro audio ever since.

I think training in both electronics and music is equally important, and the two disciplines are tied together by common mathematical relationships. As an example, a keyboard player I know once asked me how to use the 10-band graphic EQ in his powered mixer. I simply related the filter frequencies and intervals to notes on his keyboard, and that one-sentence explanation was all he needed.

Electronics training can be beneficial in subtle ways. Consider impedance, for instance: It can have a big impact on how some mics and instrument pickups sound—especially anything with passive, reactive circuitry. Understanding this when patching gear is very important; if impedance is not taken into account, the result may be hard to "fix in the mix."

Grounding is also very important to learn. In something as complex as a studio or a concert P.A. system, hum and buzz can happen if anything that wasn't previously part of the system is recklessly added in—and again, you can't fix it in the mix. Gain structure and operating levels are another key area. It's all too common for pro and consumer, digital and analog equipment to co-exist, and sometimes using a tone generator and voltmeter is the only way to get everything correctly gain-structured when metering inconsistencies abound.

Understanding electrical power, and how it relates to system grounding, is huge—especially in anything mobile where you may have to deal with temporary power systems. Knowing how to use a VOM to check power and grounding is just as important as knowing that an outlet that works fine for a vacuum cleaner may not be so good for the visiting engineer's effects rack.

And anyone considering a career in live sound needs to understand RF. Live sound doesn't happen anymore without something that's wireless.

I have made serious efforts to learn these areas—either in college or on my own after graduation—and they have been key to my survival!

Pat McCarthy

What is the most interesting sound design you've heard in a videogame—either online or in the box? E-mail us at mixeditorial@mixonline.com.

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By Kevin Becka

GREGORY TOWN SOUND

ANALOG HEAVEN ON THE BEACH

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PHOTO: ALEX ALVAREZ

Two packed racks sit at the back of the main room.

Lenny Kravitz's personal studio is built 100 feet from the beach on Eleuthera Island in the Bahamas, a 110-mile-long sliver of land 50 miles east of Nassau. "I've always loved my roots," says Kravitz. "My grandfather was born on an island called Ingua, the most southern Bahamian island closest to Cuba. My parents used to send me down here for summers; we'd come here for Christmas and holidays."

As if locating the studio in a Caribbean paradise wasn't enough, Kravitz stocked it with a dream collection of gear collected throughout his career. From the start, Kravitz always knew the sound he was going for, which started his analog love affair. "I started recording at [Henry Hirsch's] Waterfront in 1985 or '86, and I knew I wanted to make a certain kind of record," Kravitz remembers. "I saw the way technology was going in the late '80s. Records were sounding very processed—it was all about those big gated drums and everything sounding unnatural; in some cases, it was cool for different artists, but it didn't work for me. I knew I wanted an intimate-sounding album." Through his association with Hirsch over a number of albums, Kravitz would be introduced to and then buy the gear that created his desired sounds.

Gregory Town Sound started as a garage built by Kravitz to protect some of his belongings during hurricane season. It is a ranch-style concrete structure poured in place with a cantilevered roof. "It's the most amazing studio that I've worked in, and it has the gear I've been collecting for 20 years," says Kravitz. "It's an incredible place to be creative." Also being an interior and furniture designer, Kravitz started with an aesthetic in mind and then brought in Miami-based acoustician and designer Ross Alexander, who has been doing studio integration and design since 1981. "What I do is put on paper what I want: Wood here, cork there, do this and that," says Kravitz. "Then Ross does his mathematical measurements and tells me what I can and cannot do. From there, I can go forward with that design or change out a specific material so I'll get the sound I want."

The building is 1,800 square feet with a 400-square-foot control room and 600-square-foot studio, in addition to a bathroom, lobby, machine room and an air-conditioning closet. "The concrete deck was almost 12 feet and we had beams below, so we were able to get the ceiling heights we wanted," says Alexander, whose design philosophy is to start optimizing the room dimensions within the restrictions of the space offered. He uses a computer program to look at the normal modes and finds certain ratios that will work. "To me dimensions are very important," Alexander explains. "If you have a poorly dimensioned room, you'll be fighting trying to fix it all the way down the line." Alexander then employed Miami's Acoustical Components, which custom-built all the treatments to his specs. The control room and studio were built with Kravitz's style of recording in mind. "He can actually set up two drum kits out there so he can switch back and forth," says Alexander about the studio that has a large window facing the water and houses a baby grand piano, a number of guitar amps and other instruments.

Alexander realized that power would be a major consideration. "We needed an extensive power system because the Bahamas' electric is not terribly reliable," he says. "Power is 120/60 nominally, but for tech power we're using a Tripp Lite online UPS system that generates the electricity. We just use the incoming electricity to charge a battery." All power goes through an Equitek balanced power system and there is an automatic transfer switch so if anything gets out too high or low, the studio still has lights and A/C.

Apart from its idyllic location and optimal design, it's the gear that shines at Gregory Town Sound, where vintage signal flow is king. It starts with an all-star array of mics from Schoeps, Neumann, Coles, AEA, Sennheiser, Telefunken, Shure, AKG and more. All can be recorded through the studio's wrap-around Helios console or an EMI-designed REDD 37 once owned by Abbey Road and used in Studio 1. "The Helios was Henry's choice," says studio manager, gear and guitar tech Alex Alvarez about Hirsch's positive influence in Kravitz's gear-buying decisions.

"[Kravitz] purchased a Helios and was trying to go after more of a Stones and Zeppelin sound. That started off around the *Circus* album when we went that route." After the *Circus* album, Kravitz

Lenny Kravitz seated in the Helios room with the REDD 37 at top left.

PHOTO: MATHIEU BITTON

PHOTO: MATHIEU BITTON

sold the console and bought a strawberry-red Helios from 10cc, which had some key components missing and ended up being racked for optimal use. Kravitz bought the current Helios at Gregory Town Sound from Leon Russell about seven years ago. It sat for two years in a locker and then was refitted by tech Dave Amels before it came to the Bahamas. The REDD 37 was purchased 18 years ago by Kravitz, who was urged to make the leap by Hirsch. "Lenny had to take every dime he just made," says Alvarez. "He hadn't sold a million albums yet and he took a chance at it."

Other vintage gear is housed in the racks and includes EQ and dynamics processors from API, Fairchild, EMI, RCA, Universal Audio and Retro. (For a complete list of Lenny's gear, visit mixonline.com.) Speakers are ATC SCM200 ASL and B&W Nautilus 805 monitors, among others. The studio also has a collection of analog multitrack machines including a Studer C37 2-track, a J37 4-track once owned by Abbey Road, an 827A 24-track and an A-80 2-track, as well as a 3M M79 with 16-track headstack. There is also a Pro Tools system with Apogee converters clocked by Antelope Audio.

The newest piece of gear is Endless Analog's Closed Loop Analog Processor (CLASP), which ties the analog recorders and Pro Tools together. "We have five machines now in the studio," notes Alvarez. "Three machines are dedicated to CLASP, the other two are for delay effects." Kravitz likes CLASP because he can use his tape machines as he would an effect, jumping between tape speeds and machines. "I can say I'm going to record the drums through the 3M, or take my vocal and go through the Studer or the EMI. I get to pick and choose track by track, and then I'm in Pro Tools through my converters. I've finally got the best of both worlds." CLASP stores setups for three machines, and CLASP creator Chris Estes is custom-designing an accessory for Kravitz that relay switches between his three machines with the click of the mouse.

Apart from Alvarez (who wears many hats at the studio and on the road), the rest of the team at the studio includes engineer T-Bone Edmonds and guitarist and Pro Tools operator Craig Ross. When asked about workflow, Edmonds says, "We mix as we go. As it comes in, Lenny will say I love that or this needs a little bit more top or bottom. Once it's gone through CLASP through whichever tape machine we use and into Pro Tools, Craig does whatever editing and manipulation has to happen. We'll add a plug-in here or a plug-in there, but normally if we want to change something, we'll take it back out of Pro Tools and run it through what I call the 'Juke Box,' which is my playback system in the Helios. I'll EQ it, maybe run it through a Fairchild depending on what it is I'm trying to do and then send it back to Pro Tools. It's really a team effort between, Craig, Alex, myself and Lenny."

As for what's ahead, Kravitz spoke about going to the Oscars and upcoming projects, including a world tour to support his current album in progress, *Negrophilia*. "I did this movie called *Precious*, I'm doing another film this spring with Lee Daniels and I'm doing a photography show in Europe this year." For now, Kravitz couldn't be more at home in the Bahamas. "I'm finding that I'm able to get all the sounds I'm looking for. I owe that to Ross Alexander who did an amazing job on the room. The flow of the writing is going well out here: Being in the middle of nowhere, living a simple life is conducive to writing." III

Kevin Becka is Mix's technical editor.

CURRENT

compiled by Sarah Benzuly

Willie Mitchell, 1929-2010

PHOTO: EBET ROBERTS PHOTOGRAPHY

A photo of Mitchell presides over the memorial.

Record producer/label head/trumpet player Willie Mitchell died at Methodist University Hospital in Memphis, Tenn., on January 5, 2010, more than two weeks after he suffered cardiac arrest on December 19, 2009, his son, Lawrence Mitchell, told *Billboard*.

Mitchell was the owner of Memphis' Royal Studio, where Al Green, Ann Peebles, Rod Stewart, Buddy Guy, John Mayer and others recorded. A successful musician in his own right, Mitchell is best remembered for his production work in the 1970s, when he served as executive vice president of Hi Records and co-produced Green and Peebles' seminal recordings. Most recently, Mitchell wrote string and horn arrangements for Stewart's new album and produced a still-unreleased album from Solomon Burke.

He received a Trustees Award from the Grammy Foundation in 2008. In lieu of flowers, please send donations to MusiCares (www2.grammy.com/musicares) in Mitchell's honor.

Audio at the Grammys

The Emmy- and TEC Award–winning audio team assembled at the foot of the Staples Center again this year for production of the 52nd Annual Grammy Awards, held January 31 in Los Angeles. While Brendan O'Brien won for Producer of the Year, Non-Classical; Steven Epstein won for Producer, Classical; Imogen Heap won for Best Engineered, Non-Classical; and Peter Laenger, Best Engineered, Classical, an ace audio team was getting the sound on the air.

PHOTO COURTESY THE RECORDING ACADEMY® / WIREIMAGE © MORGAN STRAUSS® 2010

The Grammy Awards audio crew poses for a shot.

Inside the Staples Center, Mike Abbot served as audio coordinator, Ron Reaves mixed front of house with Leslie Ann Jones representing the Grammys at his side, Dave Bellamy handled the multiple wireless systems, and Phil Ramone, Hank Neuberger and Glenn Lorbecki tag-teamed in the Summit Denali trucks to check sound before CBS went to air, and then to monitor it from Peer Group input across the country. Outside, the music mix was handled by John Harris and Eric Schilling out of mirror-image Music Mix Mobile trucks, with technical direction by co-owner Joel Singer and support by co-owner of the West Coast vehicle, Mark Linett.

For a complete wrap-up of the audio production on the Grammys, visit mixonline.com/grammys.

PHOTO COURTESY CHUNG KING

Kanye West in the studio with studio owner John King

Chung King Exits Longtime Home

Chung King Studios has ceased operations at 170 Varick St. (New York City), its home since 1993. Last year, the SoHo location hosted sessions by a wide range of artists, including or involving Depeche Mode, Kanye West, Lil' Wayne, Maxwell, Moby and Phish. Following the move from Varick Street, King has indicated that plans are in the works to open a new downtown Manhattan location, as well as a larger complex either in the outer boroughs or New Jersey.

—*David Weiss*

Studio Unknown Update

Can small and midsized studios carve a niche for themselves in the expanding, yet ultra-competitive game sound market? Find out in this month's installment of "Studio Unknown's Confessions of a Small Working Studio." Owners who have successfully broken into the game sound industry will reveal how they did it, what they're working on, and why you may want to consider tempering your expectations if you seriously want to pursue this segment of our industry. Read on at mixonline.com/studio_unknown.

Mix Over the Web

Gareth Cousins Music Productions now offers an online mixing service, Remix, courtesy ex-Abbey Road engineer/producer Gareth Cousins. Mixes may be in stereo or 5.1 surround, single tracks or whole albums. Cousins works on Pro Tools HD3 with onboard plug-ins and outboard analog and digital gear, mixed via a Control|24 interface. A second rig handles Logic Pro should any new programmed material be needed. Monitoring is via B&W 800 Series speakers, plus 5.1 and stereo monitoring by Genelec. Find out more at garethcousins.co.uk/Remix.

Industry News

Mark Pinske comes to Radian Audio Engineering (Orange, CA) as executive director of sales and marketing...New international sales manager at RTW (Cologne, Germany) is Jochen Wainwright...Tom Harvey joins Xantech (Sylmar, CA) as director of sales...PreSonus (Baton Rouge, LA) taps Mark Stone as national sales director...Filling the L-Acoustics (Oxnard, CA) regional sales manager position is Paul Shiner...Serving Meyer Sound (Berkeley, CA) customers in Denmark, Sweden and Finland is Klaus Hansen, business development representative, Scandinavia...Project manager Timothy Kerr will provide sales support to much of the Pacific Northwest from his office in Portland, Ore., for Advanced Broadcast Solutions (Seatac, WA)... Distribution deals: Rep'ing Allen & Heath's (Agoura Hills, CA) Xone range is Major Music Wholesale (Sydney); and U.S. distributor for beyerdynamic (Heilbronn, Germany) pro audio products is American Music & Sound (Agoura Hills, CA).

Klaus Hansen

Tom Harvey

Mix Master Directory Spotlight

This month's featured listing from the new online-only Mix Master Directory (directory.mixonline.com/mmd)

OIART Ontario Institute of Audio Recording Technology

The Ontario Institute of Audio Recording Technology (OIART), founded in 1983, provides highly personalized technical and creative education in audio recording and production to an international student body. Students learn in a career-oriented immersion environment that includes six professionally equipped on-site studios and labs, lecture theaters and dedicated full-time and adjunct faculty. The program, which leads to a college-level diploma, is rigorous, both in practical terms and academically. oiart.org

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onthemove

Mike Baker,

Middle Atlantic Products president

Main Responsibilities: oversee all facets of the organization.

Previous Lives:

- 2001-president, various roles at Middle Atlantic Products
- 1997-2001, Kirker Enterprises & Subs CFO/president
- 1997-1998, Modernfold CFO/COO
- 1985-1988, Price Waterhouse tax manager

The best thing about working in this industry is... it's fun and I'm surrounded by people who work hard and are passionate about quality music and sound.

The one thing in my office most like my personality is... the climbing man—trust me, it too defies all logic.

Currently in my iPod... what isn't! Steely Dan seems to be a current "favorite," but check with me again tomorrow.

When I'm not in the office, you can find me... with my family, at the gym, playing basketball or, depending on the day, embarrassing my peers on the golf course.

Thom Takes CAS Award

On February 27, re-recording mixer/sound designer Randy Thom, director of sound design at Skywalker Sound, will take home the CAS Career Achievement Award. Go to mixonline.com to get a full list of this year's award winners—ranging from motion picture to DVD programming and gear used in production and post-production.

The Cabin—Chuck Ebert Builds a Log-Cabin Facility in Azle, Texas

Producer/engineer/acoustician Chuck Ebert, a seven-time Grammy nominee and three-time Dove Award nominee, has worked in all facets of music production in a 25-year career. "I've been playing guitar since I was 12; I blew up my first P.A. when I was about 14," Ebert says with a laugh. "I've worked in various studios across the U.S." His recording credits include Don Henley, Sting and the Dixie Chicks; in 2002, he won a Grammy for his work on the Best Southern, Country or Bluegrass Gospel Album: *We Called Him Mr. Gospel Music—The James Blackwood Tribute Album*.

Ebert channeled his versatility into developing Axon Entertainment (www.axonentertainment.com), a full-service firm for audio and video production, serving clients on a national scale. "We specialize in Christian music," says Ebert. "We do all styles of music but I will not do anything in a negative light; it has to be positive. We have the ability to accommodate a whole lot of different productions. Sometimes we'll [send] out the remote truck and [then] edit, mix and master the tracks in the studio."

In 2003, Ebert set out to design and build a high-end private studio on his property—five acres in Azle, Texas, approximately 15 miles northwest of Fort Worth. Six years later, Ebert opened The Cabin, a 2,400-square-foot log-cabin facility that Ebert built inside of an existing metal barn behind his log-cabin house. "It's a great environment for working on music, especially being in a quiet place—but you can be at Wal-Mart in 10 minutes [Laughs] or in downtown Fort Worth."

The Cabin's spacious control room has an 18-foot-high ceiling at its apex.

Inside the Cabin's 27x21-foot control room is an 80-input custom-modified Otari Elite+ analog console with API modeled preamps and EQs. Ebert says the 20x40-foot main tracking room, which features a 1977 Yamaha C7 grand piano in mint condition, has "a 2.2-second natural reverberated decay," and both rooms have 18-foot ceilings. The Cabin also has two 9x6-foot iso rooms, two 11x6-foot iso rooms and a 20x40-foot room that connects with the main room via sliding doors.

PHOTOS COURTESY OF AXON ENTERTAINMENT

Chuck Ebert at the Otari Elite+ console

"The rooms are very warm with just the right sparkle," Ebert says. "The reflective properties of rounded log walls versus flat Sheetrock walls are very different. Curved logs act as natural diffusers with less focal-point surface area for reflective energy from the sound wave. Different types of wood affect tones for reflection, as well. I am using pine in The Cabin with hardwood oak floors."

Ebert seeks "as pure a recording as we can get," using outboard gear from API, Focusrite, Lexicon, Manley/Langevin, PreSonus, Vintech, TC Electronic and others; mics from AKG, beyerdynamic, Shure, Countryman, Peluso, Lawson and Neumann; and JBL and Genelec monitors. Ebert's DAW of choice is Steinberg Nuendo Version 4. "I mix everything back through my console," he notes, using Lucid 9624 and MOTU HD192 A/D converters.

"Dallas/Fort Worth is not known for its music scene, but there is still a need for a full production studio and I've got a nice clientele, so it made sense for me to build this place," Ebert says. "Had it not been for the help of friends and family and the work that we do, there's no way that this studio would have been built."

—*Matt Gallagher*

project studio Ryan's Place

PHOTO JUDITH CRON

Ryan Ulyate's private studio features a D-Command console, ATC monitors and a view of Topanga Canyon.

Los Angeles–based engineer/producer Ryan Ulyate parlayed his hard work and his vision into a dream career. Since 2005, Ulyate has worked closely with Grammy Award–winning artist Tom Petty, primarily in Petty's home studio; in Petty's rehearsal space/recording studio, The Clubhouse; and in Ryan's Place, Ulyate's home studio in scenic Topanga Canyon. "I'm pretty good at recording and mixing, and as a producer I see myself as more of a collaborator with the artist; that's my favorite thing to do," Ulyate says.

Ulyate learned his craft in commercial facilities beginning in 1978. "That's the most valuable education you can have," he says. "You realize that there are as many different ways to make a record as there are people." In 1997, Ulyate met producer Jeff Lynne, which led to his work on George Harrison's final album project, *Brainwashed*, and the soundtrack for the November 2002 tribute to Harrison, *Concert for George*. "Right after that, Jeff was producing, along with Tom Petty and Mike [Campbell], Tom Petty's *Highway Companion* album. After that, Tom started pulling me more into

Binari Sonori—Games Speak Many Languages

With facilities in Milan and Tokyo, and plans to open a studio in Los Angeles this spring, Binori Sonori (www.binarisonori.com) has become a versatile resource for international game developers. Since 1995, this company has offered a multilingual network of project managers and linguists who provide translation, casting and voice-recording services to game clients such as Sony Computer Entertainment, Electronic Arts, Ubisoft, Fisher Price and more.

The Milan studios comprise several audio rooms; three main recording/post-production rooms (A through C) are each set up with Power Macs running Pro Tools 7.4—one HD2 Accel system, one HD Core and one 003 Factory LE. (Binari Sonori is also a third-party Digidesign developer.) Studios A, B and C are also equipped with Yamaha 03D, Soundcraft Spirit E8 and Digidesign 003 Factory mixing consoles, respectively. Main monitoring is all Genelec; Studio A is a 5.1 surround room (five 8040As and 7070a sub).

At Binari Sonori in Milan, Massimo Giorgino (left) and Nadia Ghirardini.

For recent work on Microsoft's *Fable II*, Binari Sonori's engineers handled localization and dubbing of French, Italian, German, Spanish and Latin American Spanish versions of the game. This involved recording more than 415,000 words per language and recruiting 47 actors per language over the course of more than six months' work. Other recent projects include the French, Italian, Spanish and Portuguese versions of *Uncharted 2* for Sony (more than 120,000 words per language, recruiting 17 actors per language), *Gran Turismo PSP* (Sony) and EA's entire *Need for Speed* series.

—Barbara Schultz

Track Sheet

Heading North Mastering (Toronto, Ontario) completed a redesign/expansion of its mastering rooms, doubling the size of the previous control room.

Ron Skinner (left) and Nick Bonin at Heading North Mastering

Designed by studio owner and engineer **Ron Skinner** and Technature's **Matt Schaefer**, the redesign was done with client comfort in mind...The Oscar-nominated theme from the film *Crazy Heart*, "The Weary Kind," was co-written by **Ryan Bingham** and producer **T Bone Burnett** and performed by Bingham. **Mike Piersante** and **Jason Wormer** engineered original music for the film at **Electro Magnetic Studios** (L.A.), **Stepbridge Studios** (Santa Fe, NM) and The Village (West L.A.)...Actor **Josh Duhamel** visited **Doppler Studios** (Atlanta) to record ADR for the upcoming film version of **Beverly Cleary**'s children's novel *Ramona and Beezus*. Staff engineers **John St. Denis** and **Fay Salvaras** recorded Duhamel, who plays Uncle Hobart in the 20th Century Fox film...Producer/engineer **Jay Newland** worked in **Sear Sound** (NYC) with jazz greats **Hank Jones Jr.** and **Charlie Haden**...**Paula Cole** was in **Avatar Studios** (NYC) tracking with producer/engineer **Kevin Killen**...**Thom Cadley** was in **The Barn** (Katonah, NY) mixing audio for **First Act**, **Microsoft** and *Rock Band* games.

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

by Matt Gallagher

the things he was doing. Ever since then, I've been co-producing his stuff. It's a great relationship." Ulyate worked with Petty and Campbell on their latest release, the CD box set *Tom Petty and The Heartbreakers: The Live Anthology*, which presents selected tracks from live concert recordings spanning 1978-2007.

Notably, Ulyate's studio is tightly integrated with Petty's home studio for the smoothest possible workflow between the two rooms. "I made sure that Tom's room had the exact same Pro Tools system—the same amount of cards, a similar I/O, the same plug-ins, software and speakers," Ulyate says. Ulyate's studio is housed inside of a 12x24-foot structure on his property; he treated his room acoustically with shoji screens, foam, curtains and bass traps, and configured it for 5.1 surround with five ATC SCM50ASL Pro three-way midfield monitors. "Those ATCs reveal so much more detail in the midrange," he says. He also uses KRK 7000s, a Bag End Infrasub-18 Pro subwoofer and Auratone speakers.

Ulyate's studio has a Pro Tools HD6 system, Pro Tools Version 7.4, a quad core Mac G5 PowerPC, a 24-channel Digidesign D-Command console and two Digidesign 192 I/O interfaces configured with 24 inputs and 16 outputs. Ulyate uses a dbx 120A Subharmonic Synthesizer that "adds a bit more thump to kick drums and tom-toms, and sometimes bass. I do everything else inside the box with plug-ins." Ulyate's main plug-ins include the Massenburg DesignWorks Parametric EQ and Universal Audio's UAD 1176 TDM plug-in, which is no longer supported. "That's why I've held onto my old machine," he says of his Mac. "As for reverb, it's pretty much between [Audio Ease] Altiverb and [Digidesign's] TL Space. I like Eventide and Sound Toys [plug-ins] for effects.

"[This] studio came into its own around 2005, and it had everything to do with being able to mix inside the box in Pro Tools," Ulyate says. "The most important thing for me is being able to take the time to mix. With more time, I feel I can mix better." III

L.A. Grapevine

by Bud Scoppa

Since founding Sherman Oaks–based Kaufman and Associates in 2005, renowned studio designer Jay Kaufman has designed and built a number of commercially owned studios—including The Bridge, a film-scoring stage about to fire up in Glendale. But during the past couple of years, an increasing number of the projects he's taken on have been of the home-studio variety.

"We've been fortunate in that most clients have been recognizable music producers and/or artists whose level of industry success justifies their demand for a top-quality result," Kaufman says of his home-studio work. "This has allowed us to design and build some pretty impressive spaces for them."

In recent months, these rooms have ranged from the relatively compact to the downright palatial. In the former category is a 1,200-square-foot setup he put together for writer/producers Adam Watts and Andy Dodd behind Watt's residence in Brea. The stand-alone building is now divided into a control room (outfitted with Pro Tools HD6 and such frequently used pieces as a Neve 1073, Avalon VT-737 and Manley Massive Passive, along with Neumann TLM 103 and U47 mics), a live room and a separate writing suite.

Studio designer Jay Kaufman (left) in the home studio he designed for writer/producer Adam Watts (right) and Andy Dodd

"They wanted a comfortable, warm space that worked for their style of writing and recording," Kaufman explains. "I made extensive use of wood, brick and earth-toned fabrics, along with elegant lighting to provide the ambient feel they were looking for. Of course, the acoustic performance exceeds their expectations, as well."

At the other extreme is Marco Beltrami's just-completed facility, which takes the notion of the home studio to an opulent extreme. The stand-alone, 4,600-square-foot building housing the composer's private scoring stage and separate writing studio is perched atop a mountain in Malibu overlooking the Pacific Ocean, a couple hundred feet away from his new home.

"I was brought into this project by engineer John Kurlander to take care of the acoustic needs of the space," says Kaufman. "We made significant changes to their original plans to improve isolation and acoustical performance. The main stage is designed to handle up to 30 players, and since their work is almost exclusively for film scoring, John wanted the control room to be more consistent with a theatrical dubbing stage rather than a typical music studio control room."

The D-Command-centered control room is set up with 5.1 monitoring employing Meyer Acheron 3-channel screen speakers, with the front channels behind a micro-perf projection screen. There are windows everywhere to take advantage of the breathtaking views, "but that provided its own set of acoustic challenges," Kaufman points out. Beltrami expects to start creating scores in his dream studio later this year.

The job he did for John Mayer and his engineer Chad Franscoviak also posed a unique set of challenges. Early in 2009, Kaufman met Franscoviak at a secluded estate in Hidden Hills. Mayer had leased the place for a year specifically to record significant portions of his most recent album, *Battle Studies*, while also living there to get the jump on any idea that might come to him along the way. But before that could happen, a great deal had to be done.

"We walked around the 10,000 square feet, and I gave my impressions as to how to make it happen," Kaufman recalls. "We talked about the best place for the control room, the drum room and the perfect spot for John to cut vocals and guitars. We also began discussing details regarding HVAC and electrical isolation. Then he posed the particular challenge of this project: The installation must not only yield a great-sounding result, it also had to be designed so that all the acoustic treatments—isolation, trapping and so on—were erected in a manner that would not be destructive to the house, so that at the end of the project, the restoration costs would be minimal."

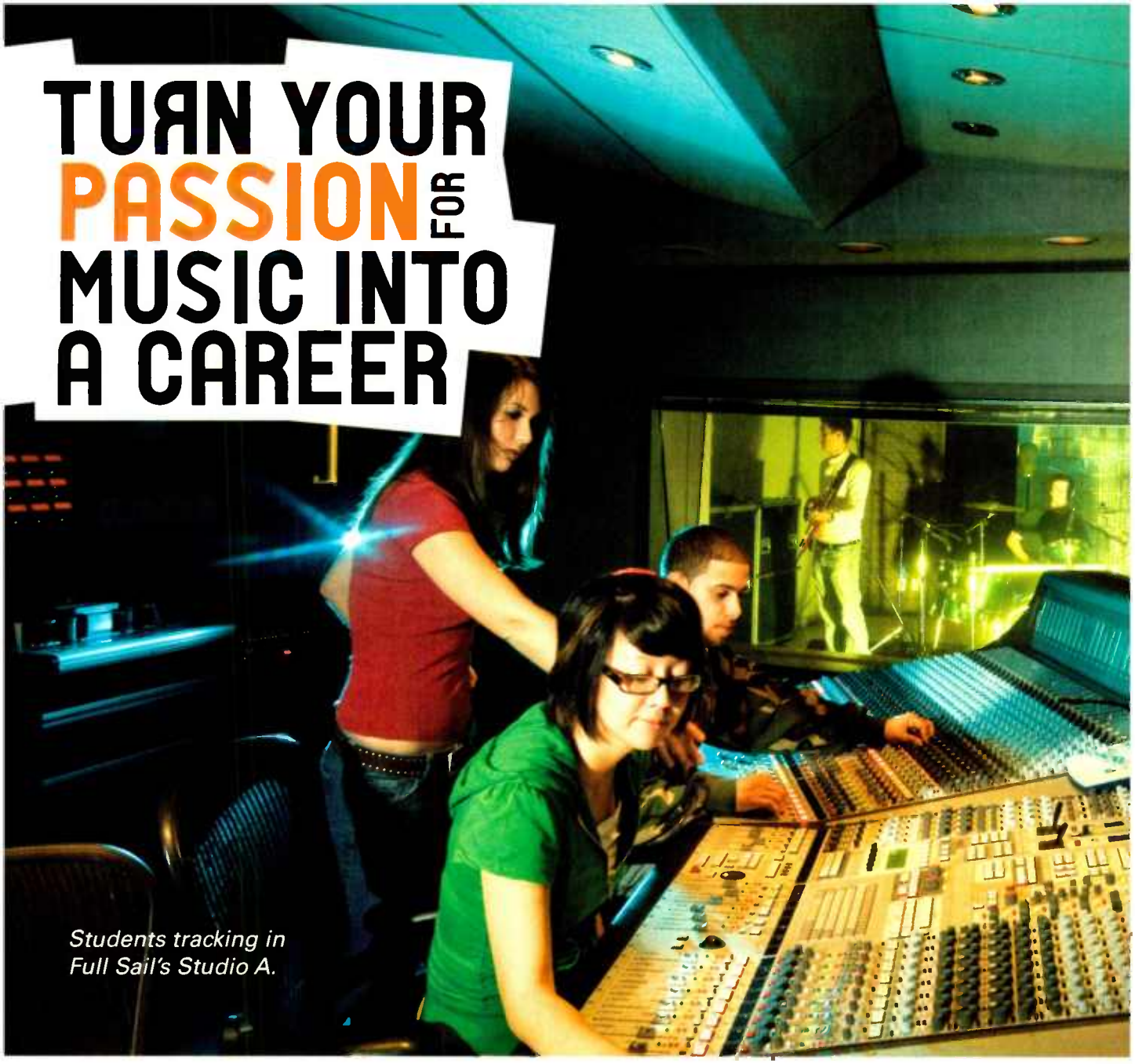
Franscoviak's control room comfortably housed Mayer's Neve 8014 console (heavily modified by Pat Schneider) and the impressive array of vintage and modern outboard gear the artist had accumulated since he hit pay dirt with the 2001 breakthrough album, *Room for Squares*. One room was dedicated solely to housing his 160 guitars.

"The space was sonically accurate with the big monitors Chad and John are accustomed to," Kaufman points out, "with the added bonus of two large picture windows looking out into the backyard garden. In a number of spots, we hung heavy drapes, with a mass-loaded vinyl liner for isolation. By opening or closing the drapes, you could control the reverberant field within the drum room.

"We pulled it off on schedule for their timeline," he continues, "and did it all with finish materials that complemented the existing décor yet created the vibe they were looking for."

What all three projects had in common was Kaufman's methodology. "When I first get involved with a project, whether a home studio or commercial space, the process begins the same way," he explains. "It's critical to sit down and discuss what the clients' expectations are for the studio, what they do specifically and how they work. With this information in hand, I start developing a plan. If it's an existing space, I look at it from all angles and determine if it will meet our criteria. If not, we move on and look for alternative spaces."

Send L.A. news to Bud Scoppa at bs7777@aol.com.



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NASHVILLE Skyline

by Peter Cooper

Robb Earls is 25 years into his Sound Vortex business: a quarter-century in Nashville, and nary a mainstream country record. Earls and house engineer/producer Derek Garten are fine with that. "Independent music has been a core of what we've done over the years," Earls says, smiling.

The Vortex has been the spot for recordings by Lambchop, David Olney, Pat McLaughlin, Tom House and other folks who lean toward the idiosyncratic and tend to be labeled as mavericks or geniuses or anything but flavors of the month. Some studios are about commercial gloss and sheen. Sound Vortex has long been committed to making good music sound good.

The place started as a leaky basement back in 1985. Earls fixed the leaks, bought a D&R Dayner console built in Holland, updated that one and then replaced it with a 32-channel D&R Avalon. "I liked the D&R sound," Earls says. "It doesn't have the expense of a Neve or an SSL, and it's a great, European-style console."

Garten runs that console most days. He's a Middle Tennessee State University graduate who worked as an assistant at Emerald Sound Studio (under Chuck Ainlay and others). "When Emerald closed down, I was faced with the decision of whether to become an assistant again or whether to produce and engineer," he says. "I got the chance to come in here, carry on Robb's legacy and establish myself as a producer, too."

Studio owner Robb Earls (left) and engineer/producer Derek Garten in Earls' indie-centric Sound Vortex

Garten began at Sound Vortex in the summer of 2008, and he quickly found that Earls' cavern-like tracking space and modern control room worked well for the indie rock and pop music he favors. He's been working with Daniel Cartier, Pico Vs. Island Trees and others, recording to Pro Tools HD and capturing huge-sounding drums that are typically set up on a riser built out of a waterbed frame.

"I love using the Sennheiser e 602 for kick drums," Garten says. "I extend a Pearl Master custom drum off the front of the drummer's kick and mike the Pearl, and it gives a whole subsonic low tone with a long decay instead of the kick drum just having a snap. I'm using it like a woofer."

Two of Earls and Garten's favorite Neumann microphones at Sound Vortex came from famed Nashville's Quad Studios, where Neil Young, Linda Ronstadt, Dobie Gray, Jimmy Buffett, Dan Fogelberg and others recorded in the 1970s. Earls was able to purchase the mics from a lawyer who had kept them as part of his payment when Quad's founders, David Briggs and Norbert Putnam, had to give the place up. "Look here," Earls says, holding a Neumann U87. "DANOR is written on it, for David Briggs and Norbert Putnam. This could be the 'Heart of Gold' microphone."

Another prize is the UREI 1176 compressor that Earls bought for $100, back in the days before Craigslist and eBay were there to ensure that $2,000 compressors didn't go for $100.

"I'm a huge UREI fan," Garten says. "I've also been really liking this DeMaria 1000 tube compressor, which is kind of like an LA-2A, but quicker on the attack, for snare drums."

Musicians recording at Sound Vortex have access not only to the microphone supply, but also to a bevy of guitars, amps, drums and effects. Many of the instruments are tucked away ("Having less out, people can more easily envision their stuff in your space," Earls says), but in a few moments Earls and Garten can produce a Fender Telecaster, a Gibson SG Special, an Ampeg Superjet amp or dozens of other tools of the trade. The vintage instrument arsenal helps lend a casual feel to the place. Sound Vortex has a band rehearsal space feel to go with its pro studio sound.

"From the beginning, I tried to create a relaxed, club-like atmosphere here," Earls says. "We have 'down' lighting and a vibe that's not overly polished. That's the tracking room. But then in the control room, it's almost the opposite: A high-tech-oriented environment where the logistics of everything have been thought out. We have a lounge like any big studio, but the heart of the thing is the tracking room and the control room."

The tracking room is small enough for eye contact between musicians, but large enough to record a group like Lambchop, which often features eight or nine people playing at once in the studio. The walls are decidedly custom, thanks to a stone mason Earls hired long ago when he was transitioning the room from basement to studio.

"I had to leave one morning, and he asked me, 'What kind of finish do you want?'" Earls says. "I said, 'I don't know, just make sure it's not flat,' because I didn't want sound bouncing around. I came back later on, and he had taken a rubber boot and hit the walls with it. You can still see the boot marks in some places on the wall." III

Peter Cooper can be reached at peter@petercoopermusic.com.

Dynamic Duo

A R T
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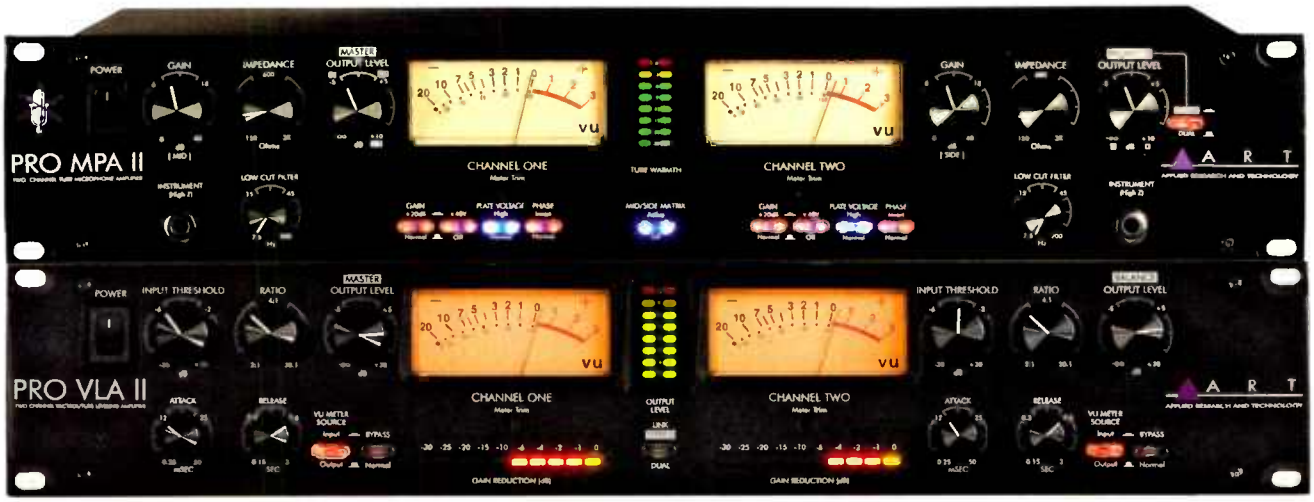

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by David Weiss

For every studio that has its grand opening, sticks with it for a few years or more, maybe even hangs a few Platinum records on the wall, there's plenty to be proud of—and then there's the eventual need to gut everything and start all over again.

As the last quarter of 2009 rolled around, the owners of Kaleidoscope Sound (www.kaleidoscopesound.com) in Union City, N.J., knew their time for a renovation was at hand. Although founders Randy and Amy Crafton had built up a strong local following and a steady stream of business since opening the two-room facility in 2001, with a client list that includes Richie Havens, Bill Frisell, Mingus Big Band and others, the studio was starting to look and feel long in the tooth.

Spacious Control Room A was dominated by a home-brewed, API-flavored "Frankenconsole" that doubled as a producer's desk and faced away from the action in the live room. Studio B was decently equipped, but lacked the necessary trappings to stand in for world-class mix duties when Studio A was booked. "The old control room was not a traditional setup," Randy Crafton explains. "Established guys' basic take would be, 'Great gear, great room, but it's too weird for me to wrap my head around.'"

Studio co-owner Randy Crafton in Kaleidoscope's remodeled control room "A," featuring an API Legacy Plus.

PHOTO KYLE CASSEL

Knowing that it was time to update Kaleidoscope, and also aware that a change in tax law would make acquiring a large-format console more advantageous in 2009 than 2010 or later, Crafton and his dedicated crew began the project in earnest in October. The goal: minimize mistakes, down time and cost overruns as much as possible, and emerge with a studio that would be more inviting and acoustically precise.

Step One: Bring In the Pros

The Kaleidoscope crew looked to the experience of architect Fran Manzella (www.fmdesign.com) to get things started—and finished—on the right foot. "I've done it with a consultant, and I've done it without; it's a lot better with!" Crafton says with a laugh. "The fact that he's done it hundreds of times is important. It's the same as someone coming in to record: They do it once a year, but we do it every day.

"Fran listened to what we asked for, he didn't expand the scope—he got it. The project started with Fran, but the same staff that helps us with the running of the studio helped us with the renovation: We have a really good staff and our roles are well-defined."

Step Two: Keep Ahead

Throughout the renovation, studio manager Carey Neal held weekly meetings with contractor John Ambrosi of Ambrosi Construction Inc., determined at all times to ensure that work crews, as well as expert craftsmen like carpenter Jeff Baker, always had the necessary materials waiting for them.

"It's essential to keep the supplies ahead of the demand because that's where the construction [schedule] really falls apart," Neal says. "If the contractor shows up ready to start installing the insulation, and it's not there, boom! You're a week down. We ordered everything at least a week in advance because there's the assumption that everything won't be readily available."

Along the way, Neal kept an eye on costs by following Manzella's recommendations on a case-by-case basis. "Rightfully, Fran's job was not to save us a buck here and there," Crafton says. "His job was to say, 'If you follow this recipe, it will work. If not, it might fall apart down the line.' So you're not only thinking about the way it will look the day it's done, but how it will look in five years."

"We didn't cut corners, but for a lot of things that Fran put in the specs, we found an equivalent that was less expensive," adds Neal. "Most of the time he was recommending the Rolls Royce. We tended to get the Mercedes."

Step 3: A Timeline Sans Down Time

Even though Studio A was the top priority, the Craftons made their flagship room the second step. Studio B was first to be addressed, starting with an 8-inch drop for the ceiling, a reorientation of the furniture and the addition of two 10-space API Lunch Boxes, an API 2500 compressor and an API 8200 mixer, along with a Lynx I/O for the 16 API 550 EQs.

"The thinking was to keep the studio up and running so we could continue to meet our clients' needs," Neal explains. "We pulled everything up a notch and turned this into another API room."

With Studio B seriously upgraded, Crafton knew they would be able to accept mix jobs that previously could only have happened in Studio A. "We figured, 'This is costing a lot— if there's any chance we could be making money while we're losing a lot of money, why not?'"

Step 4: Apply the API

The centerpiece of the renovation commenced, with Studio A being reconfigured to comfortably accommodate a spectacular addition to the East Coast recording scene: a 48-channel API Legacy Plus console. Obtained from the Goo Goo Dolls' studio, Inner Machine in Buffalo, N.Y., it's the type of board worth building a room around.

Kaleidoscope's in-house tech/engineer Sal Mormando, a longtime API enthusiast, used his vast experience to wire and commission the console, while engineer Karli Maloney took care of wiring the new patchbays and gear racks. They had the room completely wired in just 11 days. "This is no small feat," notes Neal.

First, however, they had to get it up the stairs and inside the door—time to round up the whole Kaleidoscope crew. "You'd be surprised," says Neal, "how much help you can get from 12 guys on a cold night with pizza and beer."

Step 5: Thrive

The Kaleidoscope team has created a newly elite studio for the New York City area. "Producers and engineers do projects in rooms that make a lot of sense, equipped with great consoles," Randy Crafton says. "Now we're one of those rooms." III

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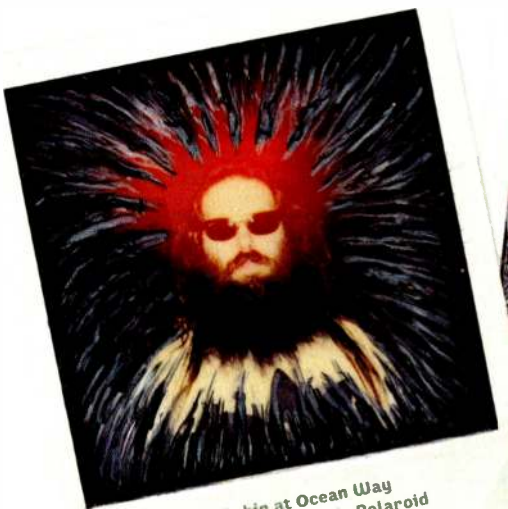
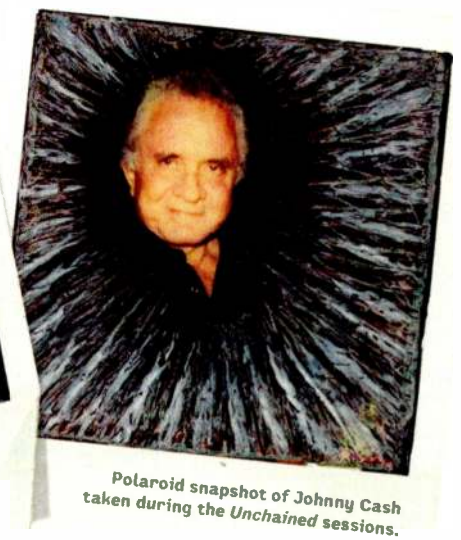
Johnny Cash and the Sta-Level

TWO AMERICAN LEGENDS MEET

Johnny Cash said to me, "I don't sing very good, and I'm not that good at playing the guitar either." Hard to believe these words would have come out of his mouth, but the sweet, humble man honestly thought he wasn't much of a musician. He would come to the session every day dressed as if he were going to a funeral, and he had a sadness about him. His deep resonant voice would tell those melodic American stories with so much emotion, you'd wish you could just hug him and tell him everything was going to be okay.



Producer Rick Rubin at Ocean Way while recording Johnny Cash. Polaroid scribble-art by Sylvia Massy.



Polaroid snapshot of Johnny Cash taken during the *Unchained* sessions.

During the recording of Johnny's *Unchained*, we wanted to give the disc a vintage character. While producer Rick Rubin enlisted a star-studded cast of players to back Johnny up on the record, I relied on the help of classic broadcast compressors to achieve the album's unique sound. Rick also wanted simplicity in the way it was recorded and mixed, and as the engineer and mixer on the project, I learned invaluable lessons about how to uncomplicate the making of the record.

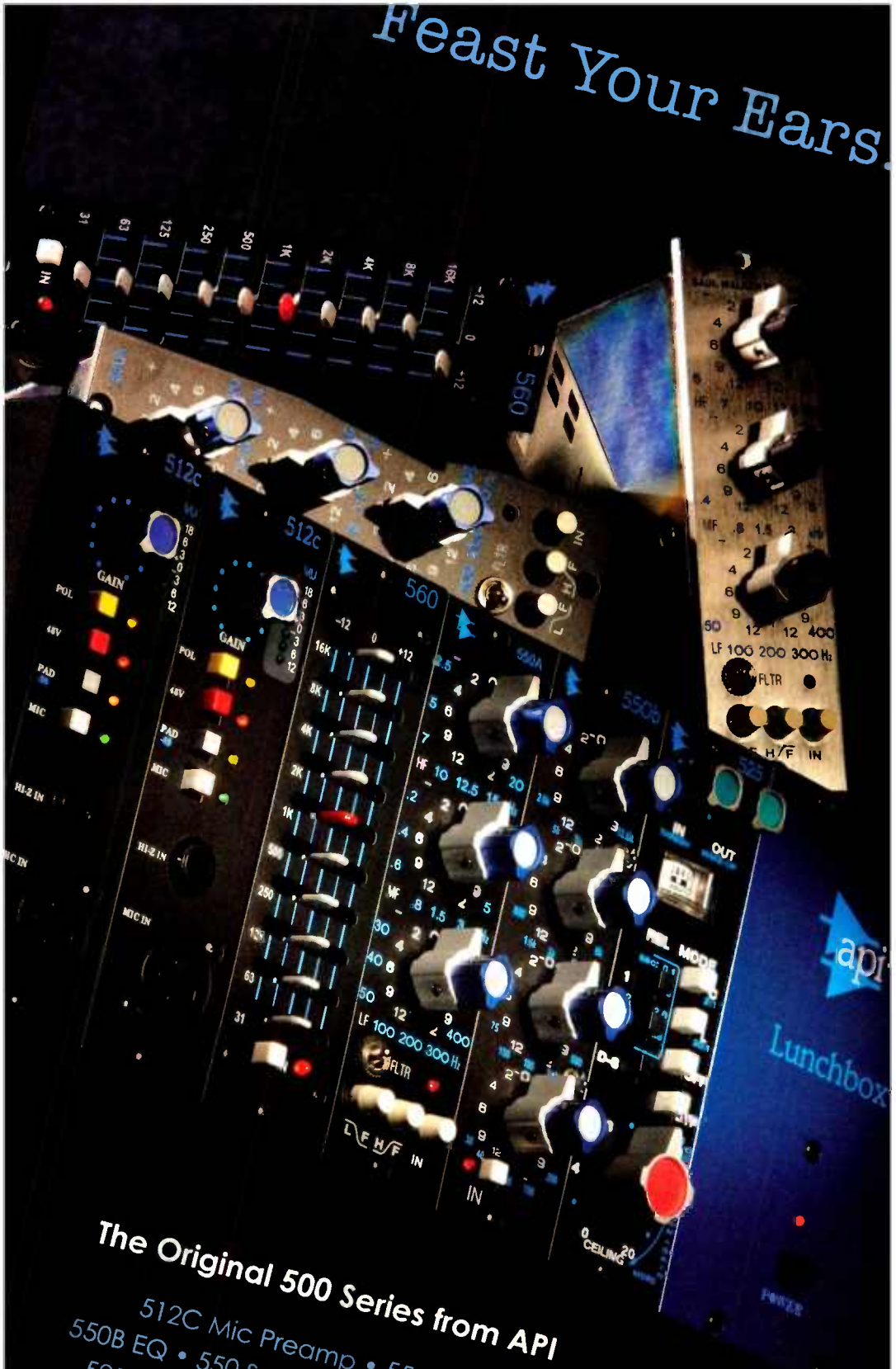
Much of the *Unchained* album was tracked at Ocean Way Studio 2, with most overdubs and mixing done in Rick's studio at his home in West Hollywood. I would drag my racks of vintage gear to the sessions, loaded with old radio compressors and oddities that no other studios had. Out of those racks, we found the signature sound for Johnny's voice for the record: the Gates Sta-Level tube-limiting amplifier. After first hearing it, the Sta-Level became the only limiter I used on Johnny's voice, and it was the only special item I brought to vocal sessions.

I'd begun my love affair with the Gates Sta-Level years before when my friend Jimmy Boyle brought one to a mix and insisted I give it a try. It was old-looking and painted battleship gray. Not sexy at all. I would rather have used a Teletronix LA-2A for the vocal on that particular mix, but I reluctantly patched in the Sta-Level and was instantly smitten. The Sta-Level had all the muscle of the LA-2A, but was bigger and warmer, and even a bit grainy (in a good way). I immediately set out to buy one for my own rack, then two, then three. During the Johnny Cash sessions, it was the first thing I thought of when it came time to record his iconic voice. Even when I was sent to Nashville to record Johnny at Jack Clement's Cowboy Arms Hotel and Recording Spa, I had a Sta-Level packed in my suitcase.

The Gates Radio Company out of Quincy, Ill., made the Sta-Level as an automatic gain amplifier for broadcast use from the mid-1950s through the mid-'70s. Popular in AM radio stations across the United States, it was used with a peak limiter to even out program content before it went on to the station's transmitter. Credit for the sound of the Sta-Level is often given to its use of the 6386 tube, the same as you'll find in both of the classic Fairchild compressors. In the broadcast world, the Sta-Level was wonderful for animating the classic AM radio announcer's booming voice. You can then imagine why the Sta-Level was the perfect choice for recording Johnny, adding a touch of old radio flavor to the recording. You can especially hear the Sta-Level's effects on the songs "The One Rose" and "I've Been Everywhere."

We tracked the *Unchained* album over a span of six months, and every session included visits from huge stars, including Tom Petty and The Heartbreakers, "Blue Suede Shoes" legend Carl Perkins, country great Marty Stuart, Flea and Anthony Kiedis from the Red Hot Chili Peppers, Mick Fleetwood and Lindsay Buckingham from Fleetwood Mac, and, of course, June Carter Cash. It was easy to see Rick's enthusiasm for the project: He was always early to the sessions and would even beat me to the studio on some days. Tom Petty,

Feast Your Ears.



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Top: The original Gates Sta-Level unit used on the Johnny Cash record. Bottom: The reissue Retro Sta-Level.

Mike Campbell, Benmont Tench and Howie Epstein brought such a great energy as Johnny's back-up band, playing a colorful selection of instruments including Dobros, harmoniums and, of course, Tom's signature Tele. I also brought my '61 Fender Esquire, as it was the classic guitar used on so many of the early Johnny Cash records. But for me, the star of the show was the Gates Sta-Level.

Having started my recording career in radio production, I was lucky enough to know where to go to get my first Sta-Levels back in the mid-'90s. Today it may be more challenging to find these units, though they do appear every once in awhile on the market. Miraculously, there is a company out of Modesto, Calif., that's now re-issuing the classic Sta-Level. The company is called Retro, and the owner/designer, Phil Moore, has a passion for the older broadcast equipment; he is developing re-issues of other classics, including a re-make of the great Universal Audio UA176. I highly recommend the Retro Sta-Level; it has been painstakingly designed to emulate the sound of the Gates, even though it no longer relies on the difficult-to-find 6386 tubes. In case you won't stand for anything but the original design, the 6386 socket is still there as an option for the Retro user. How cool is that? These Sta-Levels are not plug-ins; they are living, breathing analog rack units that you have to make an effort to patch in... and it's worth it.

The *Unchained* album was awarded the Grammy for Best Country Album in 1997, but unfortunately, Johnny was too ill to receive his statue at the event. A few short years later, and only months after June Carter Cash died, the great Johnny Cash passed away. We've all lost a legendary American voice, but we're lucky to have his life documented in his music. Maybe he thought that he wasn't the best singer or player, but certainly that is not at the heart of where true talent lies. III

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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GOD OF WAR III

By Blair Jackson

SOUND TITANS CREATE EPIC ADVENTURE SOUNDTRACK

It's been five years since the first *God of War* videogame came out on the Sony PlayStation 2 platform and became an instant sensation among serious gamers worldwide. Combining a richly detailed story using numerous characters and settings from Greek mythology with fast-paced and gory action and sophisticated gameplay, the title won a slew of awards and, not surprisingly, has spawned a franchise that includes *God of War II* (2007), *God of War: Betrayal* (2007; a spinoff for mobile devices), *God of War: Chains of Olympus* (2008; a prequel to the series developed for the PlayStation Portable) and now, on a wave of anticipation and hype, *God of War III* (*GOW3*) for the PlayStation 3.

More than two years in the making, *GOW3* ratchets up the action to new extremes as we follow the further adventures of Kratos, a mighty Spartan warrior who battles various gods and titans, and is, as we learned in *GOW2*, the son of Zeus, who has tried to kill him and vice versa over the course of the *GOW* adventures. Along the way, he encounters a plethora of mythological characters and creatures, including Athena, Gaia, Kronos, Pegasus, Perseus, Atlas, Ares, the hydra, the harpies and all sorts of bad dudes and beasties who make life rather challenging for our tormented hero. The range of characters and plot points in *GOW3* was a still closely guarded secret when I was preparing this story in early February, but from looking at the previews and an online demo of the game, it appears there is plenty of bloody mayhem involving everything from skeleton warriors to a fire-hurling god to frightening flying creatures, centaurs and you-name-it. In what director Stig Asmussen claims will be the last adventure in the series, Kratos' goal is no less than the destruction of the home of the gods, Mount Olympus!

As you might expect, the sound team on *GOW3* really had their hands full. Between the staggering array of battle weaponry (much of it with enhanced, nearly supernatural qualities, like the Blades of Athena that Kratos wields against his foes and, new for this game, the giant over-fist battering gauntlets known as the Cestus), the fires, explosions, creatures/monsters and ambiences required, there was an amazingly detailed sonic world to create. As was the case with the first two PlayStation 2 *GOW* games, the bulk of *GOW3*'s sound and visuals were done at Sony Computer Entertainment of America's Santa Monica Studios (Santa Monica, Calif.) game-production facility. And because the game was developed for PS3, the sound team was able to create an even more sophisticated and highly detailed soundtrack.

"The fact that *God of War III* is on the PS3 as opposed to the PS2 is huge for sound," comments lead sound designer Paul Fox. "We don't have the 2-megabyte limit we used to have on PS2, which definitely affected overall audio fidelity. On any PS2 game, you had to make some sacrifices to get things to fit into memory. It still sounded good, but these days we're able to set higher standards with the PS3. Now with the PS3, we're at what I would consider modern-quality sound—we can pretty much always do stuff at the highest quality. But the other thing about moving to the PS3 is that the actual amount of work to get the sound job done is exponentially larger now. The games have more content in them and more detail that we cover with sound than we were able to do before." Indeed, *GOW3* contains an estimated 10,000 sound IDs (encompassing FX, music and dialog), "an order of magnitude more than the previous PS2 *GOW* game," Fox says.

According to sound designer Steve Johnson, the expanded sonic capabilities of the PS3 allows the designers and implementers to integrate different sorts of sound sources in a way that is nearly seamless for the player—in the same way that animation of the game play is now almost on a par with the cinematics. For instance, he notes, "Because we know Kratos does this, then this and then this in a scene, we're exploring the opportunities of more linear-style sound at key points, sending whole premixed sections of sound directly to chosen speakers in a single file. I think one of the real technical achievements of this game is that we have up to as many as 20 pre-buffered streams at any one time—sound that's streaming off

GAME STILL COURTESY OF SONY COMPUTER ENTERTAINMENT

of Blu-ray, not in RAM. Traditionally, that's reserved for music, ambience, cinematics. Now, let's say there's a mini-game in a scene that might have four onscreen prompts in which you have to time your button-presses perfectly to make sure you actually kill, etc. We're doing things where we might have, say, a 5.1 stream prebuffered up to the first button-press; we know there are two button-presses that follow in succession that might last two or three seconds each—we can cover those sections in stereo and RAM—and then, say, have the fourth button-press cause a second surround stream to come in for the final kill animation. We're able to script it so that playing the first stream triggers the pre-buffering of the second stream. And we know that once the second happens, there's no turning back, so we tell it to drop the first. So we're juggling traditional game sound with a lot of more linear post work."

Adds sound design manager Phillip Kovats, "What we're trying to achieve with what Steve is talking about is a sort of heightened cinematic adventure experience for the players that they really were not able to access with the older *God of War* games. With the PS3, we can really hit it hard. And with the advent of other more cinematic games, like *Asssassin's Creed 2* and *Uncharted 2*, the ante keeps going up."

Some of the sounds in *GOW3* were carried over from the previous games, but where possible they've been upgraded to take advantage of the increased sample rate. Mostly, though, the soundtrack was freshly created from a combination of new FX recordings, Foley and sometimes combining those elements with library material and altered in new ways. "One of the things we were able to do with both the quality of sound and the quantity of sound is really detail out Kratos' movement Foley," Kovats comments. "We did a lot more armor work on him and changed his footseps up and added a lot more chains and other touches. We worked closely with [Foley artist] Gary Hecker at Todd-AO to bring this role alive in a different way, to make it more fun for the player."

Kovats also notes that David Farmer, who worked on *GOW2* and the *GOW* PSP game (*Chains of Olympus*) "came back to help sculpt a lot of the new creature sounds for the game, and we even had him go back and revisit some of the ones we had done for PS2; because we had more memory and variety, we could add to this game. He helped us out a lot on the vocals and attacks of these creatures."

As is usually the case with videogames, the early stages of sound design were done to sketches and crude animations, which necessarily change over time as work on the game progresses. As Steve Johnson explains, "A lot of times it comes down to loading the guns, as I've heard it called. You know a certain creature is going to need to be covered. You know that animations are probably going to change, timings will totally change, so a lot of times it's pulling together these assets into Pro Tools sessions and then sorting through it all when the time comes. You know there are going to be these titans over several areas of the game, and one titan may be made of a certain material than a different one, so you start pulling this all together, and these Pro Tools sessions start getting huge-er and huge-er, and then toward the end of the project, things start getting locked down and then it's all-hands on deck—we've *gotta* get this done—and hopefully it's all there and ready to go, and you've identified the characteristics of certain areas of the game and of certain characters."

"Animations are the bane of every sound designer's world when it comes to in-game sound design because animations change all the time," adds senior manager, sound group, Gene Semel. "We try to work in parallel development [with the animators] as much as possible, so whenever an animation is coming online, we're trying to put sound to those animations so that every time the game is being played during the process of development, there's as much sound in the game as possible to give us a clear picture of the overall scope and idea of what the game is going to sound like.

"It's similar to in film where guys are seeing wire frames in their sound design on the rough cuts and they don't start seeing the final

visual effects until really close to the end of the project. It's the same with games. That's one of the differences between previous console developments to what we're dealing with now because there's so much more content, so much more *everything*—art, animation, physics—going into it, and it all seems to waterfall at the very end of a project. We're talking thousands and thousands of changes in the animations, so you can imagine how much work that is for us on the sound side, too."

One of the challenges of this particular game, Kovats says, was conveying the sense of *scale*—the way the action might shift from a scene where Kratos is battling a small winged creature, to one where he is in the frame with and/or fighting with one of the enormous titans. Every aspect of the game presents a different mixing challenge, it seems, so it's no surprise to learn that—as with feature film mixes—doing a game mix can be an extremely long and involved process. *GOW3* was mixed at SCEA's Santa Monica Studios "with a keyboard and mouse," Paul Fox says, rather than using a giant post-production console as usually happens with Hollywood films.

"We were very keen on trying to run it on a schedule where we had a full week to play through the game and mix," Fox continues. "In our software sound system, we have 31 mix channels that we can assign sound IDs to. So we have the usual three suspects at the top: Sound effects, dialog and music each have a main 'fader' they're on, and then we have a bunch of other faders available for special cases and for breaking things down into smaller bits. So we'll have a Foley channel, we'll have a channel for impacts, a channel for creature vocals—as opposed to humanoid vocals—and a couple of other special cases; for instance, if we need to sidechain one thing to be ducked by another thing. We also have a dedicated channel for the soundtracks that play under the cinematics."

"Our mixer is snapshot-based, and using those 31 channels we can have a lot of great submixes to get a lot of detail in and out of the game for certain times," Kovats adds. "Like you might be going through this crazy fight where you really want to hear the creature vocals and the weapons; then you might go into an intimate scene and we'll bring the ambience and the music down a little bit and the dialog up because you really want to hear the detail in the story. We have a great tools and tech department up in Foster City [Calif.] and they've helped develop a lot of great tools, which is just short of having a mix board in front of us to create these really great snapshot mixes. We also use proprietary DSP technology on the output of the game to make sure we have limiting and compression on the dialog and other things."

Fox notes, "We are also very lucky that our director is interested in and cares a lot about sound and that he wanted to sit with us and do play-throughs before our mix. We kind of had a premix, believe it or not, and that's never happened in a game I've worked on, though I've always thought it should. It was a great opportunity because he was able to listen to the game with us—just the sound team and the director—so we were able to make doubly sure we were getting things covered that were important to him. Having Stig with us listening to stuff, we could address some very important continuity-related and gameplay-relevant sound design opportunities that might not have been as easy to spot on our own given the tight schedule."

PHOTO: BARBARA HOUSE

The *God of War III* sound team, L-R: sound designer Steve Johnson, sound design manager Phillip Kovats, lead sound designer Paul M. Fox and Gene Semel, senior manager, sound group.

Among the other issues that crop up at the mix stage are keeping sounds in proper perspective as Kratos moves through the environment; bringing distant sounds closer as the action moves toward what was once the far background; adjusting sounds in the immediate foreground as sound emitters are reached and then passed; retaining the ambient sound of the environment but allowing the action in the foreground to supercede other sound sources; giving spatial dimension to the scene while also letting the music track add more emotional depth to the scene; and making sure that dialog can be heard at all times. It's a long and involved process that requires the sound team to play the game over and over again to attain the greatest clarity, variety and power possible.

I ask whether the sound designers and implementers regularly check their work on the sorts of small computer speakers that most gamers still play on. "Yes, that's very important to us," Fox replies. "We listen to it coming out of our TV speakers, too. We also get a lot of feedback from team members because during the last weeks of the game [production], a lot of people are getting locked out from making changes to the level design and visuals, so those guys are sitting playing through the game, wearing headphones or listening over TV speakers. It's a real team effort."

The last weeks of game production are invariably long and intense as the final visual elements come in and the audio team makes its last adjustments to match the changes. It requires tremendous cooperation between departments and strong guiding hands to keep the work moving forward coherently and in a timely fashion. Semel says, "We know we're going to have a [work] spike at the end—it's the way games go. We would love to have a month at the end to finesse things after they're locked down, but at this point that's still a dream. Game development is always to some degree organic because you plan for things, you have your milestones, but you also have to be flexible and open to trying things along the way because finding the fun is a big factor in making games. You do whatever you can to make a game that people will enjoy playing.

"We're preaching to the choir here, I guess, but obviously we all believe that sound is a big part of the [game-playing] experience. Sound adds so much to the visceral feeling you get playing a game. And, of course, game scores [in game magazine reviews] now often grade for sound, as well as graphics and game-play, and those scores *do* affect sales, so sound is important on that level, too."

"As has been the case for years and years, when we really do our job well, it's not usually noticed," Paul Fox concludes. "When things sound as they should and as expected, our hard work isn't obvious. So we like to do over-the-top interesting sound design when we have the opportunity—and there were a lot of places in this game where we could do that. Honestly, though, I think some people still don't understand that there was nobody on set with a boom mic [laughs], that literally everything in that game went in there from scratch." III

Blair Jackson is the senior editor of Mix.

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Microphones Are Forever

NEW LARGE-DIAPHRAGM CONDENSERS

By George Petersen

If we examine a listing of gear used on a particular recording, the recorders and signal processing may offer a clue as to when the session occurred. However, it can be more difficult to pinpoint a particular date from the mics that were employed that day. As an example, a session using a D-12 on kick, SM57 on snare, U67s on overheads, AT4033s on toms, C414 on hi-hat, Ela M 251s on vocals, RE-20 on bass and MD-409s on guitar amps could have happened today or 15 years ago. And with proper care, mics can remain useful for decades, so it's little surprise that audio pros develop a fondness for their mics. (It's hard to muster up the same excitement about finding an old DAT machine!)

The digital revolution may be in full swing, but in terms of microphones, analog clearly is still king. After the past decade filled with mics trying to *look* like vintage models, a major trend today is models that emulate the actual sound of those classic originals. A few of these include Neumann's TLM 67 (which recreates a U67 sound); AKG's C 414B-XL II, with its C-12 voicing; the Ela M 251 tone of ADK's Cremona-251-AU; and JZ Microphones' Vintage Series, which includes a U47-sounding model. Or for something completely different, there's the Pearlman Church Microphone, a reissue of the 1950s Stanley Church/MGM mic, complete with a Neumann capsule and 6072 tube. But the race is not simply based around tube emulations. New mics targeting that desirable early FET sound include Audio-Technica's AT4047 mp or Wunder Audio's CM7 FET.

There's a Pattern Here

Some companies are offering single-pattern versions of more expensive multipattern mics in their line, which makes the high-end models available to a wider clientele without having to downgrade quality. A few examples of this include AKG's C 214 and Brauner's new "Pure Cardioid" Valvet X, VM1 and VMX units. If truth be told, a great majority of all studio recording is done using a cardioid mic—or a mic set in the cardioid pattern. There's nothing wrong with that, but the versatility of additional patterns opens up a lot of creative (and technical) possibilities. Sliding that pattern switch for a wide cardioid or (gasp!) even an omnidirectional setting can make your life a lot easier when tracking vocals for a singer who likes to move around while performing. In the chart accompanying this text, we found a dozen models that offer five or more patterns.

A useful side of pattern versatility comes from using the often-neglected figure-8 setting, which is ideal when paired with another mic for stereo recording using the Blumlein technique or mid-side (M/S) miking. But the figure-8 pattern also comes in handy for more common studio chores. On a recent session, I used the figure-8 setting to record snare hits for drum replacement. The front side captured the attack, while the back picked up the room for a huge sound.

On another session, I put the same mic (in figure-8) placed between two 4x12 guitar cabs that faced each other. The backside of a figure-8 mic is out of phase with the front, so I wired the speaker cable feeding one of the 4x12s out-of-phase and ended up with a massive guitar sound.

Big Mics on Vox

Clearly, the main attraction to large-diaphragm mics is in vocal applications. Engineers are always scouting for new microphones—particularly ones that will add a certain *je ne sais quoi* to a source, whether it's an instrument or voice. Matching the right mic to a particular vocal takes a bit of experimentation. And the most expensive mic (vintage or current) isn't always the right choice. On one particular client at my studio, the choice is frequently an inexpensive ($399 street) tube mic that adds just the right snarl to male vocals. It's far from flat, but on the right voice it works.

Large-diaphragm condenser mics—whether solid-state or tube—represent the lifeblood of most studios, and new models just keep coming. In fact, in surveying large-diaphragm mics that debuted during the past 18 months or so, we encountered more than 50 new entries (priced from $149 to more than $10,000), and this doesn't include variants such as versions with USB or AES 42 digital outputs. There's a lot out there and hopefully the chart listing new models will suggest some new entrees for your palate. Bon appétit!

Mix *executive editor/avowed mic junkie George Petersen operates a small record label at www.jenpet.com.*

Blue Microphones Bottle Rocket Stage offers Class-A electronics.

JZ Microphones' solid-state mic, the Vintage 47

Neumann TLM 102 features a 6kHz presence boost.

The Josephson C715's polar pattern is mechanically variable from cardioid to omni.

MXL's Revelation has an infinitely variable polar pattern.

Avant's BV-1 is also available as a stereo set.

Sontronics Saturn is a solid-state model.

NEW LARGE-DIAPHRAGM CONDENSER MICROPHONES, AT A GLANCE

Manufacturer	Model	Type	Polar Pattern*	LF Filter	Pad	Max SPL**	Retail	Notes
ADK Microphones; www.adkmic.com	S-7	Solid-State	Cardioid	100/150 Hz	8/18 dB	150 dB	$479	Designed for moderate to high SPL applications; ships in wood box
ADK Microphones	S-7B	Solid-State	Cardioid	100/150 Hz	8/18 dB	150 dB	$479	Transformerless FET version; more colored than S-7; ships in wood box
ADK Microphones	A-6	Solid-State	Cardioid	No	No	131 dB	$399	Designed for uncolored response; ships in wood box
ADK Microphones	Berlin-47-AU	Solid-State	Cardioid	100/160 Hz	8/18 dB	134 dB	$1,695	British Oxford transformer; Philips FET for gradual saturation
ADK Microphones	Cremona-251-AU	Solid-State	Cardioid	100/160 Hz	8/18 dB	134 dB	$1,795	Extended high-end response; British Oxford transformer; Philips FET for gradual saturation
AKG; www.akg.com	C 214	Solid-State	Cardioid	160 Hz	20 dB	136 dB	$649	C 414°style capsule in single-pattern version; with shock-mount, windscreen and case
AKG	C 414B-XLS	Solid-State	9 Patterns	40/80/160 Hz	6/12/18 dB	158 dB	$1,299	Peak-hold LED feature; with shock-mount, pop filter, windscreen and case; stereo pair set available
AKG	C 414B-XL II	Solid-State	9 Patterns	40/80/160 Hz	6/12/18 dB	152 dB	$1,399	Voiced after AKG C 12; ships with shock-mount, pop filter, windscreen and case; stereo pair set available
AKG	Perception 820	Tube	9 Patterns	80 Hz	20 dB	155 dB	$849	ECC83 triode-based tube electronics; ships with shock-mount and case
Audio-Technica; www.audio-technica.com	AT2035	Solid-State	Cardioid	80 Hz	10 dB	148 dB	$249	Includes shock-mount
Audio-Technica	AT2050	Solid-State	O-C-Fig 8	80 Hz	10 dB	149 dB	$369	Includes shock-mount
Audio-Technica	AT4047 mp	Solid-State	O-C-Fig 8	80 Hz	10 dB	165 dB	$1,055	Essentially multipattern version of AT4047 sv; designed to emulate early FET mics; includes shock-mount
Audio-Technica	AT4050 st	Solid State	Stereo	80 Hz	10 dB	159 dB	$1,625	Stereo version of AT4050; selectable L/R output (127° or 90°) or discrete mid-side output
Avant; www.avantelectronics.com	BV-1	Tube	9 Patterns	80 Hz	10 dB	144 dB	$995	Bottle mic-style with tweed case, shock-mount, pop filter, wood box and Gotham cable; also available as stereo set
Avant	CV-12	Tube	9 Patterns	80 Hz	10 dB	146 dB	$499	6072 tube-based electronics; ships with shock-mount, case and wood box

NEW LARGE-DIAPHRAGM CONDENSER MICROPHONES

Manufacturer	Model	Type	Polar Pattern*	LF Filter	Pad	Max SPL**	Retail	Notes
Blue; www.bluemic.com	Bottle Rocket Stage One	Solid-State	O-C-Fig 8	No	No	138 dB	$699	Interchangeable capsules; Class-A discrete electronics; ships with shock-mount
Blue	Bottle Rocket Stage One	Tube	O-C-Fig 8	No	No	139 dB	$1,595	ECC88 tube-based discrete Class-A electronics; ships with shock-mount
Bock Audio; www.bockaudio.com	5-zero-7	Tube	Cardioid	No	No	N/A	$7,350	Combines discrete tube electonics with Bock/Cardas elliptical capsule; ships with shock-mount and wood box
Brauner; www.braunerusa.com	Valvet X Pure Cardioid	Tube	Cardioid	No	No	142 dB	$3,150	Cardioid version of Valvet; ships with shock-mount, windscreen and case
Brauner	VM1 Pure Cardioid	Tube	Cardioid	No	No	142 dB	$5,099	Cardioid version of VM1; ships with ships with shock-mount and case
Brauner	VMX Pure Cardioid	Tube	Cardioid	No	No	142 dB	$5,350	Cardioid version of VMX; ships with shock-mount, windscreen and case
CAD Audio; www.cadaudio.com	Equitek E100S	Solid-State	Supercardioid	80 Hz	10 dB	150 dB	$799	Low 3.7dBA noise floor; ships with shock-mount and wood case
Charter Oak; www.charteroakacoustics.com	S700	Solid-State	Cardioid	No	No	125 dB	$744	Front-address design; Class-A head amp; custom output transformer; ships with shock-mount and flight case
Equation Audio; www.equationaudio.com	F-20	Solid-State	Supercardioid	80 Hz	16 dB	150 dB	$699	Includes gooseneck pop filter and case
Gauge Microphones; www.gauge-usa.com	ECM-87	Solid-State	Cardioid	No	No	128 dB	$149	Ships with shock-mount and pop screen
Gauge Microphones	ECM-47	Tube	9 Patterns	No	No	135 dB	$479	6072 tube-based electronics; ships with shock-mount, wooden box and pop screen
Josephson; www.josephson.com	C715	Solid-State	C-O	No	No	140 dB	$4,560	Cascode FET amp; Lundahl transformer; internal shock-mounting; polar pattern is mechanically variable from cardioid to omni
JZ Microphones; www.jzmic.com	Vintage 47	Solid-State	Cardioid	No	No	134 dB	$1,999	First in a series of mics emulating vintage models; voiced after U47; internal shock-mount; versatile swivel mount; low 6dBA noise spec
M-Audio; www.m-audio.com	Luna II	Solid-State	Cardioid	125 Hz	10 dB	140 dB	$399	Class-A FET electronics; 3-micron diaphragm
Miktek; www.miktekaudio.com	CV4	Tube	9 Patterns	No	No	N/A	$2,165	Features NOS telefunken tube and AMI BT4 transformer; ships with wood box, case and shock-mount
Miktek	CV7	Solid-State	C-O-Fig 8	120 Hz	10 dB	N/A	$1,499	FET design; ships with wood box
Mojave; www.mojaveaudio.com	MA-201 FET	Solid-State	Cardioid	No	No	125 dB	$695	FET version of MA-200; 3-micron capsule; ships with shock-mount
MXL; www.mxlmics.com	Revelation	Tube	Infinitely variable	125 Hz	10 dB	138 dB	$1,495	EF86 tube-based electronics; 6-micron capsule; ships with case and shock-mount
MXL	Trophy	Solid-State	Cardioid	No	No	142 dB	$299	Features 6-micron capsule and customizeable nameplate on front of mic.
MXL	V89	Solid-State	Cardioid	No	No	138 dB	$599	6-micron capsule; ships with wood box and shock-mount
MXL	Cube	Solid-State	Cardioid	No	No	132 dB	$149	FET mic designed for high-SPL instrumental and percussion sources; 6-micron capsule
Neumann; www.neumannusa.com	TLM 102	Solid-State	Cardioid	No	No	144 dB	$1,020	Features 6kHz presence boost for vocal recording; transformerless design; available in black or nickel finishes
Neumann	TLM 67	Solid-State	C-O-Fig 8	180 Hz	10 dB	131 dB	$3,458	K67 capsule is voiced to sound like U67; suspension mount optional
Pearl; www.independentaudio.com	ELM-A	Solid-State	C-O-Fig 8	No	No	126 dB	$3,026	Dual outputs from large rectangular capsule can deliver stereo cardioid (back to back) or mono cardioid, omni or figure-8
Pearlman; www.pearlmanmicrophones.com	Church Microphone	Tube	C-O	No	No	N/A	$3,500	Reissue of 1950s Stanley Church/MGM mic with Neumann capsule; 6072 tube; Triad transformer; ships with case and shock-mount
SE Electronics; www.seelectronics.com	X1	Solid-State	Cardioid	100 Hz	10 dB	125 dB	$199	Non-reflective black-rubber finish; optional shock-mount
SE Electronics	T2	Solid-State	C-O-SC-Fig 8	50 Hz	10/20 dB	140 dB	$1,199	Designed for vocals and high-transient sources like percussion; includes shock-mount
Shure; www.shure.com	PG-27	Solid-State	Cardioid	No	20 dB	154 dB	$186	Also offered in USB version
Shure	PG-42	Solid-State	Cardioid	100 Hz	15 dB	145 dB	$238	Ships with case and shock-mount; also offered in USB version
Shure	SM27	Solid-State	Cardioid	80/115 Hz	15 dB	148 dB	$460	Low 9.7dBA noise performance
Sontronics; www.sontronicsusa.com	Saturn	Solid-State	O-WC-C-HC-Fig 8	75/125 Hz	10/20 dB	130 dB	$995	Ships with shock-mount and flight case
Sontronics	STC-2X	Solid-State	C-O	75-150	10/20 dB	N/A	TBA	Offered in silver and black finishes; ships with shock-mount and case
Sterling Audio; www.sterlingaudio.net	ST69	Tube	O-C-Fig 8	75 Hz	10 dB	140 dB	$1,199	Based on Groove Tubes GT6205 tube; disk resonator extends HF response; ships with case and shock-mount
Studio Projects; www.studioprojects.com	CS1	Solid-State	Cardioid	50/75/150/300 Hz	5/10/15/20 dB	134 dB	$399	FET electronics and 6-micron capsule; ships with shock-mount
Studio Projects	CS5	Solid-State	C-WC-O-HC-Fig 8	50/75/150/300 Hz	5/10/15/20 dB	136 dB	$499	Multipattern version with FET electronics and 6-micron capsule; ships with shock-mount
Telefunken Elektroakustik; www.t-funk.com	AR-51	Tube	9 patterns	No	No	138 dB	$1,995	R-F-T model based on Ela M 251; features NOS ECC81 tube
Telefunken Elektroakustik	ELA-M 251T	Tube	C-O-Fig 8	No	No	138 dB	P.O.A.	Has NOS Telefunken 6072A tube; ships with wood box and tweed case
Telefunken Elektroakustik	U-48	Tube	C-O-Fig 8	No	No	138 dB	$10,495	Has Telefunken VF14K tube; ships with shock-mount, wood box and tweed case
Violet Design; www.violetusa.com	Garnet	Tube	9 patterns	No	No	130 dB	$2,500	Class-A discrete tube electronics; includes shock-mount
Wunder Audio; www.wunderaudio.com	CM7 FET	Solid-State	C-O-Fig 8	No	No	128 dB	$2,495	Based on U47 FET sound; has new K47 capsule; ships with wood box and shock-mount

* Key to Polar Patterns:
C = cardioid; O = omnidirectional; HC = hypercardioid; WC = wide cardioid; SC = supercardioid; Fig 8 = figure-8. ** Max SPL spec is with any pads engaged.

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Mix Interview

Ken Scott

A CAREER OF CLASSIC TRACKS

The great appeal of *Mix*'s popular "Classic Tracks" feature lies in producers and engineers' curiosity about the sound of their favorite recordings. What happened in the studio, what equipment was used, what artistic decisions were made in that moment to create Booker T's B3 sound on "Time Is Tight"? Or Patsy Cline's vocal on "Crazy"? Or Keith Richards' guitar riff on "Start Me Up"? Well, for anyone who eats that stuff up, who looks forward to "Classic Tracks" every month, it's Christmas in March.

Ken Scott is the engineer/producer behind legendary recordings from The Beatles, Elton John, Mahavishnu Orchestra, America, David Bowie, Dixie Dregs, Devo, Missing Persons, Jeff Beck, Lou Reed and so many others. As a staff engineer for EMI and then Trident Studios (both in London), Scott had the opportunity to work with some of the most important artists and producers in the 1960s and '70s, and to develop recording and mixing techniques that he still employs today. The good news for readers is he has no qualms about sharing. Scott's latest release is Sonic Reality's *A Ken Scott Collection: Epik Drums*, a plug-in library of classic drum sounds, carefully made with the original drummers on some of Scott's most memorable tracks so that today's engineers can re-create and/or manipulate Billy Cobham's (Mahavishnu Orchestra) drum sound or Bob Siebenberg's (Supertramp) or Rod Morgenstein's (Dixie Dregs), etc.

Scott's desire to offer these sounds to the masses stemmed from a conversation he had at a re-visit to Abbey Road Studio 2, where he became re-acquainted with Brian Gibson, a maintenance engineer he'd worked with on Beatles sessions back in the day.

"He told me he had specifically asked to work that day so we could have a chat about old times," Scott says. "And he said, 'Do you remember when we started here, there were all these old-timers who had the most incredible stories of the beginnings of recording? And we used to just sit there listening, fascinated by what they were saying.' And I said, 'Yeah, absolutely.' And he said, 'Well, we've now become them. The next generation now wants to hear our stories.'"

Here are just a handful of Scott's stories.

—*Barbara Schultz*

The Beatles: "Helter Skelter" (*The White Album*, 1968)

Scott sets the record straight about the mood in Abbey Road Studio 2 for these sessions, which took place early in his long career.

The sessions were a bit weird because George Martin had gone on vacation. He was having less and less to do with it on that particular album. Each individual [Beatle] was so much in control.

The myth is that these sessions were horrible. I haven't worked on any project where there hasn't been some tension at some point during the recording. We're talking about a six-month project here so there are going to be tempers flaring every now and then, but the majority of the time we had a blast. It was fun and they were so great to work with. The whole thing about how bad it was—complete myth. I hate hearing that because it wasn't like that.

Anyway, George had gone on vacation and he had left his assistant, Chris Thomas, there. Chris had been hanging out for a bit, but he was always in the background, and this was one of the first, if not the first, track that he actually had to take over from George Martin and be classified as the producer. I know he felt very intimidated by it sitting beside me the first session. They were always going, "How was that one, Ken?" with Chris sitting next to me knowing that he is supposedly the producer on this, but finally he managed to win them over. We did a lot of recording once he settled in. It became a very fast-paced session.

Paul wanted it loud and raucous, so they turned up loud and raucous. We would change things during sessions so what was finally used isn't completely known. I can tell you because I've got two setup sheets that I did from around that period, that on the bass drum it would have been an AKG D19C, the overhead either a Neumann KM56 or an STC 4038 ribbon. There would have been a Neumann KM56 on snare and a couple of other D19s sort of placed for the toms. Bass guitar would have been DI, and also either a Neumann U67 or an STC 4038 [Coles] ribbon. Guitars would have been Neumann U67s. You can see where I got my love of Neumann U67s. And the vocals would have been Neumann U47s.

A lot of it was cut live, though there were overdubs done. We'd only just moved from 4-track, so everyone was used to play-

Scott at Trident circa '72

PHOTO COURTESY KEN SCOTT

Ken Scott at Abbey Road, where he was one of the engineers to help The Beatles record *The White Album*: "The myth is that these sessions were horrible...I hate hearing that because it wasn't like that."

ing live at that point. Basic tracks were live, and we would tend to mix everything together still. We didn't separate each individual thing. We had to make decisions up front. We did about 18 takes on that track.

Back then, I was still learning my gig so I was concentrating more on what I was doing than what they were doing. I have very few stories from back then. I do remember doing a mix [of "Helter Skelter"] one day when they were particularly late. Chris Thomas and I decided to do a mix that probably today would have worked well because we compressed everything out of it. We were using the typical Abbey Road Altec compressors and we just squashed it, exactly like everything sounds today, and we loved it. But they hated it.

George Harrison: "What Is Life?" (*All Things Must Pass*, 1970)

Scott overdubbed and mixed tracks for this singular, Phil Spector–produced song.

The producers on the album were George and Phil Spector. Phil would just come by now and then. Phil Spector was very precise in how to get his sound. I did a Ronnie Spector session with him. That was the first time I met him, and whilst he was downstairs in the studio teaching the session musicians the song, I was upstairs and I had got what I considered my normal sound. He came up once everyone was playing it well, and he had me make three not great changes and it totally changed from my sound to his. He knew exactly where to zero in to change it from my sound to his. I wish I could remember exactly what he had me change, but he knew exactly how to get his sound.

As a song arrangement, "What Is Life" was fairly well formed when I received the tracks. The tape that came in had bass, drums, keyboards and some guitar; it had the acoustic guitars, it had Eric [Clapton]'s rhythm guitar and some of George's, but we did overdub more, and some brass on it. We also overdubbed orchestra, all of the backing vocals—all of the backing vocals were George, as well—and George's lead vocals.

That was the tough part on all of the tracks on that album—the vocals—because all of the backing vocals were George and there are masses of them. So we would put down four, bounce them down to one track, then he'd put down another four, and we'd bounce those two tracks together because we only had 16 tracks; we didn't have that many tracks to play with. It was continually like, once we knew we'd got something, we'd bounce it down and then overdub on top of that until we had all that we needed.

Elton John: "Rocket Man" (*Honky Chateau*, 1972)

After leaving Abbey Road and joining Trident Studios, Scott found himself traveling to Chateau d'Herouville in France with Gus Dudgeon and Elton John.

For "Rocket Man," we were actually there for the writing of the song. Bernie Taupin would go every night about 7 or 8 o'clock to his room. Every morning he would come down to breakfast with a stack of papers that he would immediately give to Elton, and Elton would go to his piano and he'd be going through these pieces of paper, and saying, "Nah, I don't like that one," and throw it away. He would keep going through the pieces of paper till he came to one, and said, "Oh, I quite like that," and within 10 minutes he'd come up with the music for "Rocket Man." We all finished eating, the band got behind their instruments and started to play. It was one of those amazing things.

We had them all set up in the studio live: drums, piano, bass and some guitar. When we were recording at Trident, there was a specified drum room where the drums would always set up, but we didn't have that luxury at the Chateau. So because all the piano tracks were live with drums and bass and some guitar, we had to somehow sort out the separation problem. Gus got in some carpenters and they built a box that went right over the top of the piano and completely blocked out everything without changing the piano sound too much. There were a couple of holes in it that I could poke the mics through, and it worked out really well.

Vocals would have been overdubbed later. On his piano, mics would have been either a Neumann KM56 or a Neumann KM86 on the high end of the piano. I can't remember when it changed over from the tube-type mics to the FETs, but they're much the same. On the low end of the piano would have been a Neumann U67 or a Neumann U87.

We did a few more overdubs at Trident after we finished in France. For the overdubs, we would have used a Sound Techniques board, and we would have moved upstairs to the mix room, and it was at that point, if I remember correctly, that the ARP synthesizer was put on by Dave Hentschel, who was just a second engineer there at that time. That's the sound of the "rocket" taking off and bursting in and out of the atmosphere on the record.

That track was complicated to mix because you have the intimate sound of Elton and his piano, and you have the choir and the bigger reverb sound later in the track. That was done with many hands on the board. Gus always liked to take control of the drums because he always liked to push them up for the fills, so he would tend to take care of the rhythm section; I would tend to take care of the piano, lead guitar overdubs and vocals. Any other little changes that would need to be done would be the second engineer; he would lean over the two of us. As for the reverb, at Trident we would have used one EMT plate. Sometimes we'd put delay on it, sometimes we wouldn't, but everything was going through the same reverb.

America: "I Need You" (*America*, 1972)

Back at Trident, Scott tracked and mixed the debut album from a transplanted folk-rock trio.

Ian Samwell and Jeff Dexter were the producers. Ian Samwell goes way back. He was a session guitarist, and he wrote or co-wrote the B-side of Cliff Richards' first single for EMI. So he goes back a ways and had a very rock 'n' roll–type background. Jeff Dexter, on the other hand, was a very hip DJ at the time. DJs weren't quite as hip then as they are now, but still it was a very strange pairing. Most of the time, they got on very well, and they obviously had the same idea. The combination of these producers and this almost folkish-type trio was different, but it worked.

The trio [Dewey Bunnell, Dan Peek and Gerry Beckley] wouldn't sing when we laid down

the basic tracks. That was all put on later. Generally, whoever was playing the acoustics would play. On the drums they brought in a friend, and I have a vague recollection of having problems with the drums, which could be one of the reasons why they're not featured that strongly. That was all at Trident, so we could have had an A Range [console] by then. The acoustic guitars for everything would have been cut live, possibly with some overdubs, and the drums would have been live, but the bass may have been overdubbed. The tape machine was a 16-track 3M machine. All of the mixes done at Trident would have been done to a Studer 2-track.

They stood together in the room to do their vocals. I think I had them on three 67s—each one on his own—and then I'd get the EQ and blend them upstairs [in the mix room] if I remember correctly. I don't think they were quite at a point where they could do it, or we even wanted it, where the three of them were around one mic. We separated them and got the blend upstairs.

The only problem with [the album *America*] was that Warner Bros. said they didn't hear a single, so they went into Morgan Studios [London] and recorded "Horse With No Name." That was added later. But the album did very well. It was certainly the first time I'd ever been involved in it, and it may have been the first time it happened, but they had simultaneously the Number One single and the Number One album in England and the States.

Devo: "Secret Agent Man" (*Duty Now for the Future*, 1979)

Scott and his family moved to L.A. when he was working steadily with Supertramp, but it was his previous work with David Bowie that spurred Devo to hire Scott to produce and engineer their second album.

The album was all done at Chateau Recorders. They had a Trident A Range board, which they put in specifically for me. What the monitors were I'm not sure. The recorder was a Studer 24-track, I think, and for some of the stuff I did there, they actually had a 16 and a 24 linked.

They had a stage persona that they were complete lunatics, but in real life they were a very professional band. I'll tell you one funny story about that: The owner of the studio wanted to show someone around midway through the recording and asked me if that would be okay, so I said, "Yes, as long as it's quick." He came in with this guy, and instantly, the guys turned into their stage persona and Mark Mothersbaugh started to run around screaming at the top of his voice and really scared the person away quickly. But as soon as he had gone, we went back to work and it was total professionalism again.

Typical of me, it was basically bass and drums, and everything else was overdubbed afterward, so if we had to manipulate things, we could. We did try some weird things, though. There was one guitar part—and I think it was on "Secret Agent Man," though I can't absolutely confirm it—we wanted a really small guitar sound so we finished up taping a pair of headphones to a mic—we took the guitar direct, I distorted it like crazy, overloading mic pre's and all of that, and then we fed it out through the headphones and picked it up again through the mic, and that was the guitar sound. Anything that works.

Another thing I remember that I loved about working at Chateau was the way I could have the studio doors open. I would have one mic in the foyer, which was all Spanish tile, and one in the bathroom or the kitchen. I had to tell everyone who worked there, we're going to be recording so please keep the noise down; all the phones had to be turned off whilst we were doing takes, but that gave an amazing distant-miking. The studio was dead, but you could always open up that door and put the mics out there.

Missing Persons: "Walking in L.A." (*Spring Session M*, 1982)

Scott connected with Missing Persons drummer Terry Bozzio through Scott's friend and neighbor Frank Zappa.

I got a phone call one afternoon from Gail Zappa, [Frank's] wife, and she says, "Terry's over here with his wife and Warren [Cuccurullo], the guitarist from Frank's band, and they've formed a band. Would you take a listen to them?" I said, "Sure, send them down."

Five minutes later they banged on the door: This very strange woman with multicolored hair and Terry and Warren, and they play me what is probably one of the worst demo tapes I have ever heard in my life. I can only assume it was my love of Terry's playing that prompted me to take it to the next step, which was to say, "Look, I don't like this, but let me come and see you play live."

"Well, we don't play out, we're just rehearsing." "Okay, I'll come down and see you rehearse." And it was terrible. But something grabbed me, and I don't know now exactly what it was, but I saw something there, and I said, "Yeah, let's do some demos."

Frank had just had his home studio built, and he knew my reputation for finding faults in studios, and so he said, "You can go in, record your demos in my studio free of charge, but remember no one's been in there before so there are going to be things wrong with it." We knew what the deal was, so we had the patience when things held us up a bit. That was fine because we were getting the place for free and Frank finished up with a fault-free studio.

We recorded five songs, and I tried to shop them and no one was interested. So we put it out ourselves, funded by Warren's parents. One of the tracks finished up being the most requested record of the year on the L.A. radio station KROQ, which was very important at that point. All of this then led to a deal with Capitol. A short time after, it was time to do an album.

More often than not, [basic tracks started with] Terry completely on his own. As he was co-writer for most of the songs, he knew exactly what he wanted to play, and then we'd start overdubbing from there. By this time, I had gotten a [bass drum-miking] technique together when I was working on an album by Stanley Clarke where I suspended, with wire, an RE20 inside the bass drum with the cable coming out through one of the air holes. I put a little damping in there, put the other head on and put some more damping on that head, and it worked perfectly. He got what he needed, I got what I needed and I continued to use that technique for quite some time after that. I did that with Terry.

In fact, on the Epik Drums Website, [epikdrums.com], there are a bunch of videos we made whilst recording various drummers, and it shows this technique where I was doing it with Terry in the studio, so if anybody wants to see how I did it, they can. III

Read more from Ken Scott at mixonline.com.

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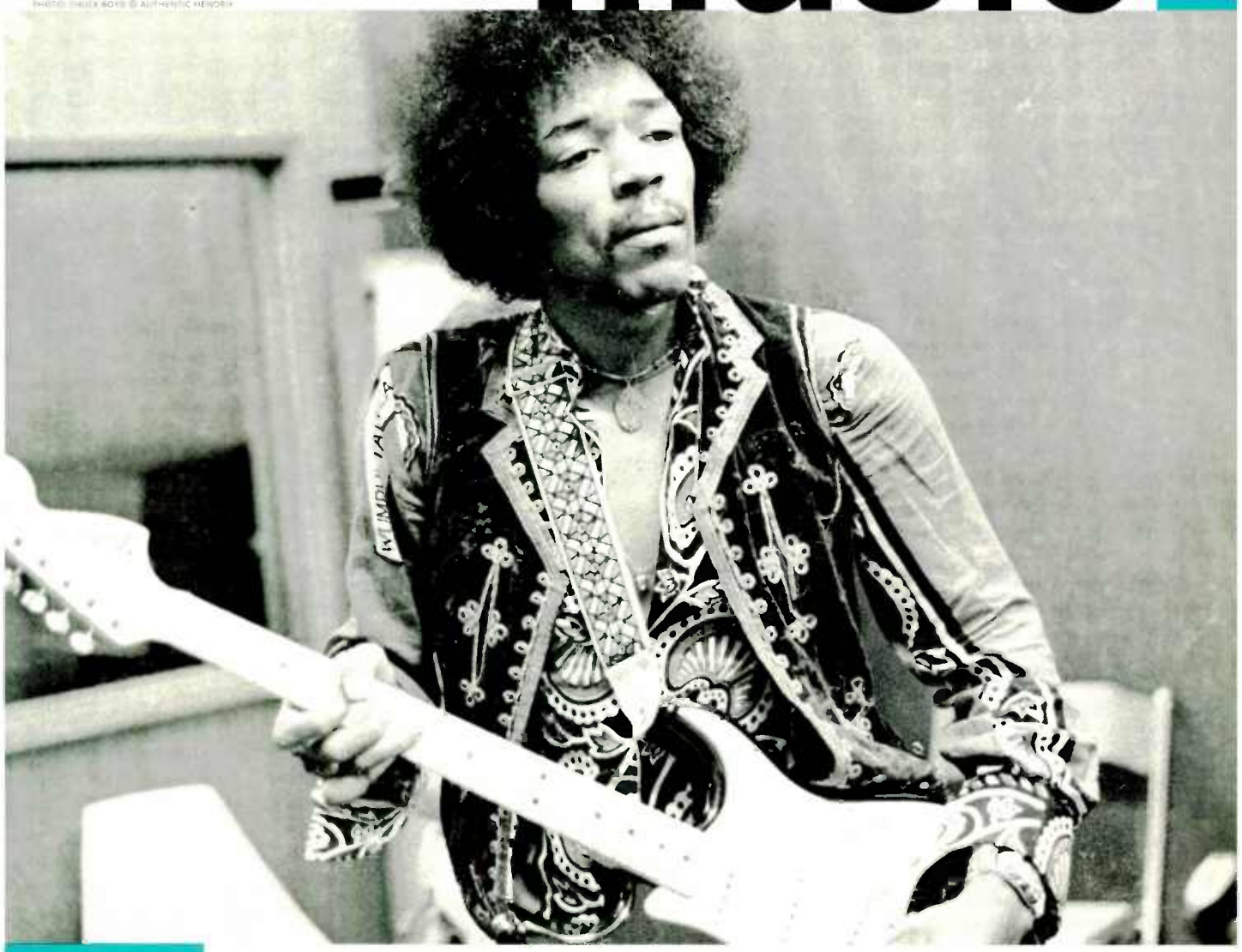


By Blair Jackson

'Valleys of Neptune'

NEW STUDIO GEMS FROM THE HENDRIX VAULTS

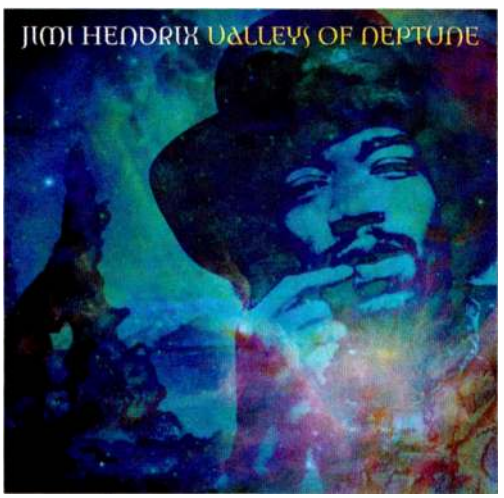
Fans of Jimi Hendrix's unparalleled guitar wizardry have a new reason to rejoice: The new Sony/Legacy release *Valleys of Neptune*, which comprises 12 rare and (mostly) unreleased studio tracks, is the most exciting "find" to come from the Hendrix estate in many years. You are to be forgiven if you have been unable to keep up with the dozens upon dozens of posthumous releases—authorized and not—that have appeared since Hendrix's death in 1970. I consider myself a serious fan and even I gave up many years ago, frustrated by the uneven quality of the releases and many overlaps. In the past few years, however, the Hendrix house seems finally to have been put in order, with Jimi's sister, Janie, as a capable curator at the head of Experience Hendrix, L.L.C., and archivist John McDermott and Jimi Hendrix's principal engineer, Eddie Kramer, spearheading what appears, on the basis of *Valleys of Neptune*, to be a sensible (and sensitive) approach to getting some gems from the hundreds of hours of Hendrix studio recordings into

our eager little paws.

The genesis of this particular project was some tapes recorded at London's Olympic Studios in mid-February 1969 and unearthed not too long ago by McDermott. "That was a great windfall," comments Kramer from his L.A.-area home. "It shows the Jimi Hendrix Experience [Hendrix, bassist Noel Redding, drummer Mitch Mitchell] at their peak—this was the last set of recordings the band did together at Olympic. It's live, it's on the floor, Jimi's singing is great, the band is playing fabulously. They're prepping for what was to become the famous Albert Hall concert [February 24, 1969]." So are they rehearsals? "I wouldn't call them rehearsals exactly; it's a lot more than that. He's trying out stuff. He wanted to hear what some of the material would sound like with different arrangements. He's experimenting. It was a test."

The year 1969 turned out to be a transitional one for Hendrix. Though the Experience would tour and record together until the end of June, Hendrix's relationship with bassist Redding was starting to unravel, which explains why on some Hendrix sessions as early as April '69, bassist Billy Cox—an old Army buddy of Hendrix's—appears instead of Redding. "In general during 1969," Kramer offers, "Jimi was interested in trying new things. He was looking for new directions after the smashing success of *Electric Ladyland* [his epic 1968 double-album], and this project [*Valleys of Neptune*] reflects that. He played with a lot of different musicians and he also did a lot of jamming in the studio. We're lucky Jimi loved to record."

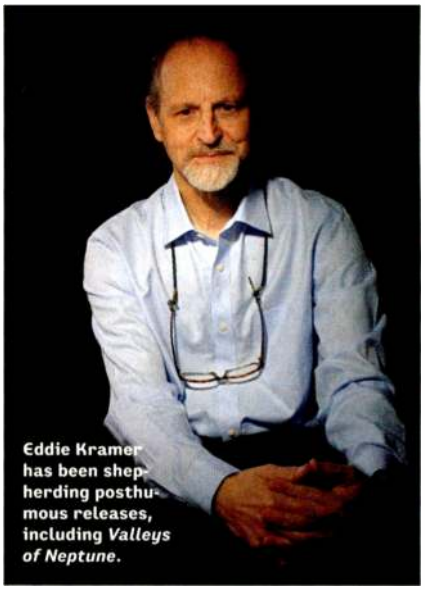
Though Kramer's association with Hendrix goes back to *Are You Experienced?* in 1967, the two did not work together much during 1969. "What would happen in '69 is, he would call me, and say, 'Hey, man, can you come up and help us out; this studio's not too together.' So I'd jump in a cab, run uptown to wherever he was working and go help him out for a couple of days, and he'd be happy and he could keep on working with someone else. Then I had to get back to my other stuff, because during that time I was building Electric Lady Studios [for Hendrix]; I was pretty consumed with that. And I was also working as an independent engineer with Led Zeppelin and various other bands."



Still, even with Kramer not around, Hendrix's recorded work was in good hands—the 1969 Olympic sessions were tracked by George Chkiantz, who'd been an assistant of Kramer's previously "and learned the way I liked to record Jimi, though obviously with his own tweaks to it," Kramer says; and the several tracks on the CD that come from Record Plant in New York City were cut by studio co-founder Gary Kellgren, "who was a fabulous engineer," Kramer says. "He was responsible for bringing me over to the States in 1968 [*Electric Ladyland* was cut at Record Plant], and we shared similarities in our approaches to recording, though he had a slightly different take on it. But the way I mixed it is the way I hear it and the way I think Jimi would have liked to have heard it." Kramer mixed at two different studios over the course of many months—at LAFX on "a lovely vintage API that's been updated and tweaked, and the stereo bus is wonderful"; and at Legacy in New York (now known as MSR Studios since its merger with Manhattan Sound Recordings last fall) on the SSL 9000J in Studio C.

Kramer had his hands full working with the variety of tapes, which ranged from 4-track to 16-tracks, and were recorded from 1967 (a song called "Mr. Bad Luck," originally intended for *Axis Bold As Love*, produced by Chas Chandler and recorded by Kramer at Olympic) all the way to 1987. Wait a second—1987, 17 years after Hendrix's death?

Kramer explains: "In '87, Chas Chandler had the tapes—he had salvaged them from Olympic—and he said to Noel and Mitch, 'Hey, do you think you guys could come and maybe top your performances on a few things?' Overdubbing was never a problem—we always looked at that as part of the process—and they said, 'Maybe we could.' And they did in some cases and maybe not in others. But what I did was—certainly in terms of Mitch's performance—I would integrate his overdub performance with his previous one; take the best bits and make one nice composite that was really very strong." Did Mitchell play the same in '87 as in the late '60s? "Not completely—it's similar ideas, and it's sometimes better in '87, other parts not. But this is where modern technology is wonderful—where I can take the best bits of both and combine them. I'm using technology that, I assure you, if Jimi were alive today, he would embrace wholeheartedly.


Eddie Kramer has been shepherding posthumous releases, including *Valleys of Neptune*.

"The stuff from Olympic was half-inch 4-track BASF LR56 or Agfa," Kramer continues, "and then we transferred to Pro Tools using the Burl Audio [B2] A-to-D converters, which I love; they're wonderful, and the reason I like them is they have transformers in them and they don't sound like A-to-D converters—they sound very analog-ish.

"Once we're in Pro Tools at 24/96, then the fun begins, because now we can address the issue of clicks and bangs and farts and whistles," he says with a laugh. "I'm a huge fan of the Waves stuff; put aside the fact that I endorse them and have my own product through them—a new set of plug-ins: the Helios and the Pie limiter. I use Waves because it's fantastic for cleaning things up. Now, when I say that I don't mean in the sense of making it sound pristine; I use it purely to make sure there are no extra pieces of junk in there that don't really help the music. I want the music to come out, but I don't want to adjust or tonally tweak Jimi's amp. I want it to be like his amp was, but better, and make it sound full and fat and in your face. So I've worked out a system that incorporates the very best of the analog and digital worlds that I feel very happy and comfortable with. I love the Millennia stereo EQ on the bus, and I have an older SSL limiter from the previous generation—before they started messing it up—and all the usual stuff: 1176s, LA-2As, Pultecs; you name it. So I'm adding compression, EQ, reverbs, but all of that is treated with respect. We mix down to tape at 15 ips Dolby SR and then I transfer it back through the Burl back into Pro Tools, so I always have both sets of mixes. My

goal is always to make it sound like Jimi's in the room with you."

Asked to pick the most challenging song on the record from a technical standpoint, Kramer immediately mentions the title track, "Valleys of Neptune." "That track is compiled from a performance he did in [September] '69 and one he did in [May] '70. It's amazing—when I put the two up together I didn't have to do much juggling at all because the '69 performance was guitar and vocal and the '70 performance was with the band and they are so close—it's the same key and exactly the same tempo. It's scary the guy could do that a year later. So it didn't take too much to sync those two together, but the challenging part was to make it all feel as natural as possible."

It does feel natural, and so do the other songs on the CD, including a few that are clearly still works-in-progress—such as the beautiful instrumental "Lullaby for the Summer," which features some superb double-tracked leads (and some creative panning from Kramer that recalls the swirling close of "House Burning Down" from *Electric Ladyland*—"I couldn't resist!" he chuckles). The version of "Stone Free"—culled from four different sessions in the spring of '69—is a definitive reading of that great song (first cut by the Experience in 1966), and the scorching live-in-the-studio takes of concert staples "Red House" and "Fire," and the Experience's jammed-out instrumental version of Cream's "Sunshine of Your Love" are amazing. Hendrix, Billy Cox and drummer Rocky Issac tackle the Elmore James blues piece "Bleeding Heart" during a late-April '69 Record Plant session, and another session from earlier in that month yields an excellent version of one of Hendrix's best-loved blues: "Hear My Train a Comin'."

The disc ends with an unfinished, wordless (but still sung) song called "Crying Blue Rain" that, as it starts out, has a little of the vibe of "Hey Joe" until it speeds up a little before the three-minute mark and then heads off to a truly wild and exciting place before the final fade-out. Clearly this is a restless musical soul on display, and this track—and others on the CD—tantalizingly point at some of the directions Hendrix might have followed in greater depth had he not been taken from us way too soon. It leaves us asking questions about what could have been—and, of course, wondering what will come next from the vaults.

"There's a library full of stuff we haven't even touched yet," Kramer teases. "The good news is there's plenty more." III

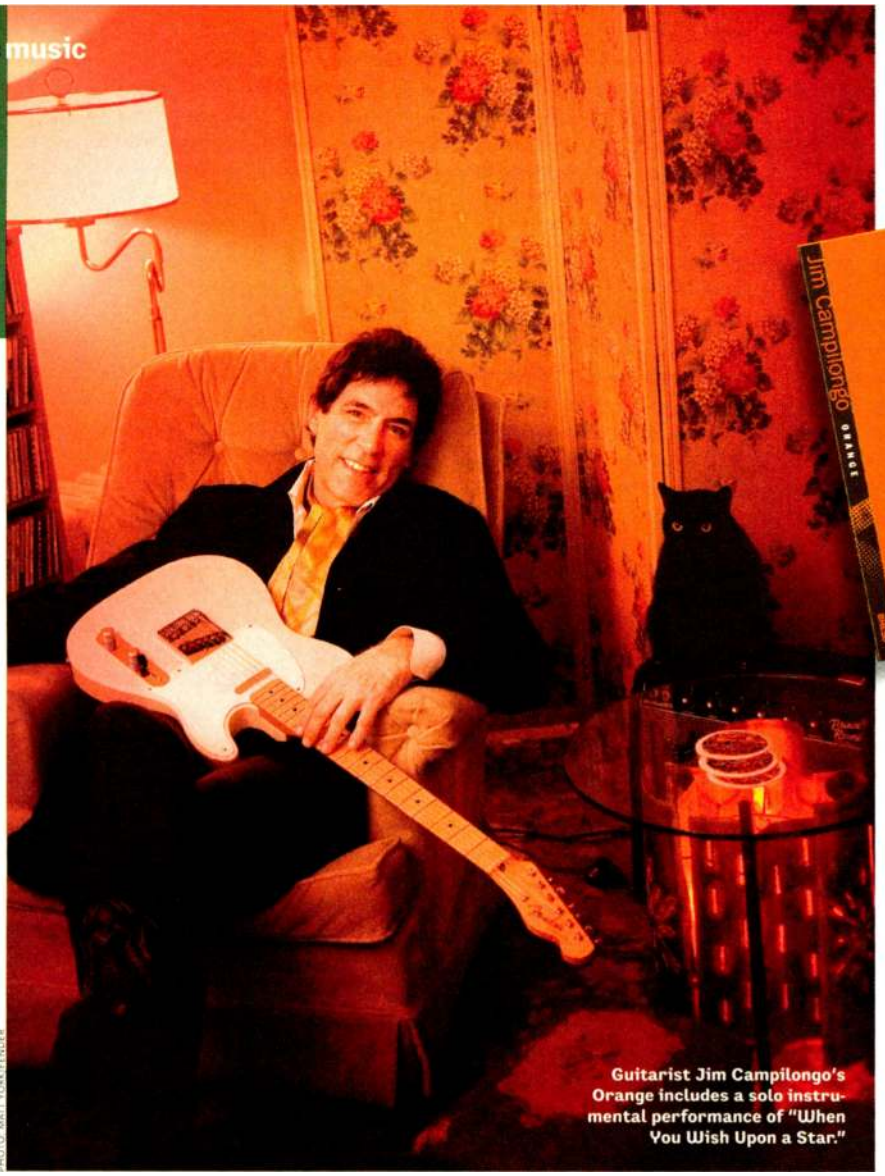


PHOTO: MATT YORK/FENDER

Guitarist Jim Campilongo's Orange includes a solo instrumental performance of "When You Wish Upon a Star."

Jim Campilongo

EXTRAORDINARY GUITARIST PAINTS 'ORANGE'

By Barbara Schultz

First, Jim Campilongo and producer Anton Fier had to agree on an approach: When they began production for Campilongo's latest mostly instrumental album, the guitarist viewed the project as a Jim Campilongo Trio record, one that would capture the vibe and the repertoire of the guys he plays with every Monday night at the Living Room in New York City.

"I had a different agenda," says Fier, the Golden Palominos drummer/frontman whose eclectic tastes and talents have led him to produce Drivin' N' Cryin', Joe Henry and others. "I wanted Jim to make a different kind of record than he'd made before. One of the first things I said to him when we started talking about this was, 'It's time to paint your masterpiece.'"

Campilongo, whose eight previous albums have shown many facets of his Telecaster mastery, and who lately plays with Norah Jones' Little Willies as well, was a bit leery of making what he calls a "business card record." "You know what I mean," Campilongo says. "It's 'Joey plays Albert King blues. Joey plays Wes Montgomery jazz. Joey does red-hot country pickin'.' I'm not putting down proverbial Joey, but I feel uneasy during those records. The records I'm usually attracted to are like: It's a rainy day, I'm going to put on Joni Mitchell *Blue*. Or it's a crazy day, I'm going to put on Miles Davis *On the Corner*. I was worried that my record would switch and sway in an unnerving way where you couldn't really hang with it. But I have to say I really feel differently now."

It's one of those intangible things, but Fier and Campilongo definitely created tracks that coalesce beautifully. From his almost Hendrix-like aggression on the opener, "Backburner," to the airy "Blues for Roy," to the bittersweet solo performance of "When You Wish Upon a Star" that closes the album, the tunes are unified by Campilongo's musical soul and character.

Engineered by Yohei Goto, *Orange* was tracked at Brooklyn Recording and One East (both in New York City). As creative recording and budgeting require these days, different studios served different purposes. Basic tracks were cut in the big Neve room at Brooklyn. Fier says Goto was the perfect engineer for the job, in part because he had previously been on staff at both of the facilities.

"The Neve at Brooklyn is two custom sides of an 8068 that are put together," Goto explains. "The right side and left side are customized differently. It's a little hard for people who use it for the first time, but it sounds great. I was an assistant there five years ago. That's why I could do things really quick, which was important because we only had three days. It's a really nice studio. There aren't many studios like that in New York anymore—the room, the mic selection, the board, the gear, big room—but we can't afford hours and hours working there."

Goto made an abbreviated schedule work by setting up extra microphones to capture all of the styles and nuances of the trio's play-

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ing. "For example, I put up two different sets of overheads [on Tony Mason's drums]," Goto says. "One pair was Coles 4033 ribbon mics—not a sensitive mic—so it's good for the hard-hitting rock sound. But they're not as good for subtle jazz music, so I had to put more sensitive mics up also: Neumann KM254s. They are the opposite—way more sensitive than the Coles to pick up the little subtle things like brushes. We let them just play it, and then later on chose which mics to use from those two overhead sounds.

"The other thing that was a challenge was we recorded [all of the basic tracks] live without headphones," Goto continues. "Everybody is in the same room, and Jim doesn't want headphones. So next to Jim is the [stand-up] bass, and it's hard to hear that to Jim when he's playing live."

Goto took a DI from the bass amp and set up a speaker in the tracking room so that the guitarist could hear Stephan Crump's bass. When it was time to mix, of course, the live recordings posed some engineering challenges because of the bleed that all the close-miking in the world can't eliminate.

"Everything is one," Goto says simply. "If you EQ the bass, it will change the sound of the drum and the guitar because everything is one."

Campilongo: "I don't like to wear headphones when I play."

PHOTO: ARTHI KRISHNASWAMI

But the feel of recording as one was exactly what Campilongo was after: "I don't like to wear headphones when I play. I don't want to re-create this thing we've done at 12:30 at night with a great sexy audience watching us, and we're playing and it feels like we're all in it together, and then go into a recording studio at two in the afternoon and put on headphones and try to get the same kind of performance. It's a tough thing to do."

Goto transferred the tracks from the Brooklyn sessions into Pro Tools, and then brought them to Matt Wells' One East, a studio Fier says he really appreciates because it is a rare "affordable Neve room, with one of the best control rooms I've heard. You can listen very quietly and still hear everything accurately."

At One East, Campilongo tracked his solo pieces ("Awful Pretty, Pretty Awful," and "When You Wish Upon a Star") and two duets with guitarist Steve Cardenas, and overdubbed some guitar parts. This was also where Goto recorded Campilongo and singer Leah Siegel's dark and beautiful performances on two of the cover tunes that Fier helped select—The Stones' "No Expectations" and Iggy and the Stooges' "No Fun"—and where the album was mixed.

"Selfishly speaking, I like records that go on a journey," says Fier. "Jim had already made records documenting the current bands he had in the studio, and I thought it was time for him to do something different. What makes this work is Jim has his own voice. He has his own sound, which, as a musician, is what one strives for one's entire life." III

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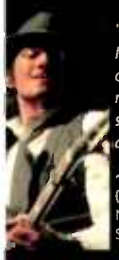

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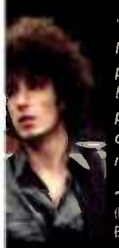

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PHOTOS: DARIUS PANAHPOUR

Yo-Yo Ma performing with the Colorado Symphony Orchestra and the Neumann U67 (foreground)

By Candace Horgan

Yo-Yo Ma and the Colorado Symphony Orchestra

CLASSICAL BROADCAST BENEFITS PUBLIC RADIO

When the Colorado Symphony Orchestra (CSO) began to feel an economic pinch this year, promoters came up with several novel ways of addressing potential budget shortfalls. In addition to across-the-board pay cuts, the CSO teamed with Colorado Public Radio for a three-day pledge drive that culminated with a concert by acclaimed cellist Yo-Yo Ma and the CSO.

CPR broadcast the concert live to 22 radio stations in Colorado in DTS Neural 5.1 surround. All told, the drive raised more than $600,000. For the broadcast, CSO chose independent consultant Mike Pappas to oversee the recording; Pappas has previously worked with the orchestra and often works with KUVO, Denver's 24-hour jazz public radio station.

Pappas has been recording since "I sold my car and bought a Scully 280 2-track, ¼-inch tape recorder that I used to carry in a flight case and lug around to gigs," he recalls. "It weighed like 90 pounds. I had 14-inch reels on it so I could actually record for an hour."

Mike Pappas mans the DiGiCo board while David Day and writer Candace Horgan look on.

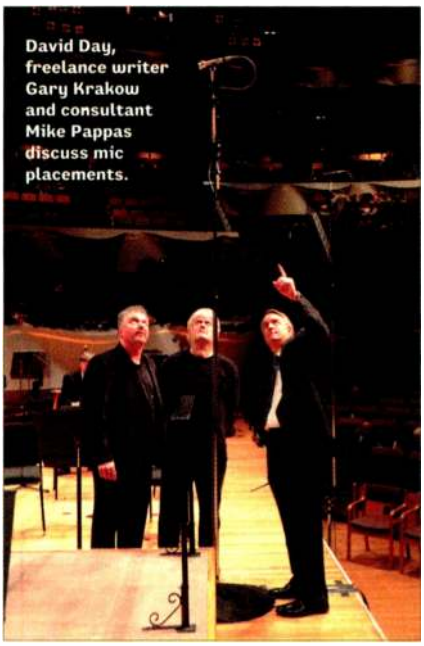
"[CSO] called us a couple years back to do 10 days of Beethoven, so we loaded in on May 28 and were out on June 13," he says. "There were usually two performances a day, or a rehearsal and a performance. None of those rehearsals and performances were the same, so you'd rehearse one thing and they'd be performing something different that night. I think we had, at one time, 12 different sets of tape marks on the hall floor as to where microphone moves were for specific events. We had to take the stage apart from the morning rehearsal and then put it back up for the evening performance."

The symphony's Boettcher Concert Hall is idiosyncratic, with several problems an engineer has to consider when setting up a recording. "The hall is in a really weird spot," Pappas says with a laugh. "Half the audience is behind you, and none of the seating areas are symmetrical. It's hard to find a centerline in that room. It has quirks, like players on the right hand of the stage can't hear players on the left hand of the stage. All that plays into the gear we use and how we get it to work."

Classical Miking Scheme

On a tour of KUVO, Pappas' assistant Will Barnette unlocks the gear cabinet and reveals a Neumann-lover's paradise, with M150s, U87s, a U67 and more. For the Yo-Yo Ma concert, Pappas turned to a prototype Neumann microphone, a KM133D digital model. The mic uses an M50 titanium capsule, which Pappas says is ideal for many classical applications.

"It's mounted in a sphere, so what happens is at low frequencies, the microphone is an omni, and as we get above 1k, the mic develops a pattern and it's cardioid, and then above 16k, it's a hypercardioid," he says. "What you can do with it is use the fact that it's an omni at low frequencies to integrate some of the room tone. The other cool thing about omnis is they are extremely flat in their frequency response. Those capsules on those digital mics, or the M150s for that matter, are 3dB down points at 2.5 Hz. We have lots of low frequencies, and that's good because you don't want to have roll-off that's going to look back anywhere into the audio passband. You want to keep that as far out of the audio band as possible, because the minute you have a roll-off you have a phase shift. Omnis are cool for that, but the problem with omnis is they are omnis, so you want something with some directivity at high frequencies because it allows you to aim the mics into the orchestra and use that directivity to help bring out certain sections of the orchestra."



David Day, freelance writer Gary Krakow and consultant Mike Pappas discuss mic placements.

Pappas used a total of five in front of the stage, using tape to mark the placement of each to within a quarter of an inch as they had to take each mic down after each morning's rehearsal. The mics were placed 10 feet, three inches above the stage, aimed slightly down at a five-degree angle. Barnette and Joey Kloss helped Pappas with mic placement and removal after rehearsal.

The digital microphones have an NMC DMI-8 8-channel control box that feeds into a Macintosh computer running RCS software. The control box provides phantom power, in this case 10 volts at half an amp, because the mics have a gain stage, A/D chip and DSP chip inside the bodies. From the computer, via the RCS software, Pappas could set many parameters, including compression and limiting, though he used neither. The control box also lets you set the sample rate, which in this case was 24-bit/44.1 kHz.

The reason for the lower sample rate is because the DiGiCo DS-00 broadcast console is limited to 44.1. Pappas has a new SD-7 on order, which will be configured to record up to 24/192 and have built-in Neural Surround. For the CSO broadcast, the DS-00 was used to route the signal.

"We have every imaginable facility on the console, but we don't use it," Pappas says with a laugh. "For big symphony projects, we don't use any EQ, dynamics processing or the eight stereo reverbs. It's a big level control and router because we route stuff to get it to the broadcast guys."

In addition to the KM133Ds, Pappas used a stereo dummy head, the KU100 nick-named "Fritz," in the back of the hall hanging from the ceiling 10 meters above the floor to create the surround rears. "Fritz is an analog box and has standard [analog] outputs," Pappas says. "We try to not run analog mic cables very long. The cabinet right above Fritz is a Grace 802 unit with a built-in A/D converter that outputs AES. We feed that AES signal down 400 feet of Cat-5 cable."

In determining how to mike Ma's cello, Pappas had considered employing a KM140 figure-8 in cardioid in a mid-side configuration so that he could control the stereo width. However, his assistants persuaded him to use a Neumann U67 running into a Grace 802 unit in the stage rack above the DiGiCo controller.

When mixing the show, Pappas had a hard-right/left pan of the outside microphones, and the middle three were mixed Lc/C/Rc with the U67 mixed just left of center. Fritz was used for Sr and Sl.

Getting the Right Cables

Not many engineers are concerned with things like audiophile-grade cable, but Pappas has 3,000 feet of Cardas microphone cable for his setup. "We did studies of cable capacitance and the microphones' ability to drive live cables," Pappas says. "Where this came into play was with applause on live recordings. Typically, you'd have 150 to 200 people and it sounded great; you get to 1,500 or 2,000, and it sounds like crushed pink noise.

"We came to the conclusion that it's not a frequency-response problem or a filtering issue; the microphones run out of current to drive a load so you get this insidious slew-rate limiting distortion," he explains. "What's happening is the amplifiers in the microphones can't deliver enough current to charge the capacitance at a high level with high-amplitude signals. Once we figured that out, it was an epiphany. We have an Excel spreadsheet that allows you to enter the parameters of a microphone and dial in your cable specs and how much capacitance it has per foot, and it will calculate how much cable length

DIGITAL MIXING

M7

www.yamahaca.com

WE'VE TAKEN THE WORK OUT OF NET ING

Leave those bulky copper snakes behind. Yamaha's newest addition to the M7CL family, the M7CL-48ES includes an EtherSound interface that connects to up to three SB168-ES stage boxes via a single CAT5 cable to provide simple plug-and-play operation. Offering 48 remote control inputs and 24 outputs, the stage box units assist in achieving enhanced audio quality by moving mic preamps closer to the stage. The console's own 8 omni inputs and outputs bring the total to 56 in/32 out alongside 3 MY-card slots utilizable for personal monitoring systems, recording, plug-ins and more. With remote I/O easier than ever, the M7CL-48ES encourages little work and lots of play.

Adding to our latest arrival are Version 3 features that are not only compatible with the M7CL-48ES, but also the M7CL-32 and M7CL-48. Upgrades include:

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- VCM effects (Comp 276, Comp 260, Open Deck, EQ601)
- New recall safe parameters (input patch, output patch, direct out patch, insert out patch)
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- And much more. For a complete list of new features, visit www.M7CLV3.com

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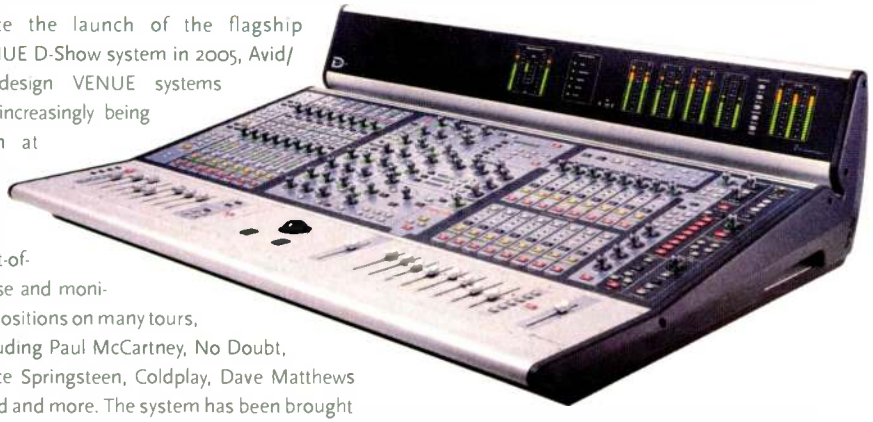
SOUNDCHECK

Five Years and Going Strong



Since the launch of the flagship VENUE D-Show system in 2005, Avid/Digidesign VENUE systems are increasingly being seen at front-of-house and monitor positions on many tours, including Paul McCartney, No Doubt, Bruce Springsteen, Coldplay, Dave Matthews Band and more. The system has been brought into the inventory of SR companies such as Clair Global, Sound Image, Firehouse Productions and Solotech, and installed in clubs like The Knitting Factory.

To commemorate this milestone, Avid is offering sound professionals an opportunity to trade in their older analog or digital mixing boards and receive up to a 20-percent discount on new VENUE systems.

Nine Inch Nails front-of-house engineer Peter Keppler said this about using the VENUE system when *Mix* caught up with the tour a few years back: "Nine Inch Nails was the first time I worked on VENUE. And with Nine Inch Nails, I'd used the HDx option on the console and multi-tracked every night's performance direct to Pro Tools. The setup for that is so easy—three cables! When [AFI] asked me to do this tour, I said, 'Yes, but I really want to take out this console.' They talked about doing recording at the stage and having [monitor engineer Mike "Porkchop" Souder] look after all of that, as well as everything else he has to look after. And I said, 'If you want to take me and take the console, I can do the recording.' I can't say enough good things about the VENUE. It took a couple of days to really get the feel of it—it feels a bit different from a lot of other consoles—but it sounds amazing. I wouldn't want to use anything else."

tour log

Jumping into Porcupine Tree's next run of U.S. dates, front-of-house engineer Ian Bond tells *Mix* what's in his setup.

How much gear are you carrying?

We always carry our own backline and monitor system. The monitor system comprises a Yamaha 02R96 for control, a pair of wedges, a drum-fill sub and wireless in-ears. We also carry our own stagebox and splitter system, plus all mics and DIs. All this is tied into the house line system via a fan-out of XLRs direct to the house stagebox.

Ian Bond (right) is FOH for Porcupine Tree (below)

PHOTO: DIANA NITSCHKE

How do you have your Midas board set up?

I use just one scene on the PRO6 and run "analog." I mainly mix on VCA groups, but as the Midas has an "Area B" option, I leave all four vocal channels open at my right hand. The left-hand side of the console becomes somewhere to make fine adjustments to individual channels. I also have several POP Groups set up so I can access FX returns, guitars and vocals (locked to Area B).

What is your go-to piece of gear?

I have two: an Audix OM7 vocal mic and a TC Electronic D2 delay unit.

Do you have a specific mixing technique for this band?

Not really—just keep things simple and let the band control all the dynamics.

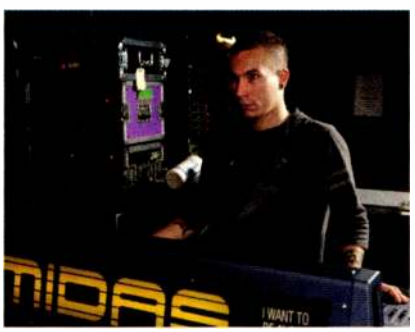
When you're not on the road, where can we find you?

I have a sound rental company, IPB Audio, looking after local and national acts, as well as one-off shows.

fix it

The Noisettes Monitor Engineer Nahuel Gutierrez

Having fewer faders was never an issue working with the POP Groups [on a Midas PRO6], which were my main way of mixing. And I set up one group of four V.I.P. channels in Area B so I could have each of the four vocals there all the time, with everyone pre-fader. This meant I had very quick control of the send for each performer. The console also has two solo buses so I was able to cue wedges or IEMs independently from each other and listen to any channel or either bus with the click of a button. A very handy feature is assignable rotary controls, allowing you to permanently assign a single parameter from any channel to a knob. I used this for the threshold of my gates, plus a couple of gain controls that I always wanted to have handy. It's a great thing being able to grab a particular control for a particular channel, and I was able to adjust the threshold of my gates just by looking at the metering page and moving the knobs.



Solotech Hits the Strip

At the grand opening, guests enjoy one of the many rooms in Solotech's new Las Vegas digs.

Canadian production company Solotech has opened a new facility in Las Vegas, where the technology providers can more effectively support client venues such as the Colosseum at Caesars Palace and the Cirque du Soleil KÀ theater at MGM Grand.

"We worked on the opening of some of Las Vegas' major showroom projects," says Pierre Leduc, VP and general manager of Solotech U.S. Corp. "With this new facility, we'll continue to support the region's installation projects, including the Elvis showroom in City Center and the Kodak Theater in L.A., offer local rental services and have a storefront to meet the supply needs of local A/V professionals."

"The idea with the Las Vegas expansion is that we can create any production virtually—wherever you are, we can make something for you," adds Richard Lachance, Solotech's VP of development. "Within five years, Las Vegas will be bigger than Montreal, so we're laying the foundations for that forecast. We don't see ourselves as a typical touring company or audio-visual provider per se. We tend to think and operate as a full-service provider of multiple media technologies. For a production to be successful, it's critical that the show's entire technical infrastructure be designed and supported with the same degree of integration."

Solotech puts a heavy emphasis on ongoing technical development opportunities for its worldwide staff of more than 500 A/V professionals. "We deal with a lot of different technologies," says Lachance. "And to do it right, you need to have highly competent people to run them. We're much more than just a rental company. Our gear doesn't go out without seasoned technicians who will maximize the performance of the products. These talents are the foundation of our success and will continue to play a key role in Solotech's growth."

load in

Jann Arden and band are using Sennheiser ew 300 IEM G3 wireless personal monitoring systems; Arden sings through a Neumann KSM 140 mic. Vancouver-based Gearforce provided the L-Acoustics KUDO rig.

Front-of-house engineer **Ken "Pooch" Van Druten** joins **Waves Audio** as the company's Live Division's product specialist...**Loudness Sonorizacao** (Brazil) has joined **L-Acoustics'** K1/KUDO Pilot Program, adding KUDO, SB28s, LA8s and LA-RAK units to its inventory...**Templeton Sound Systems** spec'd **WorxAudio** Trueline and Wave Series gear for a refit of **South Aiken Church of God's** audio system...**PRG** has added **Riedel** RockNet digital audio network equipment for the 2010 **Detroit Auto Show**...Audio systems provider **Audioco** (Mexico City) recently purchased a **Soundcraft** Si3 console, which was first used at the Metropolitan Theater for pop artist **Maria Jose's** performance.

road-worthy gear

Movek myMix

Movek's myMix, a networked personal mixer/multitrack recorder, can create up to eight independent stereo mixes and up to 18 tracks of multitrack recording to an SD card. Musicians make their own personal cue mix using a simple interface with color LCD screen where all input channels appear as separate named channels with control over volume, tone, pan and effects. Line-level outs and a stereo 3.5mm jack can output to headphones, in-ear monitors, a main P.A. or stage wedges. Systems with more than two units connect via standard Ethernet switches.

www.movek.com

Crest E-Lite 1800 Amps

The new E-Lite 1800 and E-Lite 1800 DSP power amplifiers from Crest feature 900 watts per channel, weigh less than 10 pounds (the *non*-DSP version is only 7.5 pounds) and can run in parallel, stereo and bridged modes. Onboard DSP amplifier on the E-Lite 1800 DSP offers

variable delays (up to 120 ms per channel), adjustable crossover, limiting, parametric EQ, HF driver EQ, four user-presets and lockable security settings.

www.crestaudio.com

RCF TTL55-A Line Array

The flagship TTL55-A from RCF is a high-power, three-way, active line array system that's scalable from a few modules to full touring rigs. Each has 3,500 watts of networked, DSP-controlled amplification driving six neodymium transducers—dual 12-inch woofers in a clamshell configuration, flanked by a 10-inch midrange and three 1.5-inch HF drivers—for 143dB max SPLs. Matching stage wedges, rigging hardware and the TTS56A double 21-inch, 6,800-watt subwoofer complete the package.

www.rcfaudio.com

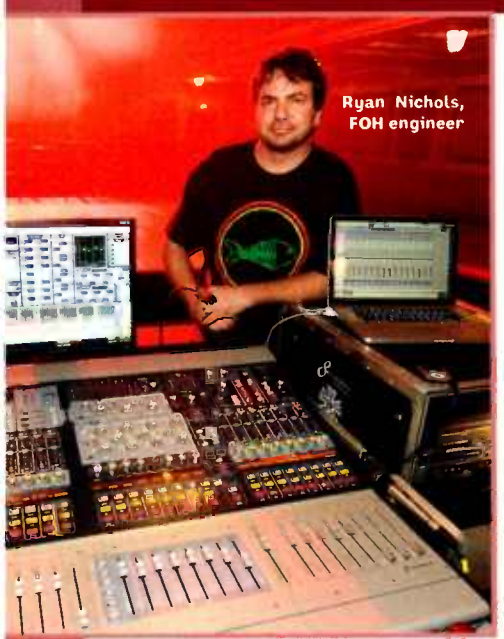
ALL ACCESS

Photos and text by Steve Jennings

SWITCHFOOT

At the end of their set at the Regency Ballroom, from left: Switchfoot's Tim Foreman, Chad Butler, Jon Foreman, Jerome Fontamillas and Drew Shirley

Fuzzed-out rockers Switchfoot may have taken a new path for their latest, *Hello Hurricane*—a new studio HQ, new label and a return to their San Diego roots—but onstage, they are as effervescent and crowd-pleasing as they were the first time they stepped under the stage lights 10 years ago. *Mix* caught up with the multimillion-selling rock band at San Francisco's sold-out gig at the Regency Ballroom.



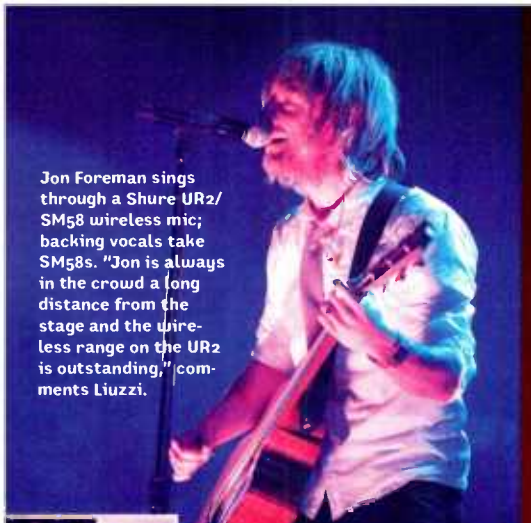
Ryan Nichols, FOH engineer

Ryan Nichols, front-of-house engineer/production manager, mixes on a Digidesign Show Profile, citing its small footprint and compatibility with Pro Tools for recording as perks. "You can't knock the variety of plug-ins," he adds. "We play the new album, *Hello Hurricane*, in its entirety for the band's first set and [the board] makes my job a lot easier to be able to duplicate the exact plug-ins used in the studio. I have my FOH setup on files for just about every digital console. We travel overseas quite a bit and it isn't always practical to demand a specific desk. As long as I can load my file, I'm good to go. It's nice to know that I can carry multiple consoles on an airplane in my backpack."

For effects, Nichols taps a Fairchild 660 on the bass and acoustic, Digidesign Smack! on vocals and Crane Song Phoenix Luster on a variety of channels, "mostly to add warmth in this digital domain," he says. "I stick with pretty basic 'verbs and choruses for the vocals and drums, with the Line 6 Echo Farm delay for specials."

The P.A. is house-provided (all other gear is provided by 8TwentyFour Productions in Saratoga Springs, N.Y.). "Having a different P.A. every day definitely makes it a challenge to have consistency with my mixes, but that is what keeps me young! The band only uses in-ears and a single 18-inch sub for the drummer that we carry. In a lot of venues, I use house wedges for fills for the fans down front. Not having wedges leaves a hole in the coverage for the vocals and direct instruments, and those are the biggest fans so you have to take care of them."

As for Nichols' mixing style, keeping vocalist/guitarist Jon Foreman's voice on top is a crucial element. "I have never been a mixer that tries to emulate the album; I always felt that the fans can go home and listen to the record; let's make the live show its own event."

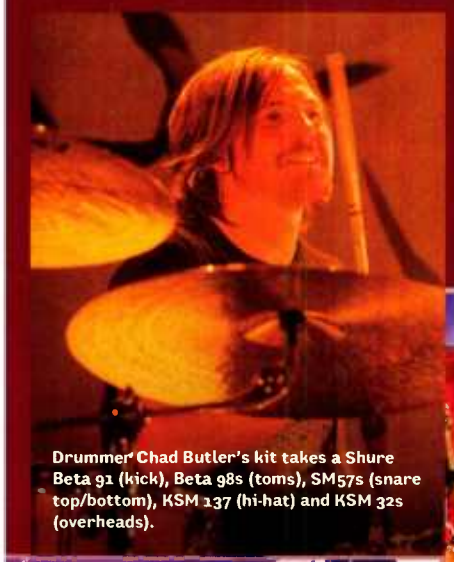


Jon Foreman sings through a Shure UR2/SM58 wireless mic; backing vocals take SM58s. "Jon is always in the crowd a long distance from the stage and the wireless range on the UR2 is outstanding," comments Liuzzi.

Jerome Fontamillas' keyboard setup comprises a 73-key Rhodes Stage Piano and a Korg M3 keyboard. Through the Rhodes, he runs a Line 6 Echo Park delay pedal and a Visual Sound Route 808 distortion pedal. For added effects on the Korg, he runs an extra line through a Korg Kaoss Pad 3. He plays through an Orange AD30 2x12 Combo miked with an SM57.

According to Liuzzi, there are two Shure 515 push-to-talk mics onstage: One is set up behind Jon Foreman's amp (pictured) and one at the drums for the band to communicate with each other and with the monitor engineer without being in the P.A. during the show.

Jon Foreman runs a TopHat King Royale 2x12 combo and a Line 6 X3 Pro for both electric and acoustic guitars. "He tries to keep it simple so he can focus on singing and interacting with the crowd," says guitar/bass tech Chris Beaty. "It's miked with a SM57 and has a direct line, as well."



Drummer Chad Butler's kit takes a Shure Beta 91 (kick), Beta 98s (toms), SM57s (snare top/bottom), KSM 137 (hi-hat) and KSM 32s (overheads).

Guitar/bass tech Chris Beaty

Drew Shirley (guitars) is using a 65 London Head and a 1950s Supro Super, both through a 65 cabinet with 2x12-inch Pre Rola Celestions. According to guitar/bass tech Chris Beaty, each speaker is miked with an SM57. "Drew is our effects wizard—always trying to replicate the sounds from the record through his rig and arsenal of pedals," Beaty says. "He has two pedal boards: The one on the ground comprises an Ibanez Tube Screamer TS808 Keeley Mod, JHS Bun Runner Custom Made OD and Fuzz, Line 6 Delay DL4 JHS MOD, Electro Harmonix Holy Grail Reverb, [Radial] Tonebone Switchbone amp switcher, Aspect Design Labs Switchbox and a Boss TU-2 Tuner. There is one up in his guitar rack so he can affect with his hands. That board comprises a Menatone Pleasure Trem 5000, Korg Kaoss Pad and an Ibanez Analog Delay."

Monitor engineer Michael "Miggs" Liuzzi (who also does double-duty as drum and keyboard tech, as well as stage manager) mans a Yamaha M7CL, using few plug-ins—mostly light compression on a few vocals and the snare drum. "The guys don't like a lot of processing," he explains. "They like everything wide open and 'live'-sounding in their ears. We use Ultimate Ears UE11s; they sound amazing."

Bassist Tim Foreman plays a Lakland Decade model run through a Line 6 Lowdown HD750 bass amp through a Gallien Krueger bass cab; he also uses a Line 6 M9 Stompbox Modeler pedal.

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A Designs **NAIL Compressor**

The 2-channel NAIL Compressor ($TBA) from A Designs (www.adesignsaudio.com) features a hybrid tube and solid-state design with all the compression controls you'd expect, plus a dual adjustable threshold. This lets users combine a hard and soft approach for some interesting and unique compression effects. The two-rackspace unit also features a wet/dry control for parallel compression and comes with custom-milled knobs and faceplate, switchable LED meters, adjustable sidechain filter and in/out switches for each channel.

Aural Luxury

Ultrasone **Edition 8 Palladium**

Edition 8 Palladium ($1,699) from Ultrasone (www.ultrasone.com) is a luxurious closed-back headphone incorporating Ultrasone's latest S-Logic™ Plus technology. To raise the bar, Ultrasone adorns the outer ear cups with palladium, which limits tarnishing and offers increased durability. The embossed, high-tech ceramic inlay ear cups are individually stamped with a serial number. Frequency range is 6 to 42k Hz at up to 96 dB, supplied by 40mm titanium-plated drivers. It ships with a leather carry bag and a 12-foot extension cable.

Portable Plug-In Player

Peavey/Muse Research **MuseBox**

Peavey (www.peavey.com) and Muse Research (www.museresearch.com) teamed up to create MuseBox ($1,199 MSRP), which lets musicians and engineers (studio and live) take software-based synths, sounds and effects with them wherever they go. MuseBox's compact 2U half-rack design is portable, versatile and built for the road, made specifically to run software plug-ins at pro-quality 24-bit/48kHz. A CF card slot provides instant access to new software synths and effects. MuseBox comes standard with 1 GB of RAM (expandable to 2 GB) and is equipped with a fast-loading 4GB solid-state system disc module (expandable to 8 GB). An optional 250GB laptop hard drive offers added storage. MuseBox ships in spring 2010.

A New Classic

Telefunken **AR-51 Microphone**

Mimicking mics of the past and using the same circuit design as the Telefunken ELA M 251E, Telefunken's (www.t-funk.com) new AR-51 ($1,995) uses a vintage NOS tube and features a globally sourced power supply and capsule. The AR-51's circuit board is designed for superior current handling, permitting the amplifier to have full access to the necessary power for handling low-frequency and transient information. The AR-51 employs the same European-manufactured output transformer found in every ELA M 251 E built since 1960.

Groundbreaking I/O

RME **Fireface UC Interface**

Based on a newly developed RME (www.rme-audio.de) Hammerfall core, the RME Fireface UC ($1,499) provides low latencies even with multiple audio channels, breaking performance restrictions of typical USB audio interfaces. The 36-channel (18 inputs/18 outputs) interface features two digitally controlled, balanced microphone inputs; eight analog I/Os; ADAT I/O; optical S/PDIF I/O; two MIDI inputs and outputs; and word clock. The UC operates at up to 192 kHz on all I/Os, and features the TotalMix 648-channel mixer with 42-bit internal resolution. Platform support includes Mac OS X, Windows XP, Vista and Vista 64 with full ASIO multiclient operation of WDM and ASIO 2.

Remotely Yours

Prodigy Engineering **Preamps**

Launched at NAMM and distributed by FDW, Prodigy Engineering (www.prodigy-eng.com) specializes in digitally controlled, high-performance analog products. Anima ($6,000 MSRP) is a rackmount 8-channel remote-control preamp. Taking control to the next step, Bella ($975) is a single-channel mic pre in the popular API 500 Series module format, but adds a front panel USB port for remote control. Both feature a minimalist design with relay-stepped gain control and I/O transformers, mil-spec parts and control integration with DAWs such as Logic and Pro Tools, and control surfaces like ICON.

Powered Precision

KK Labs **D8 Studio Monitor**

A new company founded by acclaimed speaker designer Keith Klawitter, KK Labs (www.kklabs.net) announces the D8 ($5,074/pair), a powered studio monitor that includes DSP/Ethernet control with either analog or 24-bit/48kHz AES/EBU digital audio input connections. The two-way design features an 8-inch LF driver and a 1-inch inverted-dome titanium tweeter. The D8's Acoustic Cabinet Control™ (ACC) design aligns and tunes the low frequencies for a linear sound with quick transient response.

Able-Bodied Modeler

IK Multimedia **AmpliTube 3**

AmpliTube 3 from IK Multimedia (www.ikmultimedia.com) is a major upgrade of the platform that offers more than 160 pieces of gear, including 51 stomp boxes and effects, 31 amplifier/preamp/power sections, 46 speaker cabinet models, 15 high-end stage and studio mics, and 17 post-amp rack effects. A slick GUI upgrade allows the movement of processors and mic positions with a simple mouse drag and drop. The open architecture allows the user to add more packages as needed, including AmpliTube Fender and Ampeg SVX. Other improvements include 70 reworked models within the AmpliTube Metal and AmpliTube Jimi Hendrix package, a new collection of bass gear models and a new preset-management and keyword system for better organization and recall. Prices are $349.99 (new), $269.99 (crossgrade) and $199.95 (upgrade).

Hi-Def Performer

Earthworks **SR40 Microphone**

The SR40 ($1,295 single; $2 690 matched pair) from Earthworks (www.earthworksaudio.com) boasts a near-perfect cardioid polar pattern, acoustic input rating of 145dB SPL and a 30-40k Hz frequency response. The SR40 also features extremely fast impulse response, short diaphragm settling time and a sturdy build fit for either studio or live use. The SR40 comes in a black finish, requires phantom power and has an optional screw-on windscreen.

Portable Multitracking

Tascam **DR-680 Recorder**

The DR-680 ($TBA) multichannel recorder from Tascam (www.tascam.com) can record up to eight tracks to solid-state SD card media at 96kHz/24-bit. Six mic inputs provide phantom power and 60 dB of gain while an additional simultaneous digital S/PDIF source can be added for full 8-track recording. Inputs can be monitored using a built-in mixer with level and pan controls for each channel via a built-in speaker or headphones. The DR-680 records stereo audio at 192kHz/24-bit and up to four channels of MP3 audio. Two recorders can be connected for up to 16-track recording on battery power.

Valved and Versatile

Palmer **PDI-CTC Tube DI**

Short for Palmer Direct Injection-Classic Tube Circuit, the Palmer (www.tsidistributing.com) PDI-CTC ($999.99) is designed with the shortest possible signal path from input to output. The unit incorporates an ECC83/12AX7 and an ECC82/12AU7 tube, as well as four adjustable wideband filters for a wide range of tone control. Either mic or line-level balanced XLR outputs, each with a dedicated ground lift, provide access to the hi-Z input. In addition, Palmer supplies both parallel and buffered 1/4-inch unbalanced outputs on the front panel.

Big Sound, Small Price

FabFilter **Micro Plug-In**

FabFilter's (www.fabfilter.com) Micro ($22) plug-in promises filtering from creamy smooth to raw self-oscillating madness at a flick of the Peak knob. The built-in envelope follower offers more creative filter effects by letting the user modulate the filter cut-off frequency, depending on the amplitude of the incoming signal. Separate input and output gain controls simplify increasing or reducing the internal filter saturation by adjusting the level of the incoming signal before it hits the filter internals. Other features include fine-tuned knobs and controllers, interactive MIDI Learn, undo/redo and A/B switching.

Workflow Enhancement

Minnetonka **AWE 1.5 Software**

Minnetonka Audio (www.minnetonkaaudio.com) has upgraded its AudioTools AWE with a bevy of new features, including Snow Leopard compatibility. The engine features more than two dozen different signal and file-processing functions, including an Output Sets feature, which allows a single interleaved source file to be de-interleaved, processed through a complex DSP chain including VST plug-ins and then delivered as multiple output files in multiple formats simultaneously. Version 1.5 speeds surround sound jobs with improved multichannel I/O handling and support for upmixing plug-ins that generate multiple output files from stereo sources. The upgrade is free for existing users or $795 new.

Unbreakable Suspender

Rycote **InVision USM**

The Rycote (www.reddingaudio.com) InVision USM ($119.95) microphone mount is based around the "U"-shaped lyre suspension used in the company's existing InVision range for smaller-barrel microphones. The InVision USM will fit any mic diameter that measures from 18 to 55 mm, including large-diaphragm models and those with flat-sided and tapered barrels. With no elastic or rubber parts, the unbreakable USM promises 12 dB more isolation than elasticized mounts. Another version designed specifically for Neumann TLM Series mics is available for the same price. III

By Michael Cooper

Retro Instruments 2A3 Passive Equalizer

Vintage Meets Modern in This Sweet-Sounding Tone-Shaper

When Retro Instruments set out to design a passive equalizer that captured the sonic character of the vintage Pultec EQP-1A3, the company didn't strive to create an exact knock-off. Instead, the designer used modern components, included a subsonic filter and added more high-frequency boost filters. The result, the Model 2A3 program equalizer, combines the sweet sound of vintage gear with the enhanced flexibility that comes from a modern design.

The 2A3 features Pultec-style filters and a switchable highpass filter.

Boost and Cut

Passive filters don't rely on amplifiers to effect tonal shaping; rather, they use capacitors and inductors in separate boost and cut circuits to shape response in specific frequency bands. Aficionados of high-end passive EQs (including myself) cite their smooth, sweet and highly musical sound. The downside to passive circuitry is an inherent loss of level: 40 dB in the 2A3. The 2A3 uses readily available 12AX7 and 12AU7 tubes (two each) to amplify the signal back up to unity gain (+4 dBu with all frequencies nulled). Other tubes may be substituted, with some internal adjustments.

One counter-intuitive use of vintage Pultec equalizers—and the 2A3—is simultaneous boosting and cutting at the same bass frequency. The boost and cut filters have different slopes and bandwidths so simultaneous boosting and cutting causes a "bass shift" response: The lower-bass band is boosted while frequencies in the adjacent higher band (the middle- to upper-bass or lower-midrange band, depending on the frequency chosen) are cut. The result is thunderous lows and Windex-clear mids.

The dual-mono 2A3 has two boost and two cut frequency bands for each of its channels. Separate rotary boost and cut controls for the lows always affect a common frequency, switchable between 20, 30, 60 and 100 Hz. Your choice of boost and cut frequencies for the highs, however, can be different from one another. You can boost either 1.5, 3, 4, 5, 6, 8, 10, 12, 14 or 16 kHz and cut either 5, 10 or 20 kHz. You can also continuously vary the bandwidth of the high-frequency boost circuit from narrow to broad.

A global bypass for each channel defeats the filters, but not the tube amplifiers or previously mentioned subsonic filter. That filter (an HPF) can be set to 40 or 90 Hz (or completely bypassed) to prevent the buildup of too much subsonic energy. When activated, modest overshoot causes noticeable boost at the corner frequency. Activation also provides transformer coloration as the 2A3's XLR I/Os (on the unit's rear panel) are transformer-balanced.

The unit's boost and cut controls are all continuously variable and are accompanied by 100-position knob scales for exacting manual recall. This feature, plus more than 70 dB of channel separation and the ability to handle whopping +26dBu I/O levels, suggests primary use on a mix bus, which is where I put the 2A3 to the test.

Passive Pleasures

Activating the 40Hz subsonic filter on a contemporary country mix lent a gentle boost to subterranean lows, making bass guitar and kick drum thump nicely. The attendant transformer coloration softened the program's midrange frequencies, lending flattering warmth. The bottom end was a tad less precise, but the tradeoff was worth it.

Next, I dialed in very modest boost and cut (a little more boost than cut) at 30 Hz. It's important to know these filters can reach well above 100 Hz with enough gain, influencing the spectral balance even with the subsonic filter engaged. Now the mix was speaking to me in thunderous tones, warming the seat of my chair. Yet the simultaneous cut prevented the upper-bass frequencies from sounding muddy.

Dialing in a very broad bandwidth for highs, I boosted around 5 dB at 16 kHz. Whereas boosting this much with an active equalizer might cause the top end to sound strident, the 2A3 simply lent sweet definition and beautiful air to the lead vocal, cymbals, stringed instruments and reverbs. The combined effect of all my tweaks made my mix sound bigger, warmer and more 3-D.

One for the Rack?

At $3,750, the 2A3 is pricey. But put it on your mix bus and you probably won't want to take it off. The 2A3 is one sweet-sounding equalizer. III

Mix contributing editor Michael Cooper is the owner of Michael Cooper Recording (www.myspace.com/michaelcooperrecording) in Sisters, Ore.

PRODUCT SUMMARY

COMPANY: Retro Instruments
PRODUCT: 2A3 Program Equalizer
PRICE: $3,750
WEB: www.retroinstruments.com

PROS: Sweet sound. Pultec-style filter response. High headroom. Exacting manual recall.

CONS: Price may deter some.

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Schoeps VSR 5 Analog Reference Mic Preamp

Exceptional Performance, Auto-Mute, Condenser Sensing

The VSR 5 is Schoeps' commercial version of its custom test mic preamp with essentially the same circuitry: two independent preamp circuits in the same chassis with a common power supply. Although tight-lipped about what's actually in the Core SVM amplifier modules, Schoeps was inspired by the TransAmp LZ modules from Valley People, famous for its low-noise circuits. With its rugged steel chassis and gray Nextel-finished front panel, the unit continues the impressive look and feel of Schoeps' mic line.

Top: The VSR 5 features six function buttons for phantom power, polarity, mute and three low-cut filters. Bottom: Interior view of the VSR 5, with power-supply transformers at top/center.

High-End Design

The VSR 5 has a no-nonsense, uncluttered layout with the basic essentials. Each input section has easily viewable, fast-acting LEDs displaying overall gain from -48 dB to +9 dB, with a clip indicator at 20 dB. Firm detented stepped gain controls offer up to 60 dB of gain in 3dB increments. These are solid and don't easily slip; you know when you're making a change—no accidental bumping will happen with these.

Each channel has six function buttons, including lighted phantom, phase reverse and mute switches and three low-cut (40, 80 and 120Hz) settings.

Two very handy features include automatic sensing of condenser microphones (yellow for power-up and green for active on the phantom 48-volt switch) and automatic muting. Internal relay-controlled muting occurs whenever the unit is powered on/off—ideal for accidental power interruptions—and whenever phantom power is applied to either channel.

Rear audio connections include gold-plated XLR in/out and two 50-ohm balanced/floating independent outputs per channel. This is another handy feature, with one output set for direct monitoring and the other for an independent feed to an A/D converter or other recording device.

Life on the Inside

Popping the top reveals a sturdy, well-laid-out design. A center steel reinforcement panel prevents any chassis flexing. Metal standoffs provide extra circuit board and component reinforcement, with multicolored, flat-wire connectors from module to module—very nice. (All circuit boards are modular for easier service.) Each channel is physically separate and discrete, with its own Core SVM module. Gold-plated contacts on the XLRs and input trim pot contact (with precision resistors setting each gain step) ensure long-term, noise-free use. The power supply has three custom toroidal transformers, tested for lowest electromagnetic fields. The rear panel has a 120/230VAC operation switch, detachable AC cable socket and a three-position ground-lift switch (ground, lift and hi-Z).

In the Studio and Beyond

I used the VSR 5 on a near-daily basis on numerous projects. It's recommended for studio use, but was very much at home and performed admirably in my live/remote recording rig, directly interfaced with a variety of digital I/O boxes, in most cases through an RME Fireface 800. In a wide range of sources—from classical piano to jazz vocal to operatic casts to larger and small orchestral ensembles—the VSR 5 effortlessly handled everything in its path.

First up was a performance of the rarely performed piano monster-piece "Hexameron" (Bellini/Liszt) with the Philadelphia Classical Symphony and pianist Kenneth Hamilton on a 9-foot New York Steinway grand, arguably one of

PRODUCT SUMMARY

COMPANY: Schoeps
PRODUCT: VSR 5
PRICE: $3,499
WEB: www.reddingaudio.com

PROS: Solid build, auto-mute and condenser sensing, exceptional sonic performance.

CONS: Price may deter some. Uncolored nature not geared to everyone's taste.

By Joe Hannigan

the loudest works in the piano repertoire. With a pair of DPA 4023 mics inside the piano, this initial test showed just how much headroom and smooth, clean gain—especially in such a highly percussive and punishing environment—the VSR 5 circuitry offers. Any concerns about overload or pinched sound were quickly abated. I deliberately drove this particular piece the hardest, expecting to find some harshness or limits. Essentially, there were none until driven into clipping at the +51 mark on the input dial.

Next was a live recording of Chicago-based jazz vocalist Kurt Elling in Philadelphia's Kimmel Center for a delayed radio broadcast. Taking a direct feed from a Shure Beta 57, the VSR 5 captured all of Elling's nuances and far-ranging details, from scat to crooning, bopping and bellowing, even some near-whispered poetry recitation. I was glad to have the VSR 5 onboard for this one; the result was stunning and the broadcast turned out to be a real keeper.

A variety of other demanding projects quickly followed: stereo ORTF vocal pairs on operatic and choral performances with Audio-Technica 4050s; large ensemble orchestral mains with DPA 4006s; solo spot mics with vintage Neumann KMi-84s; and a U87 male voice-over session for ice-skating and holiday announcements at nearby Longwood Gardens.

The VSR 5 also proved useful with various ribbon mics (Cascade Fathead, AEA R-84, etc.), with more than enough clean gain to get the job done. The front panel defeatable phantom switch was a welcome option for safety's sake.

Sonic Superstar

While touted as an in-studio device (and at $3,499, understandably so), the VSR 5 will find a home with those who want to invest in something at the same quality level and cost as Grace, Millennia, D.W. Fearn and other high-end preamps. Few may have the luxury of using the VSR 5 on remote recordings, yet it's equally suitable for on-location work. Its solid build is much better than many other so-called "live" units I've seen, and with reasonable care the VSR 5 could easily be the main stereo pair pre of choice for audiophile location recording or broadcasting. The unit's clean, uncolored gain, with all the basics and a few additional handy features (including excellent RF rejection), make it one serious contender in either setting—live or studio. III

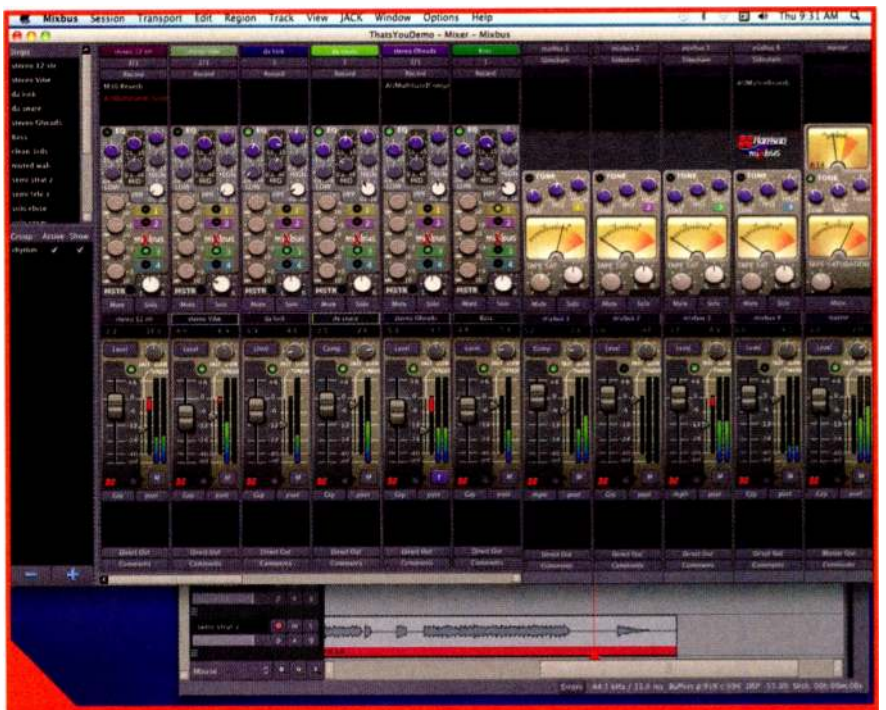
Joe Hannigan's company, Weston Sound, is in its 21st year of production.

Harrison Mixbus 1.1 DAW Software

Affordable Mixer/Editor Offers Superior Sound, Intuitive GUI

Thanks to efforts from many major plug-in manufacturers, modeling has become a very accessible way to employ the signature sounds of popular mixing consoles in DAW-based working environments. We've seen quite a few offerings that represent the channel strips of different analog consoles, but up until now, a virtual Harrison has existed solely in Universal Audio's UAD platform in the form of a modeled EQ based on Bruce Swedien's hit-making Harrison 32C.

According to Harrison, the sound of its consoles runs deeper than a simple EQ or compressor. The company found that running a plug-in version of its channel strip through the summing architecture exhibited in the aux buses and the main summing bus of most DAWs results in a sound that is unsatisfactory. Rather than building a DAW from the ground up, it seemed a better idea to take an existing infrastructure and swap out portions with newly redesigned components. Harrison chose the Ardour workstation (www.ardour.org), which was cross-platform (Mac/PC/Linux), had a large existing user base and offered the ability to modify the programming. Harrison had an existing relationship with Ardour, which helped design the software side of Harrison's Xdubber unit. This relationship was advanced through the development of Mixbus. Harrison's engineers took the foundation of this software, but made some serious changes.



Mixbus features many extras, including user-defined shortcuts, EQ on each channel and control surface support.

Old Meets New

On launching Mixbus, an Ardour user will first notice a complete redesign of the Mix window. This change affects both the overall appearance and the functionality. The mixer reflects each of the tracks in the Edit window with a full channel strip, complete with a panner, HPF, 3-band semi-parametric EQ, compressor/limiter and four Mixbus assigns. Each of these components can be switched in or out, allowing easy A/B comparisons. This differs from the plug-in workflow in the DAW world, which prompts you to instantiate a plug-in for every effect/processor needed. Mixbus allows access to more advanced features—such as an input trim and automation-enable controls—via a small button at the bottom of the channel strip that reveals a large window with a range of options.

The console vibe continues from there with a pre-routed signal flow. Each mixer channel can selectively feed any, or all four, of the Mixbuses. The output to the master bus is also switchable, so a signal can feed the master, or not, while still feeding any of the auxes. Each Mixbus features simplified tone controls, panning, a compressor/limiter and a "tape saturation" control. This tape saturation serves as an overdrive function and can get pretty crunchy if cranked. The master bus has the same controls as the Mixbuses—minus panning—but adds a look-ahead limiter and K-Metering (engineer Bob Katz's system focusing on averaging signal at 0dB VU while allowing 14 dB of headroom). Last, the track-based channel strips, Mixbus channel strips and the master channel all feature both pre-fader and post-fader insert points.

But How Does It Sound?

The sound of the EQ section in the channel strip is very clean. They are not as warm as a typical analog EQ or a corresponding software model, focusing on precise carving of frequencies rather than on imparting a good deal of color. Given its convenience and clean sound, however, I found little reason to turn to plug-ins and instead relied on Harrison's EQs for the bulk of a music mix.

PRODUCT SUMMARY

COMPANY: Harrison
PRODUCT: Mixbus 1.1
PRICE: $79.99
WEB: www.harrisonconsoles.com

PROS: Great-sounding summing. Convenient workflow. Very affordable.

CONS: The Ardour platform is not intuitive and can be glitchy.

The high and low bands are shelving, while the central Bell filter emulates Harrison's 32 Series console, with a Q that tightens up with increasing boost/cut. The compressor on the channels and summing buses leaves little to complain about. It has three selectable modes: Leveler, Compressor or Limiter. These modes inorporate the ratio and time constraints to match common hardware types. Threshold and attack-time controls are both available through the channel strip; makeup gain is only accessible through the automation-enable page.

I analyzed the compressor's behavior on a picked acoustic bass. In the original source material, the high-midrange pick attack was relatively even throughout the performance while the lows jumped around in level, particularly during slides and hammer-ons. With a few quick tweaks, the compressor drew out a good amount of harmonic content, thoroughly enriching the midrange surrounding the attack. I was impressed with the way it leveled out the chaotic lows without causing noticeable pumping in the upper-mids. I tried several other software compressors on the same source without such pleasing results. There must be a well-structured detector "circuit" and an intelligent auto-release.

The real feather in Mixbus' cap, however, is its summing algorithm, which exceeds expectations. All of the buses feel like they have generous headroom. You can combine a good amount of signal through them and still maintain a warm, meaty low/low-midrange without muddying the upper range. This could be attributed to the 32-bit floating-point operation—or just well-written code. Relative to Pro Tools or Logic, I would consider it a much cleaner sound, more akin to Nuendo, or even a hardware console. Another nice touch is delay compensation for each of the Mixbuses. Whether you're using them as effect returns for your time-based processors or for parallel compression, you'll get phase-accurate processing. This is attempted by other software, but rarely executed with such ease as I found with Mixbus—especially at this price point.

In the End

The mixer side of the Harrison Mixbus 1.1 software is quite impressive. There are also such niceties as user-defined keyboard shortcuts, a time-scale including timecode and incorporation of control surface support. That aside, the entire operation relies on a freeware internal busing structure called "Jack," which leads to some frustration and confusion until you get the hang of it. Also, the editing side of Mixbus leaves something to be desired, and the operation of the software was not without glitches. To that end, I don't think this is the DAW to replace all DAWs. I could, however, easily find myself editing in Pro Tools, exporting all of the edited tracks as audio files or stems, and bringing them into Mixbus just for the mix. When using the software exclusively for mixing, it was admirably smooth in operation and offered a sound superior to Pro Tools. I have always been a fan of mixing in Nuendo with its pre-configured EQs and clean summing, but that software's price tag of $1,799 makes it rather exclusive. I would certainly recommend Mixbus as a very affordable alternative to conventional in-the-box mixing, with a sound on par with a hardware summing bus or high-end mixing software. III

Brandon Hickey is a recording engineer and post-production consultant.

Sennheiser ew 500 G3 Evolution Wireless System

Superior Sound, Mac/PC Management Software, Easy Operation

As wireless audio squeezes into reduced space due to the recent sale of bandwidth to Google, Verizon and others, RF audio equipment manufacturers are battling each other to push the limits of performance and features while keeping costs manageable. Sennheiser's new ew 500 G3 Series of transmitters and receivers promises to deliver trouble-free RF operation and high-quality audio.

The system is available with two transmitters—a handheld mic (SKM 500 G3), which may be fitted with a variety of capsules, and a bodypack (SK 500 G3) that accommodates several different clip-on or head-worn mics—and the ci1 instrument cable. For this review, I received the ew 572 G3 B system with receiver, transmitter and instrument cable.

The ew 500 G3 includes Mac/PC management software, allowing for remote monitoring of many wireless Sennheiser products.

ew 500 G3 systems operate in one of six UHF frequency ranges between 516 and 865 MHz. Each range offers 26 banks with 32 channels per bank (maximum) and 1,680 possible transmission frequencies. Banks 1 through 20 feature factory presets configured to cooperate without intermodulation. The remaining six banks (U1 through U6) let you select and store any frequency, but it is up to you to choose these frequencies carefully to avoid interference with other wireless devices. When used in the U.S., the ew 500 G3 is not intended for operation in the 698 to 806MHz range in deference to recent FCC developments.

Rack It and Pack It

The EM 500 G3 receiver has rear panel jacks for two antennae (in true-diversity mode), XLR and ¼-inch audio output, and DC input for the included wall wart. Front panel controls include a headphone jack with volume knob, Sync button, jog dial, on/off/standby switch, backlit LCD and infrared interface. Via the jog dial, the unit's LCD toggles between four main screens: Transmitter Parameters, Receiver Parameters, Soundcheck and Tuner. All four screens always display the receiver's operating frequency, audio level, RF level at antenna I/II, battery strength and transmitter name (which you can enter). The Transmitter Parameters screen indicates transmitter model number, sensitivity setting, mic or line input, RF power level and cable emulation status. Receiver Parameters shows receiver output level, bank/channel, EQ curve and transmitter model. Change the screen to Soundcheck and the system enters a test mode in which you can walk the performance area while the EM 500 G3 monitors maximum and minimum RF levels. This proved helpful in previewing onstage reception for dropouts.

When you switch the receiver to Tuner, it activates a chromatic tuner that is very easy to read. You can set the tuner to automatically mute the output when in use.

The SK 500 G3 transmitter offers a small but serviceable LCD and runs on two AA batteries for approximately eight hours. External provisions include a threaded ⅛-inch jack for audio input, recessed mute switch, settings button and captive antenna. On/off and Set buttons are located under the battery cover to prevent accidents during a show. I liked having the on/off switch here but some of the musicians using the system did not. Transmitter adjustments include frequency, audio sensitivity, auto-lock-on/off, Mute mode, RF power output, cable emulation, pilot tone and LCD contrast. One LED on the pack indicates power on/off/low battery, while the other LED shows peak audio level. Frequency response of the system is spec'd as 25 to 18k Hz using the line input.

Hit the Road, Jack

The Receiver Parameters screen provides access to ew 500 G3's Easy Setup mode. Scan New List scans the RF spectrum for unused channels and compiles a list of available channels. After setting the receiver frequency, you can open the belt pack to expose the infrared sensor, place the belt pack in front of the receiver and press the Sync button on the receiver. The receiver (via the

PRODUCT SUMMARY

COMPANY: Sennheiser Electronics
PRODUCT: ew 500 G3 Evolution Wireless Instrument System
PRICE: ew 500 G3, including EM 500 G3 receiver and SK 500 G3 transmitter with instrument cable: $1,274.99 MSRP
WEB: www.sennheiserusa.com

PROS: Excellent RF and audio performance. Powerful companion software for Mac OS or Windows. Rack kit included.

CONS: Initial setting of gain structure is a bit fiddly.

infrared port) tells the transmitter to change to the appropriate channel—very clever. Of course, you can always manually set the frequency on both components.

When using the ew 500 G3 for guitar and bass, I encountered one snag: It was difficult to nail down unity gain settings. In theory, one sets the transmitter's sensitivity just below clipping and then adjusts the output of the receiver so that gain structure of the guitar rig behaves as it would when using a cable. This was easier said than done. After a bit of fiddling, I settled on a sensitivity of -48 for the transmitter and +24 output from the receiver, but the gain staging of the guitar rig did not quite behave as it would if the guitar was connected via cable. (Perhaps in the future, Sennheiser can furnish "suggested" settings for guitar.) In any case, audio quality was excellent, and most people would be hard pressed to know the instrument was not tethered. Initially, I thought "cable emulation" was a simple high-cut filter, but careful listening revealed a subtle change in timbre, with a bit more "body" and a slight decrease in high frequencies as the emulation amount was increased.

The rear panel Ethernet port allows the ew 500 G3 to be used with Sennheiser's Wireless System Manager (WSM) software, which—I am delighted to report—runs on Mac OS X and Windows. Available for free from Sennheiser's Website, WSM is essential for multiple systems, but it's useful even with only one system. In addition to the ew 500 G3, WSM allows for remote monitoring of many Sennheiser wireless products. On my MacBook, I could view RF strength, battery reserve, frequency and audio level, and the Properties menu addresses every system parameter.

WSM also provides RF spectrum analysis for pinpointing RF activity, as well as an RF level recorder that can log a time frame ranging from one minute to 24 hours. The purpose of the RF level recorder is similar to Soundcheck, but in WSM signal quality is shown on a graph depicting RF strength vs. time. You can walk the stage with the transmitter, and if there is an area where the signal is dropped, you can deploy a remote antenna to compensate. Embedded in WSM is Frequency Manager, an app that automatically scans the RF spectrum, finds vacant channels and allocates them to various wireless systems on the network.

Excellent Performer

Sennheiser's ew 500 G3 succeeds on many levels. First and foremost, its audio quality is fabulous. Despite the fact that it employs companding, instruments never sounded like they were being dynamically altered, as I have found to be the case with lower-quality companding circuitry. RF performance is excellent. Throughout the shows I did not experience a single dropout or glitch, and all of the unit's functions worked successfully. The management software works flawlessly and runs on OS X or Windows. Sennheiser has done a very thorough job in engineering the ew 500 G3, which should be on a shopping list for anyone considering a serious RF system. III

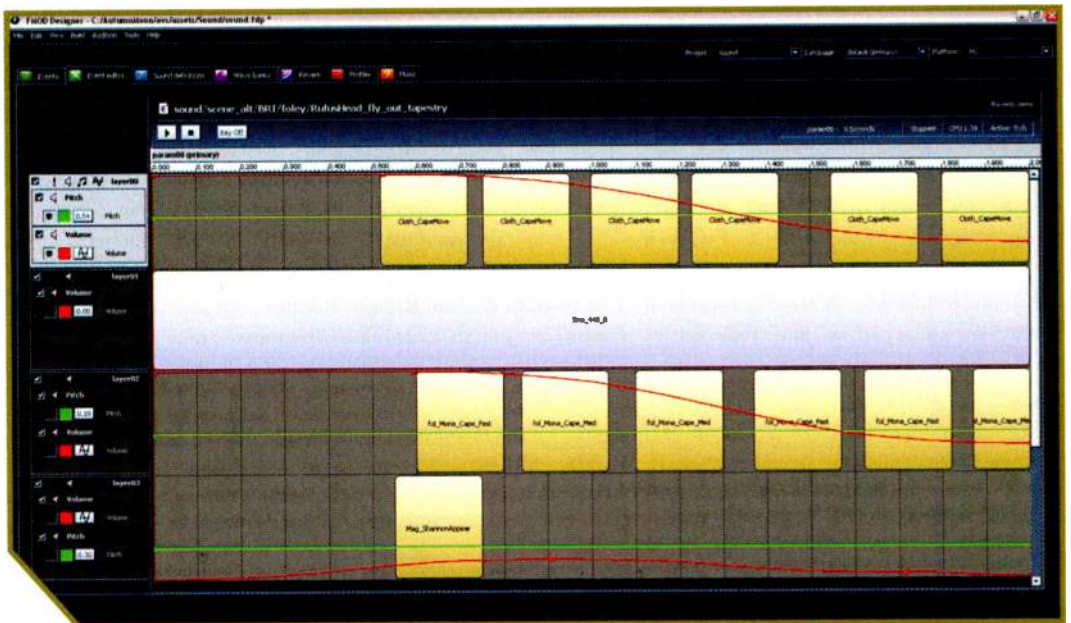
Steve LaCerra is a live sound engineer based in New York City.

Start Your Engines

Understanding the Basics of Game Audio

I have a friend whose business card reads, "If I don't know it, I know someone who does." That's my story in this edition of "Tech's Files." My friend and fellow geek Damian Kastbauer is an audio-for-gaming insider.

We'd like to provide an overview for peeps like me who are completely unfamiliar with game audio, but who might benefit from knowing some of the nuts and bolts of the process. For example, DAW plug-ins are very graphics-intensive and look very much like their hardware counterparts, even though sliders are more mouse-friendly than knobs. By contrast, audio tools for games tend to be parameter-based, whereas a slider is a newcomer and virtual knobs don't even exist!



Less text-oriented than other middleware apps, the interface for Firelight Technologies' FMOD has more of a plug-in look and feel.

On the surface, game development is often compared to the process of making a film, with the need for a storyboard, screenplay, set and sound design. There is a common discipline between film and videogame creation, but some aspects remain distinctly different. While it might seem absurd to reinvent a DAW or a camera each time a new project is initiated, that's what often happens in the gaming industry when it comes time to improve upon previous technology. For each new game, the logic, visual and sonic programmers must create a brand-spankin' new engine. The insider's coding game is all about "playing well with others"—for example, sharing memory and DSP/CPU capabilities—so that the behind-the-scenes technology is transparent to the gamers.

Of course, game designers want a great first impression; the new release must look, feel and sound more realistic than the previous generation. Processing requirements, platform variations (computer hardware) and time to market are all moving targets made more dramatic by projected deadlines that don't account for the nebulous "fun factor" necessary to make a good game great.

Let the Games Begin

Anyone familiar with more than one DAW knows that each has its own feel; just like a car's engine, gear train and suspension contribute to its personality, the game engine and toolset add feeling to the creation of the game. When engineers are programming a game, a customized processing engine is built and stocked with only the tools necessary for various tasks that need to be done. Hardcore PC users take a similar approach when installing an operating system by loading only the most essential applications required to achieve maximum efficiency and speed. Understanding the needs of the game—and the hardware specifications of the target platform—allows programmers to leave out anything they won't be using.

Once everything has been assessed—software features defined and resources for the audio portion of the engine allocated—it's time to start building. Some programmers prefer to "roll their own," but there are also several available run-time audio libraries (also known as middleware) with which an engineer can kick-start the audio development. For the uninitiated, this is the customized programming toolkit that provides solutions to game-specific feature sets, such as hardware specifications, and has the potential to meet the needs of cross-platform development.

You Want Fries With That?

The game audio engine can be thought of as a multitimbral sampler that plays back audio samples at the request of the game engine. In addition to playing back requested sounds, the engine will also be asked to do many tasks on the fly—pitch shift, volume randomizing, shuffling and sequencing of playlists—because sounds are constantly changing.

To modify and adjust the values for tasks like these, audio-specific toolsets are "created" to harness the engine's functionality. If the user interface for these tools is not given ample consideration, then control over features and functionality will be out of reach when needed; they will also require programmer assistance, which is often hard to come by.

by Eddie Ciletti and Damian Kastbauer

Populating a mechanical toolbox is analogous to the task of compiling a software DSP toolset. Any tool in the box can be used, but choosing the most appropriate tool can minimize any detours to the mechanic. For example, you wouldn't open a 7-band EQ if only a high-pass filter were needed.

Meet Your New Manager

Hundreds of simultaneous sound voices may be requested during any given frame or moment of game play. To make traffic flow smoothly and avoid pileups, it's necessary to establish memory limits and priorities based on the target platform. A sound may either be loaded into Random Access Memory (RAM) in full, or streamed on demand from the DVD or HDD (if available). Through the use of a streaming buffer, only a small part of the sound needs to be loaded so it can start playing on demand when requested. In the background, the rest of the sound file is in the cue, ready to be "streamed" from the media. Multiple on-demand variations (or instances) of sounds may be loaded into RAM to ensure proper playback. All of these requirements can add up to serious issues with memory management.

Welcome to the Jungle

Imagine mixing an action scene in Pro Tools and being limited to six mono tracks. We're talking explosions, multiple vehicles, crowds screaming and, by the way, no bouncing tracks! There are a couple of ways to prioritize important sounds in the scene to avoid traffic jams and mud.

You can take a broad brush and prioritize based on sound categories using a scale of 0 to 100. We might decide that it's more important to hear weapons as opposed to footsteps (or a voice instead of explosions), which may further lead to separating an important voice from grunts and groans. These priorities are applied to the metadata of the sounds being played back and are then used to prioritize the sounds, based on the maximum number of voices allowable at a given time. Priorities can be dynamically adjusted or modified based on the distance, or amplitude, of the sound from the position of the "listener."

Party Like It's 1999

One of the emerging trends vying for our valuable processing resources concerns the availability of DSP plug-ins that have been commonplace in pro audio since the mid-'90s. Recently, companies including Waves, WaveArts and McDSP have developed cross-platform-compatible versions of some of the popular effects that are CPU-efficient enough to run on today's consoles.

The developer has the ability to process sound in games at run time and maintain a similar level of quality heard across other media types. So during gameplay, effects can be applied to modify their playback based on values coming from the game engine. For example, applying distortion and EQ to a critical voice file, depending on whether it's being delivered in person or via headset communicator, is something that could change based on whether the player decides to stick around while being barked at by the mission guide.

Real-time effects also allow developers to adjust output dynamics, in essence "mastering" the final mix to optimize dynamics so they can, for example, avoid clipping during a pile-up of sounds and ensure that quiet sounds are heard across different playback devices. Available in music production for years, it has remained on the fringe of game audio due to a lack of processing power, embedded workflow and authoring. Because most game consoles on the market can also play back movies and music, audio quality comparisons are inevitable. Initiatives like these will continue to help raise the bar for interactive audio.

Wrap It Up, I'll Take It

This is just a simple overview of the many challenges and techniques that affect the creative and technical sound design process for games. Each new generation is delivering a more pleasing and realistically represented soundtrack while any technical decisions (and limitations) are transparent to the user; things sound as expected, with no distractions. Applying several strategies for memory management and optimization can not only guarantee sounds are heard when needed, but also allows room to cram in more sound and features to suit the gameplay, style and scope of the project. III

Damian Kastbauer is a freelance technical sound designer working with the Bay Area Sound Department. His contributions to the art of game audio implementation can be heard in Conan, Star Wars: The Force Unleashed *and* The Saboteur, *among others. Eddie Ciletti is learning to translate Italian and gamer geek speak at www.tangible-technology.com.*

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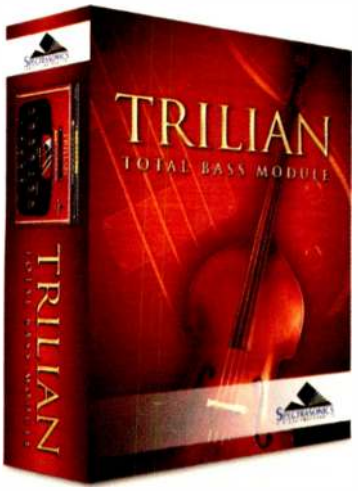

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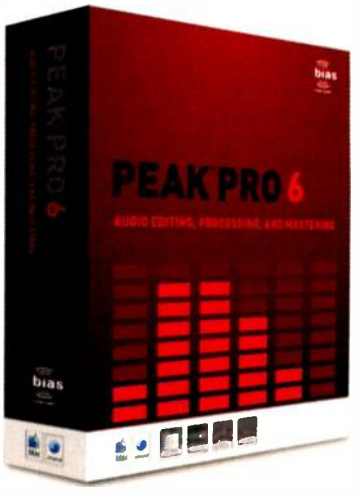

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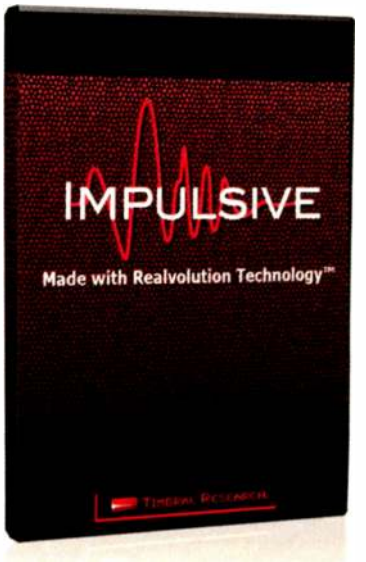

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Q&A

By Tom Kenny

Spencer Nilsen

Composer, game sound pioneer leads the next generation at Ex'pression College for Digital Arts

You started out on piano, turned to composition, then built audio studios for Sega back in the '90s, and now you're president/creative director at Ex'pression College. Did you expect this career path?

Not exactly this one, but it all seems to make sense now. [Laughs] I started on piano when I was 5, and that was my toy box. I wrote and played all the time, and was a session keyboardist in my late teen years. I then started doing some scoring work and got introduced to the early Sega games—I did *Sonic the Hedgehog CD*, *Ecco the Dolphin*, *Batman Returns*, *NFL*—and was later asked to run their audio division and build out three studios. I had extensive MIDI experience. We were using the GEMS tool then with 8-bit audio and very little space. But we saw the CD-ROM machines coming and saw that there was tons of opportunity ahead. So I kept writing. And I still do.

But I've always loved the academic environment, and I was introduced to Ex'pression by David Schwartz, actually, the founder of *Mix*, and served as a consultant after they opened around 2000. I came on full time as a program director in 2003 and became president in 2006.

Okay, jump-cut to today: 24-bit audio, multichannel playback. Do you see a similar opportunity ahead with new delivery formats for audio?

I do. The field of interactive audio is simply more fun today. It's no longer rocket science to incorporate quality audio into any form of new media, whether games or smartphones. All of our handheld devices, all of our communication tools have an audio component. For our students, that means the field is so much bigger now than it was when I went through school or when I worked at Sega. Now interactive audio means everything from the standard impact sounds and roll-overs and action sequences in a game, to live translations of something streaming to your smartphone from a political convention in multiple languages. It can be used in scientific visualization. There's the use of audio in forensics—all kinds of areas where audio is being used to teach, to explain. And again, the tools have become so accessible. The tools to create audio for the smartphones are intelligent; they resemble the tools we use in standard audio production for records and films and that sort of thing. And the line is blurred now between the tools used by an engineer who produces high-quality audio for professional entertainment and the tools used by people designing audio for handhelds, instructional materials and stuff like that.

Do students entering Ex'pression understand that range of audio careers today?

We definitely have fewer students today than 10 years ago who expect to sit behind a large console and record a rock band. They see themselves as entrepreneurs, and they are conversant in video formats, in game design, animation, motion graphics—all the areas we teach. They have the vernacular and they are more educated from a consumer standpoint about good vs. bad audio. And they speak cross-platform, cross-discipline. In the audio program specifically, our students are not only learning the entire pipeline of audio production, but they're getting a view of multiple emerging markets that require audio to communicate, whatever the message or format. It's exciting today because a young artist can support themselves if they are energetic and forward-thinking. We feel, essentially, that we are educating the new Renaissance artists. Without overstating it, this is an age in technology akin to the age of Da Vinci or Michelangelo.

These are, to use Apple's term, the Digital Natives.

Ex'pression College's Spencer Nilsen: "We are educating the new Renaissance artists."

Absolutely. And they come in today with a greater understanding of technology in their everyday life. But what's most interesting to me is that I am seeing this return to subtlety. They're more selective, more quality-oriented. They've acquired different skill sets, and the tools they're using, whether in audio or game design, have become so advanced that it really does free them up to be creative. That's something [producer] Jack Douglas stresses each semester in his classes, the simplicity and the subtlety.

We try to tell our students every day that storytelling is the key. I realize that may sound cliché, but it's absolutely true. In film, a compelling score creates the mood; in games, sounds can be a precursor to action, a trigger with an emphasis and the ability to manipulate. But the best sounds in the world won't even be heard without a strong concept, a strong story. And that applies whether you're producing a song, a film, a game or a Webisode. **III**

Tom Kenny is the editorial director of Mix *magazine.*

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