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BY KEVIN BECKA

On the Cover: Blade Studios in Shreveport, La., the home of A-list drummer Brady Blade, was designed by Russ Berger around an SSL Duality console and a "big room for drums." For more, go to page 12. Photo: James Wilson.

Mix, Volume 35, Number 8 (ISSN 0164-9957) is published monthly by NewBay Media LLC, 28 East 28th Street, 12th floor, New York, NY 10016. Periodical Postage Paid at New York, NY, and at additional mailing offices. POSTMASTER: Send address changes to Mix, PO Box 8518, Lowell, MA 01853. One-year (12 issues) subscription is \$35. Canada is \$40. All other international is \$50. Printed in the USA. Canadian Post Publications Mail agreement No. 40612608. Canada return address: BleuChip International, P.O. Box 25542, London, ON N6C 6B2.

A photograph of two Shure KSM microphones mounted on stands in a recording studio. The microphones are silver and have a distinctive spider-like shock mount. They are positioned vertically, one above the other. The background is a wood-paneled wall, and a cello is visible in the lower left. The lighting is dramatic, with a blue glow on the left and warm tones on the right.

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WHERE HAVE ALL THE "GOOD" HACKERS GONE?

Okay, so maybe "good" isn't the right word. Probably not "noble" or "moral," either. But at least back in the early '80s, when the term "hacking" entered the vernacular, there was something of a code to the practice, and a certain Bonnie and Clyde-type appreciation for the culture. Hackers were the outcasts, the pale skinny kids who were bullied and belittled in their teens, who stayed in their rooms and played *Dungeons and Dragons* and customized videogames. These were the inhabitants of the earliest chat rooms, the nerds who used their skills anonymously to expose corruption or change their own letter grades. They were odd, borderline cult-ish. They were no doubt criminal in some cases. But they weren't evil.

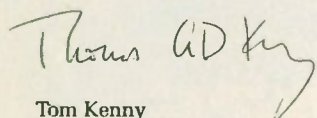
At least that was the popularized perception, characterized as early as 1983 by Matthew Broderick in *War Games*, followed the next year by a much darker Henry Dorsett Case and Molly Millions in William Gibson's *Neuromancer*. This was 1984! Desktops were rare! You logged on with a C:> prompt, leaving the B Drive open for storage because the A Drive was running the application! The hacker club was small and, at least in the fiction of the time, somewhat honorable. At the same time, in the real world, hacker stories were just as likely to be about a lone wolf exposing a Fortune 500 security weakness (through an email to the very company) as they were about a cybercrime. In 1986, after his arrest, Lloyd Blankenship wrote an essay called "The Conscience of a Hacker," sometimes referred to as The Hacker's Manifesto. In it, he made clear that a hacker was driven by curiosity, and that malice or subterfuge had no place at the table.

Then, over the ensuing 25 years, as the World Wide Web went mainstream and hundreds of millions of users joined the party, baser instincts seemed to take over. We got worms and viruses and identity theft. Credit card scams and phishing and "leaks." Sharpies on a disc to defeat copyright, and P2P file-sharing justifications. Hackers begat "crackers," and the culture shifted. Today we're at a point where a couple of reporters with cell phones can hack into a phone system and bring down a global communications empire, prompting outrage around the world that no amount of public service ads or congressional legislation can match.

Hacking and cracking have infiltrated nearly every aspect of our daily lives, certainly our professional lives. Music and recording software companies wrestle with the possibilities and precautions from the very first day they draw up a business plan. They have to. When someone goes in and cracks the iLok key, then puts anything and everything they can up on the Web for free, the costs become very real. Research and development slows, friends get laid off and businesses close their doors. It has happened; it will likely continue to happen.

Ray Williams, president, music marketing, at the International Music Software Trade Association (imsta.org), has been fighting the good fight since about 2004, making the audio industry at large aware of the costs of hacking and cracking. He is a realist, and he understands that it's the behavior that needs to change. That, he figures, is a 20-year process, like changing public opinion on smoking or drunk driving or wearing seat belts. Friends don't let friends use cracked software.

I'm not out to repeat an old song. Not out to moralize. I don't expect a hacker in a black mask to email Avid and let them know how and why Pro Tools is vulnerable to a breach. We're past the point of moral argument to the hacker. We have seen the greed. We have seen the malice. We have listened to the liberators. We have sometimes even seen the good. Maybe now, with a very public focus on a very malicious form of hacking, we will start to see a change in the behavior of the user.



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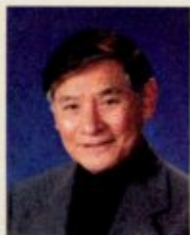


BEATLE MANIA!

Cleveland's Rock and Roll Hall of Fame and Museum now features a Beatles exhibit, with nearly 70 artifacts, including some "never-before-exhibited" items such as bandmember clothing and Paul McCartney's handwritten arrangement for "Birthday." The exhibit also displays John Lennon's Gibson J-160E acoustic guitar, George Harrison's Rickenbacker 425 electric guitar, Ringo Starr's "drop-T" Beatles logo drum head from the kit he used on the *Ed Sullivan Show* in February 1964 and more. Says VP of exhibitions Jim Henke, "We have been fortunate to have a great relationship with Yoko Ono. This time around, we were able to work with Ringo Starr and with George Harrison's estate, so they are well-represented in the exhibit. We also worked with some collectors who had other key Beatles pieces, and before we knew it, we had an absolutely incredible collection."

On the Red Carpet

The Motion Picture Editors Guild (MPEG) will honor veteran sound editor Don Hall, M.P.S.E., with its Fellowship and Service Award on October 15, 2011. The award recognizes an individual



who has demonstrated professionalism, collaboration, mentorship, generosity of spirit and a commitment to the labor movement. The ceremony will be held in Los Angeles at a location to be announced later this summer.

InfoComm 2011

InfoComm (June 11-17, Orlando) has grown into a pretty healthy trade show, with an increased audio presence that has made it the leading U.S. marketplace for A/V installation professionals.

Mix's tour began on the Wednesday night at an EAW party in the historic Beacham club. Built in the 1920s and formerly named Tabu, the 1,250-capacity Beacham now boasts a system that includes seven EAW KF740 enclosures on each side, supported by eight SB1002 large-format flyable subwoofers arrayed in a mono block below the stage, four JF80z compact full-range loudspeakers as lip fills and four EAW MK5396 two-way full-range installation loudspeakers for mezzanine and upper-balcony fills. The stage is all MicroWedge MW12 and MW15; the system is powered by Powersoft amplifiers.

Lectrosonics showed its new lightweight HH handheld mic/transmitter (pictured), which allows for interchangeable capsules to make it more rider-friendly. Besides the company's cardioid and supercardioid condenser capsules, we saw heads from Audix, Heil and Shure on display.

Aphex has been under the direction of David Weiner Ventures for about a year now, and the company has been extremely active across multiple markets. At the show, Weiner was talking up the company's recent push toward licensing its technologies, but was also showing the Channel, an update of the famed 230, which includes a tube preamp, Class-A compressor, logic-assisted gate, de-esser, parametric EQ, Big Bottom and Aural Exciter.

Roland Systems Group drew crowds with the debut of the V-Mixing System, including the M-480 48-channel live console and R-1000 48-track recorder/player. But what caught our eye was the \$5,000 VR-5 A/V mixer/recorder, which can handle basic audio duties, with live video switching and direct streaming functionality through any number of streaming services.

QSC Audio showcased its systems approach with the release of Q-Sys 2, which provides a CobraNet card as a bridge, and the introduction of the KLA Active Line Array system into the "House of K." That's the company's umbrella for the K, KW and now KLA Series of speakers, along with associated amplifiers



and network control, which makes it easier for system integrators and installation professionals to map out a multipurpose venue.

Gabe Whyel took us through the American Music & Sound booth, where the company had most of its lines on display, including Focusrite, Turbosound, Midas and Fostex, as well as the new GSR24M console from Allen & Heath (pictured). It's a 24-channel analog desk aimed at the personal studio market, and it includes options for FireWire and ADAT interfaces for workstation control. Then we stopped at the Beyerdynamic wing, where Whyel walked us through the streamlined 28-mic TG Series. Apparently the company has slimmed down the offerings to instrument- and vocal-specific applications, showing off some new clamp mics for drums and ribbons for vocals.

Finally, we stopped by Radial Engineering on our way out for a brief chat with Peter Janis. There was a lot of attendee interest in the Radial Workhorse, an 8-slot 500 Series frame available with or without an 8x2 summing mixer. And the installers were hot on the Primacoustic Broadway and London acoustic panel and room treatment kits.

There were many, many more pro audio manufacturers onsite. The installation market seems healthy right now, with continued interest in houses of worship and multipurpose venue construction. InfoComm has become the go-to show for live audio. For more InfoComm products, go to page 76.

—Tom Kenny

OCA Alliance Announced

To secure the standardization of the Open Control Architecture (OCA), the Alliance (PreSonus Audio Electronics, Bosch Communications Systems, d&b audiotechnik, Duran Audio, Loud Technologies, Media Technology Systems, Salzbrenner StageTec Mediagroup and the TC Group; oca-alliance.com) will complete the technical definition of OCA and then transfer its development to an accredited public standards organization, which will then render the OCA spec into an open public standard for control of professional media network systems.

OCA is descended from AES-24, a system control protocol developed by the AES in the 1990s. OCA defines a flexible and robust control standard that covers the entire range of pro media-networking applications. By adding system control to the media-network equation, OCA will allow devices from multiple manufacturers to share a common management regime.



MARTIN RUSHENT, 1949-2011

British record producer Martin Rushent died on June 4 at his home in Berkshire, England. His first experience in a recording studio was at London's EMI House where his school band (he was the lead singer) recorded a demo. After graduation, while working for his father, he applied for studio jobs and was employed by Advision Studios as a 35mm film projectionist. Soon after, he transferred to the audio department as a tape operator, where he worked on sessions for Fleetwood Mac, T-Rex, Yes, Emerson, Lake and Palmer and many more. He moved up the ladder to senior assistant engineer, staff engineer and eventually head engineer. At that point, he went freelance and soon after was

employed by United Artists, where he recorded Shirley Bassey, The Buzzcocks and The Stranglers.

His biggest success came with the Human League's *Dare* (1981), with its hit single "Don't You Want Me." He also worked with The Go-Go's, Joy Division, Generation X and many others. Rushent built a home studio around a Mackie console, where he would produce The Pipettes, Does It Offend You, Yeah? and others. At the time of his death, Rushent was working on a 30th-anniversary version of *Dare*, remixed using musical instruments instead of synthesizers.



MIXBLOGS



TechTicker: Avid Releases Pro Tools 9.0.3

Pro Tools Version 9.0.3 is out as a free download. It fixes a long list of bugs (30 pages) including:

1. Pro Tools cannot record to Mac OS X drives that have been formatted as "Case-Sensitive."

>>blog.mixonline.com/mixblog/category/techticker



Ask Eddie: Topic 3—Powered Mic Confusion

Q: Why don't PC mics work on a standard console?

This remarkably common question most recently came from Andreas Polydoros from Athens, Greece.

>>blog.mixonline.com/mixblog/category/ask_eddie

SPARS Sound Bite

What Makes a Quality Recording Studio?

SPARS has embarked upon a quest to seek out recording studios that have not only survived but are thriving today, in an effort similar to what Tom Peters did when he wrote *In Search of Excellence*. We recently talked to a few studio owners who have done a really good job adapting to the conditions of their respective markets.

Dan Workman runs the oldest continuously operating recording facility in the U.S., SugarHill Studios in Houston. At year 70, they must be doing something right. Workman is an innovative marketer who has been actively involved with the local music community, sponsoring charity events, hosting Grammy free dental clinics and working with The Houston Sound, a non-profit organization dedicated to increasing awareness of the Houston music scene. He also produces a video Webcast/podcast series called *Live from SugarHill Studios*, which highlights some of these bands in the natural studio recording environment, as if you were sitting in on the session. Nearly 30 episodes have been produced so far, and SugarHill's Studio A (pictured below) is featured prominently in all of them.

Chuck Chapman has run Chapman Recording and Mastering in Kansas City since 1977. Their three rooms strike a nice balance of accommodating a variety of needs, from music recording/mixing to broadcast/corporate projects to transfers, writing and editing. Realizing early on that offering only mu-



sic recording services was not a formula for growth in his mid-sized metro market, Chapman decided to add audio engineering work for corporate and media clients in the area. He invested time and resources for more than a decade to establish a prominent position in that market. Having a long-term vision and plan and executing that plan with commitment definitely helped his business stay competitive.

There is no single magic recipe to run a successful operation. Every market is different, which means there can be great diversity in what works. Also, given the fact that markets are not static, one has to continuously refine and evolve an approach or sometimes re-invent oneself as client demands shift.

—Kirk Imamura, president/director

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Studio Unknown Update

Vocal sessions: They can produce glorious joy or paralyzing pain on the part of the talent and the producer or engineer alike. The question remains: What elements help to create a successful recording experience? We've asked both those behind the console and those in front of the mic to weigh in. Find out what each side believes is most important in the August edition of "Confessions of a Small Working Studio."

>>mixonline.com/studio_unknown

SoundWorks Collection Update



After eight films over a 10-year span, the epic adventure of Harry Potter and his circle of wizard friends will close the last chapter of this celebrated series with *Harry Potter and the Deathly Hallows - Part 2*.

Director David Yates returns to direct his fourth *Harry Potter* film with his talented sound team including re-recording mixers Stuart Hilliker and Mike Dawson, supervising music editor Gerard McCann, supervising sound editor James Mather and sound designer Dom Gibbs. Expecto Patronum!

>>mixonline.com/post/features/video_sound_works_collection

Cool Spin

We Are Augustines Rise

Ye Sunken Ships (Oxcart Records)

Any songwriter knows that getting thoughts onto paper can be cathartic—get those demons out into the open. No one knows this better than *We Are Augustines'* Billy McCarthy. His mother and brother were both diagnosed as schizophrenic and both took their lives, and that loss has left an indelible mark that infuses *Rise Ye Sunken Ships* with an



overwhelming sense of melancholy. The album itself began life with McCarthy's former band, *Pela*. Working with producer Dave Newfeld (*Broken Social Scene*), the three-day booze-fueled sessions ended with few songs barely completed. Shortly thereafter, *Pela* disbanded. McCarthy and Eric Sanderson (bass/keyboards) continued to keep the lines of communication open and rejoined as the duo *We Are Augustines* (with drummer Rob Allen).

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Jim Ebdon

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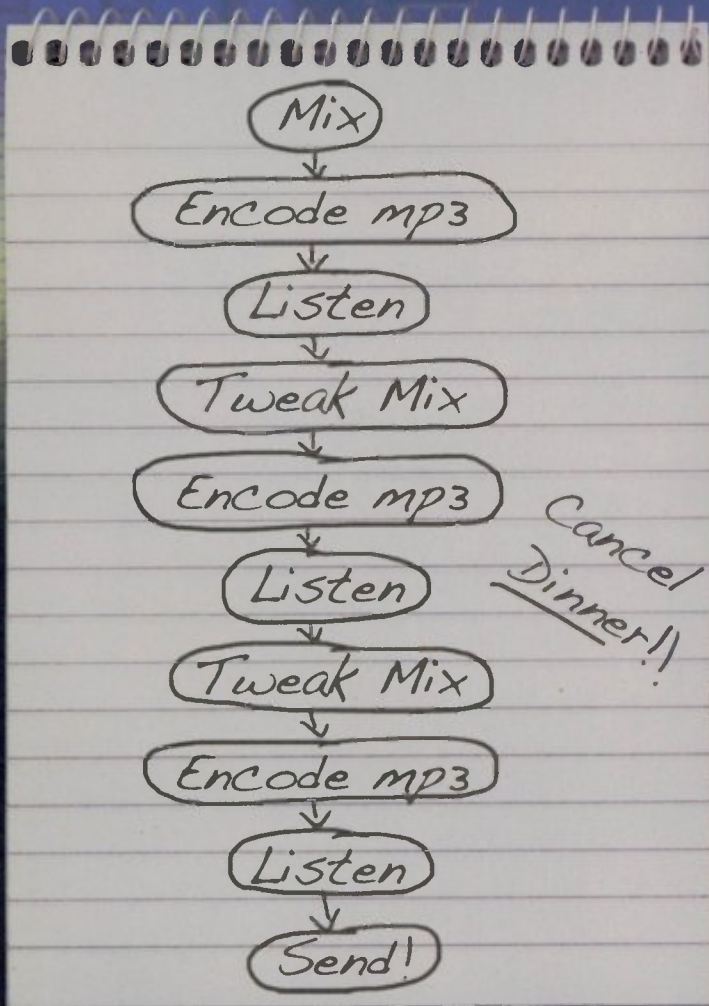
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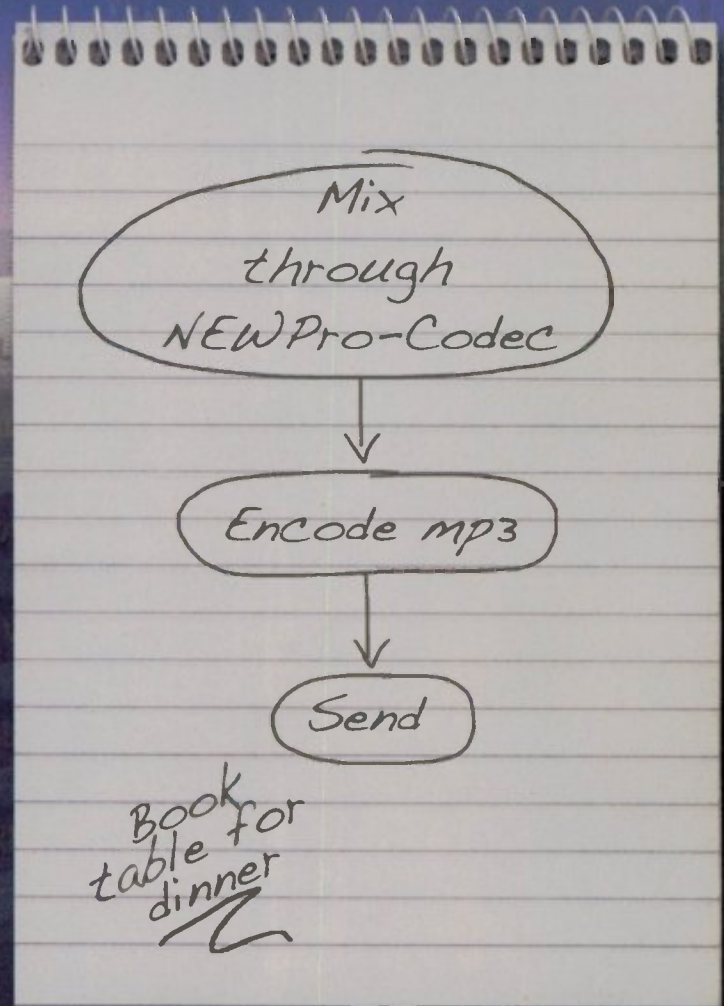
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On the Cover

By Barbara Schultz

BLADE STUDIOS



Photos: James Wilson

The 3,200-sq-ft tracking room, built for drums

The week that we telephoned Blade Studios (Shreveport, La.), co-owner/producer/drummer Brady Blade and chief engineer Chris Bell were in Studio A with videogame developers Rob Atkins and Adrian Carmack (*Doom* and *Quake* Series) scoring the *Fallen Shadows II* videogame. Action in the second *Fallen Shadows* game takes place in New Orleans, and Blade says the score is generally “creepy.” Over the phone, Bell played back some music from the “All Saints Morgue” scene; it’s an eerie sequence of tones and percussive sounds, built around the ominous thump of a heartbeat.

“The heartbeat is a [music] library sound,”

Blade explains. “Everything else we did in the studio with real instruments. The whole groove centers around that heartbeat.”

Blade knows a thing or two about laying down a steady beat. He’s perhaps best known as the touring drummer for Emmylou Harris, Steve Earle, Jewel, Indigo Girls, Bob Dylan, Dave Matthews and others. But a few years ago, he decided to spend more time close to his family and less on the road. He began focusing more on session work and producing, and re-settled in his hometown of Shreveport, which is where he met Scott Crompton, a marketing exec and guitarist, and now co-owner of Blade Studios.

“I had just moved to Shreveport; I got invited here to work in the film business, writing business plans for a Shreveport-based production company looking to expand their services,” Crompton explains. “Louisiana has the Number Three filmmaking market in the country. The state offers incentives here; if you make your film in Louisiana, you can earn up to a 35-percent tax credit [which includes scoring], and that’s one reason so many film productions come here.

“In August of 2005, they passed a similar incentive in Louisiana for sound recording,” Crompton continues. “And then, of course in September, Katrina came and wiped out almost

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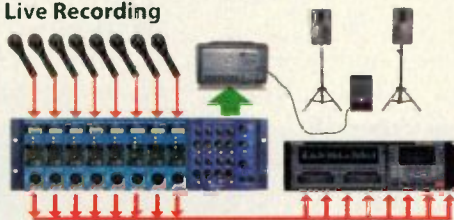
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From left: engineer Chris Bell, co-owner Scott Crompton and Brady Blade. Inset: the 700-square-foot control room.



every one of the meaningful studios in the state.”

Many of the beloved studios of New Orleans and beyond have rebuilt or relocated since then, but Crompton says he could see that with those incentives in place—a 25-percent rebate on every expense, including airfare and lodging, as well as studio, equipment, producer and musician fees—there would be plenty of room for a new, high-end commercial studio in Louisiana.

“I said, ‘I think we’ve got an opportunity here,’” Crompton says, “because not only is Brady very well-connected in the business, but people love him. He’s a shining soul and a great guy, and I thought that with his connections and a solid business plan, if we built the right kind of studio here, people would come.”

Crompton and Blade formed a partnership to build a top-end, multi-use recording studio to serve the music and film industries, and they brought in longtime engineer Chris Bell (Erykah Badu, The Eagles) to oversee the technical side. They found a former biotech-engineering building where they could develop 8,000 square feet into studio space, and they hired top studio designer Russ Berger to help realize their lofty goals. “I wanted a room that had the best of all the studios I’ve worked in all over the world,” Blade says.

“We just tried to think of everything we could do,” Crompton adds. “We wanted to be able to say, ‘Our studio is on a par with any of the great studios in the world.’ But we also knew we had to do something that made sense. One of the things I liked about Russ from day one was that his first question to me was, ‘What’s your business plan?’ He said, ‘Scott, most of the studios I’ve designed are still functioning, but the

studio business is tough right now.”

“Brady, Scott and Chris have the combined talent and experience needed for a successful business,” Berger says. “They decided to configure the studios to accommodate both music and film work, thereby capitalizing on Louisiana’s incentive programs for both media industries.”

Berger says that the facility’s design started with Blade: “With Brady being the driving force,” he says, “drums are at the heart of the design. The main room needed to allow the sounds from drums and percussion to fully form without choking off the decaying drop. The drummers out there know exactly what I mean.”

The two-studio complex combines solid infrastructure, state-of-the-art gear and a high-tech

aesthetic. At the core is the studio wiring by L.A.-based technician Paul Cox, whom Bell can’t praise enough; Cox gave the entire facility a dependable core, including video capabilities in every room.

Studio A includes a 1,200-square-foot tracking room (large enough for film scoring, where Bell records almost all of Blade’s drums), connected to four iso rooms of varying sizes. Workflow in the 500-square-foot control room centers around a custom Ocean Way HR2 surround monitoring system and an SSL Duality console. Nearly the entire equipment package was brokered through Jeffrey McDaniel of GC Pro in Dallas.

“The way we work now, we use a computer and tape,” Bell says. “If a newer engineer comes in who doesn’t want to run anything through the console, the Duality operates as a control surface; we can flip one button, and he’s working in the box [Pro Tools|HD3 Accel]. We also have a Studer 827 tape machine and a CLASP system, which we’ve been using a lot. That’s been great, especially for tracking Brady’s drums—we can hit tape first before we go into the computer.”

The studio also offers loads of outboard gear, some of which Bell brought along from his personal supply: 32 channels of API, eight Neve 1081s, Telefunken V72 mic pre’s and more. Also on hand are the Yamaha C7 concert grand that Blade grew up playing and a treasure trove of other instruments—especially drums, as Blade is sponsored by DW and Zildjian.

Studio B (500-square-foot control room with two iso booths, equaling 250 square feet) was designed to serve as a mixing/overdub or post/ADR space. It features an Avid ICON D-Control ES system, as well as a 32-input Neve 8816 summing bus, and another pair of Ocean Way HR2s. But don’t



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bother trying to book that room any time soon—it has already been locked out for the next two years by CBS Sports. Meanwhile, “A” has been in heavy use, hosting Rolling Stones bassist Darryl Jones, who cut his debut solo album at Blade; and local artists Maggie Kerner, Moira Red and Daphne Mills, as well as Atkins and Carmack.

Crompton helps all of Blade Studios’ clients

navigate the incentive program, booking travel and lodging, as well as any studio services, and handling all of the necessary paperwork. He and Blade have made it their mission to help musicians get everything they can out of recording in Shreveport and to spread the word about Louisiana’s entertainment business incentives. “Every client spends their time here inspired and making great

music, not worrying about keeping up with accounting,” Crompton says. “Our mission is for everything recorded here to sound great, so we want artists comfortable and at ease.

“We helped with two tracks on an Eric Clapton record in 2009, before we were even open. Doyle Bramhall, Brady’s friend, was the producer. They had spent three weeks in New Orleans before coming here [to Shreveport], and we went to dinner, and I said, ‘Doyle, be sure to keep your receipt.’ And he said, ‘For what?’ Here was a guy who had been in New Orleans for three weeks, and he didn’t know about it. That’s why when I talk to people, I always say, ‘Hey, be sure to talk about the Louisiana incentives—not just for us, but for every studio because it’s a meaningful discount.’”

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See more photos, including the build at mixonline.com/august_2011

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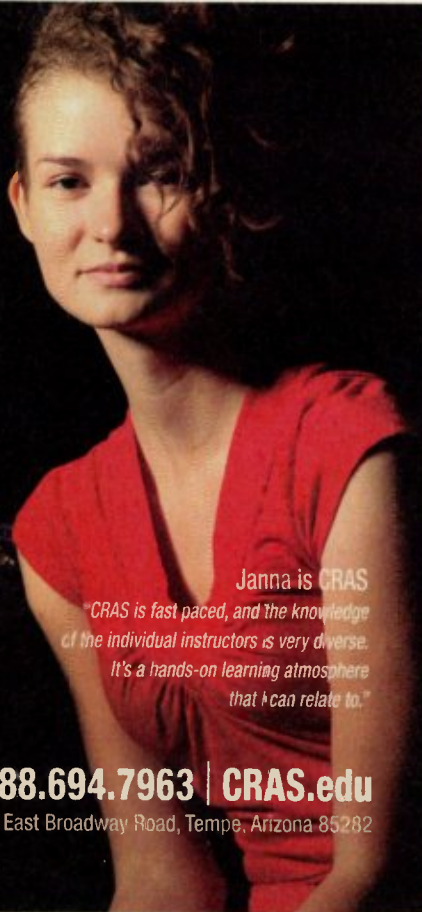
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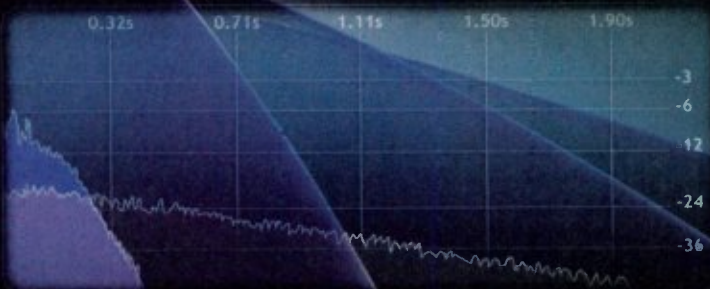
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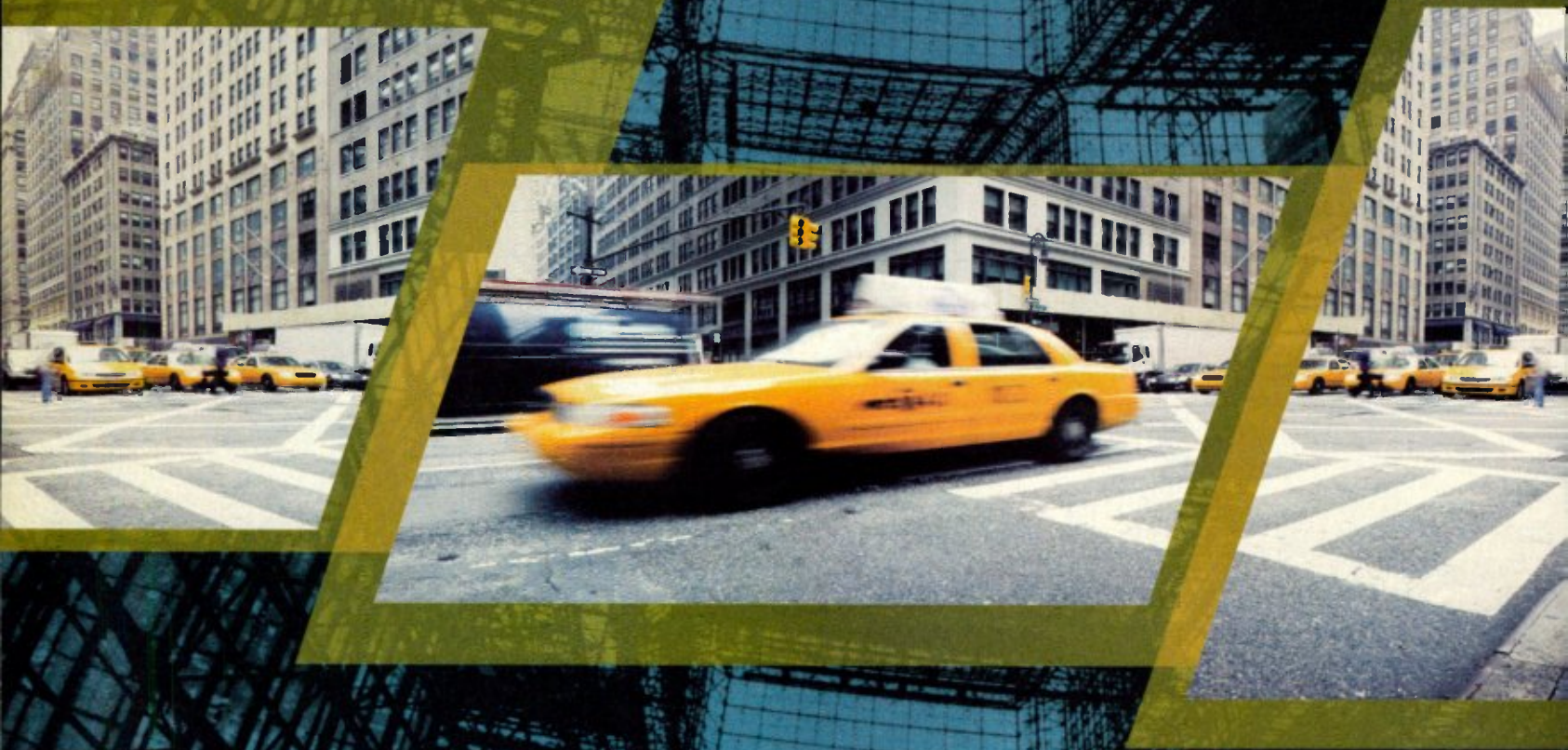
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From left: Tom T. Hall, Jim Lauderdale, Eric Brace, and Peter Cooper

'I LOVE TOM T. HALL'S SONGS OF FOX HOLLOW'

Remake of Classic Family Album Brings Out Nashville's Finest

By Barbara Schultz

Country Music Hall of Famer Tom T. Hall was pleasantly surprised when singer/songwriter (and former *Mix* Nashville editor) Peter Cooper said that he and Eric Brace wanted to produce a remake of Hall's 1974 album, *Songs of Fox Hollow*. It had been unlikely enough when Hall wrote and recorded a hit children's album at the height of his career success, "And I'd never even heard of someone redoing a whole album," Hall says. "But of course, I said, 'Yes.'"

The original album had been inspired by Hall's interaction with two young nephews who spent a summer on his farm, Fox Hollow. Hall wrote about what he saw through the eyes of those boys, and the album—with charming and poignant songs like "I Love" and "I Care"—became a hit with "children of all ages." Thirty-seven years later, Cooper—who says Hall is part of his "Mount Rushmore of songwriter influences"—was about to become a dad when he hit on the idea of visiting Fox Hollow (where Hall and his wife, Dixie, also operate a studio) and re-recording this music for the next generation.

"When I found out I was going to have a kid, I started thinking about what would be the first song I wanted to play for him," Cooper says. "Other people think about painting the nursery or installing a car seat; I was thinking that I wanted 'I Love' by Tom T. Hall to be the first song he ever heard."

Cooper and Brace asked some musical friends to perform the songs. "It's one thing to ask Buddy Miller if he wants to be part of a tribute album, but it's a much easier sell to say, 'Hey, do you want to hang out with Tom T. at his house and sing his songs to him?' No one said no."

The producers' picks included Patty Griffin, who sings "I Love"; Miller and guitar legend Duane Eddy doing "Sneaky Snake"; Jim Lauderdale on "I Like to Feel Pretty Inside"; and more. Singers took turns fronting a stellar band: pedal steel player Lloyd Green, keyboardist Jen Gundersman, stand-up bass player Mike Bub and drummer Mark Horn.



Jim Lau derdale

Cooper says that the arrangements remained largely true to the originals, but what would have been string-section parts in '74 are realized with Green's pedal steel.

The Halls' studio is in a converted dog kennel; several years ago, Dixie Hall gave up breeding basset hounds and the space was turned into a control room and series of booths, which they now use to record numerous bluegrass artists. Their house engineer is strings session player Troy Engle, who helped tracking engineer Richard McLaurin set up for the sessions.

"At the time of those sessions, we had a Mackie digital 8-bus console and we were tracking to an Alesis HD24 hard-disk recorder," Engle says. "I was on hand to help because Richard had never recorded there before. I think he used all of the mic pre's that were on hand: a dbx 576, several 386s—the 2-channel versions—and an older Peavey, a VMP2."

"I started to bring stuff out there, and then I thought better of it," McLaurin says. "I brought my Coles mic, and that may have been the only thing. So we started poking around at their studio, and it was like, 'Oh my gosh, an RCA 44, let's use that!' But I wouldn't say that any of the gear we used was the key. When you've got Patty Griffin and Buddy Miller and people like that,

anything you put in front of them is going to sound beautiful."

During a couple of overdub days, when McLaurin had another commitment, Alex McCollough—a mastering engineer at Yes Master (and the mastering engineer on this project)—filled in to record Jim Lauderdale's vocals and Duane Eddy's guitar. "We put Duane in one of the larger booths in front of the control room," McCollough says. "He brought in his Gretsch and his Musicman amp and asked for a large-diaphragm condenser mic; I used the Neumann mic that Richard had already set up, into the Peavey mic pre. He started playing, and all I can say is, it sounded like Duane Eddy!"

Adam Bednarik mixed the completed tracks on the vintage API at House of David Studios. His approach of using minimal compression and focusing on an open, natural sound brought out the best in these lovely, affectionate recordings. "I ran the stereo mix through a pair of 1176s and into two Neve line amps," Bednarik says. "It gave the mixes an added depth. I also ran the steel and Duane Eddy's guitar through some UA tube compressors, but that was more for sonic character. The main thing was to keep that open sound and wrap the mixes around the vocals."

"These songs are geared to kids, but they have some hard truths in them," Cooper reflects. "In 'Everybody Loves to Hear a Bird Sing,' the song I got to do, the song goes, 'Right now you're young and you're not very tall, and you're really very busy and you're really very small. Some day when you're older and things go wrong, you're gonna need a pretty bird song.' Things aren't always going to be wonderful, but you might want to hear a bird sing on a bad day."

VANESSA CARLTON'S 'RABBITS ON THE RUN'

By Matt Gallagher

Singer/songwriter/pianist Vanessa Carlton's fourth studio album, *Rabbits on the Run* (Razor & Tie), marks her first collaboration with UK-based producer Steve Osborne. "After my last record [*Heroes & Thieves*, 2008], I was out of juice," Carlton says. She found creative rejuvenation in listening to the music she grew up with, on vinyl. "I loved those records! It was clear: This is how I want to make my records." She describes *Rabbits on the Run* as "the most clear-minded and pure reflection of my sense of music that I've ever been able to achieve. It's also the most collaborative because every-



Photo: Matthew Wilson

one was so clear about what it was going to sound like."

Osborne brought Carlton, drummer Patrick Hallahan (*My Morning Jacket*) and guitarist Ari Ingber



Photo: York Tilker

(*The Upwelling*) into Peter Gabriel's Real World Studios in Bath, England, and joined the trio on bass. For 10 days, they tracked songs in the Wood Room with engineer Dan Austin, going to tape, which was Carlton's desired tracking medium. For most songs, Carlton played an upright piano recorded through ADL and Chandler outboard gear, and sang into a Soundelux ELUX 251 tube mic. Additionally, Osborne produced brass and string sessions at Konk Studios in London, as well as a children's choir in Abbey Road Studios, recording to Pro Tools and later bouncing down to tape.

Carlton and Osborne completed the album in Osborne's rented space at Real World, including overdubs and new songs. "We mixed the whole thing in my room on the 24-channel [analog SSL] desk and then mixed down to half-inch," Osborne says. "We had no automation because [the] SSL had no VCAs, so it was hands-on. I had to mix quite differently [than] if I was using Pro Tools automation. It was a lot of fun."

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View photos from the sessions and read a complete interview with Tom T. Hall at mixonline.com/august2011.

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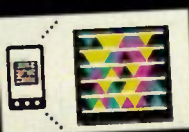
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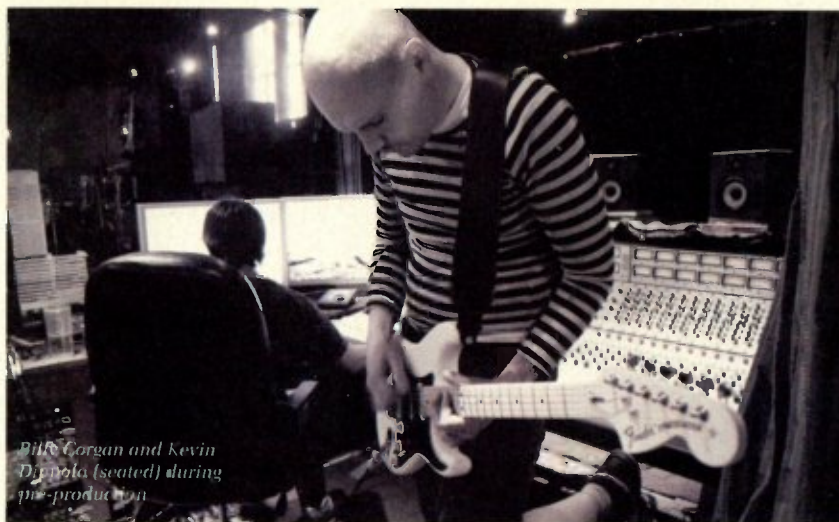


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SMASHING PUMPKINS IN PRE-PRODUCTION

When Smashing Pumpkins lead singer Billy Corgan came into Coldwater Studio (Beverly Hills), he had 30-plus songs but whittled that number down during a month of pre-production for their upcoming album, *Oceania*. "The studio is situated in a guest house so we were able to jam in a comfortable room with lots of light that faced a pool," says studio head engineer Kevin Dippold, who works with owner/producer Kerry Brown. "When Billy was happy with a particular arrangement, we'd move into the studio section of the guest house to do a quick acoustic guitar demo. Billy had just acquired an amazing vintage Martin that we miked with a Soundelux e251, and an AKG 451 and 414. These were all amp'd with a modified Neotek sidecar and summed on a Neve 5088 mixing board using the Roy Thomas Baker summing method. We also used a handful of soft synths to flush out the structure in the form of quick Pro Tools sketches." During the last week of pre-production, Pumpkins drummer Mike Byrne and bassist Nicole Fiorentino came in to refine their parts.

When Corgan is asked about the use of technology during the pre-production stage, he replies, "I'm cool with it if it facilitates a better song or does something



Billy Corgan and Kevin Dippold (seated) during pre-production

Photo: Kristin Burns

that a human can't do. I'm not into it if it fakes what a human can do. Digital editing has made the musician with great chops almost irrelevant—not totally, but almost. I'm looking for a casual, relaxed setting [during pre-production], and Kerry has always brought that to me no matter where we have worked."

—Sarah Benzuly

KICKDRUMS ON THEIR OWN

Producers Alex Fitts and Matt Penttila, under the nom de plume KickDrums, had to turn the mirror back on themselves. The same critical eye and creativity used to create beats and tracks for the likes of 50 Cent, Kid Cudi and John Legend was put into play for their own release, *Meet Your Ghost*. While working on other artists' material, the duo began to build the songs, fusing hip-hop tones with rock melodies. Working in their own personal studios in New York City, the two would mostly swap tracks with each other, coming together to work in Fitts' space (outfitted with Pro Tools 9 and Mackie HR824 speakers) when necessary. Toward the end, they brought in producer Alan Wilkis, whom they met while living in New York. Wilkis further helped define the album's sound, suggesting bridges, chord changes, etc. "We love producing for other people and doing remixes, but we had a lot of ideas for our own original music," says Fitts. "With us, we can really dive in and do whatever we want. The album turned out to have a lot of different styles and a lot of different vibes; we always wanted to try a lot of different things."

—Sarah Benzuly



Matt Penttila (left) and Alex Fitts



Photo: Christopher Nishan

SSL GOES INTO ORBIT

Orbit Audio (Seattle) recently had an acoustic (by Guy Staley) and aesthetic makeover, as well as installed an SSL 4056 G Series with Ultimatum. The control room features eight inches deep of 705 Corning in the front wall, covered with FR701 purple and black acoustical fabric. The back-corner bass traps offer 30-inch-deep Rocksol. Six acoustical clouds hang over the listening position. Helmholtz resonant bass absorbers line one wall in the live room.

—Sarah Benzuly

PRESERVING CULTURE AT WAM

Non-profit Women's Audio Mission (WAM) recorded a trio of master Mongolian musicians, with funding from the Alliance for California Traditional Arts. WAM founder and chief engineer Terri Winston oversaw the tracking sessions with engineer Jenny Thornburg, while Thornburg mixed the album at WAM; Michael Romanowski completed mastering at his facility. "They have to be recorded together and have really close sightlines," Winston says. "Also, they did not want to have microphones close to them; the closest we could get was probably a foot and a half. They were very meticulous about how it sounded."

—Matt Gallagher



From left: musician Ulziisaikhan Lkhagvadorj, engineer Jenny Thornburg, WAM founder Terri Winston, and Michael Romanowski

Photo: Women's Audio Mission

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World Radio History

Classic Tracks

By Barbara Schultz



Some of The Go-Go's look a little the worse for wear in this 1981 publicity photo. From left: Charlotte Caffey, Jane Wiedlin, Belinda Carlisle, Kathy Valentine and Gina Schock.

THE GO-GO'S

"Our Lips Are Sealed"

Nothing says 1980s L.A. like The Go-Go's on the radio. Those sweet, bright, infectious songs were the perfect soundtrack for a sunny day—still are, though 30 years have passed since one of rock 'n' roll's first all-female bands released their debut album, *Beauty and the Beat*.

The Go-Go's formed in the midst of L.A.'s late-'70s punk scene. None of the founding members—Belinda Carlisle, Jane Wiedlin and Margot Olaverra—were professional musicians. They were friends who bonded over shows by bands like The Germs and The Dickies.

In her recent memoir, *Lips Unsealed*, lead singer Carlisle recalls being outside a party in Venice, Calif., and the exact moment three fans became bandmates: "...the three of us found ourselves sitting on the curb with beers and cigarettes. We talked about the Sex Pistols' show in San Francisco, which was still fresh in our minds, and I added stories from my trip to London, and eventually we were talking about starting our own band...It was like making a pact."

The original Go-Go's lineup included Carlisle, Wiedlin on guitar, Olaverra on bass and Elissa Bello playing drums. "Our first rehearsal was at Margot's apartment off Robertson Boulevard," writes Carlisle. "We were pretty scattered and lost. We didn't even know how to start; we barely figured out how to set up our instruments. We banged around, tried to write songs and then went to Denny's for dinner. We were

situated in a booth, a mix of kinky hair styles and colors wrapped in cigarette smoke. All of us were in agreement that our first rehearsal had surpassed expectations."

They had nowhere to go but up, and the punk scene was all about D.I.Y. The group kept at their instruments and began writing songs together. They invited bass player Charlotte Caffey to join their group, but they wanted her to play lead guitar, so she spent a week learning to play guitar. The band started gigging at clubs like The Masque and The Whisky A Go Go. English ska group Madness invited them to open on a tour of the UK, where they cut an EP for Stiff Records.

As success began to build for The Go-Go's, differences between the bandmembers became problematic. Carlisle relates in her memoir that Bello was unreliable, and was replaced by Gina Schock. Olaverra became disgruntled as the band's sound became less hard-core and more pop; unwilling to lose momentum in the direction that was working for them, The Go-Go's replaced Olaverra with bassist Kathy Valentine.

It was the "classic" Go-Go's lineup of Carlisle, Wiedlin, Schock, Caffey and Valentine that finally signed with IRS Records and partied their way to New York City and the making of their first album, *Beauty and the Beat*. "...our producers, Rob Freeman and Richard Gottehrer, had their hands full with us," writes Carlisle. "We were either drinking and partying in the studio or hung-over from the night before."

Freeman, who engineered and co-produced the album, is a perfect gentleman, however. He mentions nothing about the musicians being the worse for wear in describing the sessions. "We wanted to make the album as live-sounding as possible, which can be an elusive quality in studio recordings," says Freeman, who had also worked with other seminal bands such as The Ramones and Blondie. "So we went into a rehearsal studio first to hear the band play together and get a sense of what they were capable of."

The Go-Go's had been playing out for more than a year at that point, and they had a full slate of great material written for the album, including "We Got the Beat," which had been included on the Stiff EP, and "Our Lips Are Sealed," written by Wiedlin with Specials lead singer Terry Hall. The musicians had developed a romance/friendship during The Go-Go's UK tour, but Hall was not single at the time.

"After we left, he sent Jane a letter about their complicated situation," Carlisle writes. "She set some of the lines from that letter to music, added some lyrics of her own (she's a genius), and voila, she had 'Our Lips Are Sealed.'"

"I was so in love with 'Our Lips Are Sealed,'" Wiedlin recalls in the liner notes to the 30th-anniversary edition of *Beauty and the Beat*. "I thought, 'If they don't like this, it's just gonna kill me.' I was very nervous to bring it in to the band, but everyone loved it."

Basic tracking for *Beauty and the Beat* took place at



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From: 'eben grace'
Date: 06/20/2011 11:25 AM
To: 'mike grace'

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Batman fan Jane Wiedlin pals around with engineer/co-producer Rob Freeman and, clockwise from top, Belinda Carlisle, Kathy Valentine, Charlotte Caffey and Gina Schock in Soundmixers Studios.

Pennylane Studios, which was equipped with a Trident TSM console and a 24-track Otari MTR-90 2-inch machine. "Pennylane had a great tracking room," Freeman says of the now-defunct studio. "Wooden floors, wooden walls, wooden ceiling, but not boxy at all. The room was about 25 by 35 feet, with the ceiling as

high as 16 feet in places. Carefully designed spaces were left between the wood slats that covered the surfaces so that certain frequencies reflected while others were absorbed into the insulation behind the slats."

In the tracking room, Freeman placed Schock's drums close to the control room glass to take advantage of the bright acoustic reflections there, and baffled off the guitar and bass amps. Carlisle was con-

finied to a vocal booth to deliver scratch vocals.

"The guitar amps were baffled on three sides, providing plenty of isolation, but open enough to allow their sound to bounce off the walls and into the ambient drum mics," explains Freeman. "The main guitar sounds were captured with a dynamic mic placed close on each amp, and a condenser mic back a few feet. They sounded great, but when you brought up the ambient

MUSIC EVENTS IN 1981

February 14: Billy Idol leaves the band Generation X to start his solo career.

May 2: Sheena Easton hits Number One in the U.S. with "Morning Train (9 to 5)."

May 14: Diana Ross signs with RCA Records, leaving Motown Records, her label of two decades. The \$20 million deal is the most lucrative recording contract at that time.

August 1: MTV debuts on cable television in the U.S., playing music videos 24 hours a day.

Date Unknown: Hal Wilner "invents" the modern tribute album with Amacord Nino Rota.

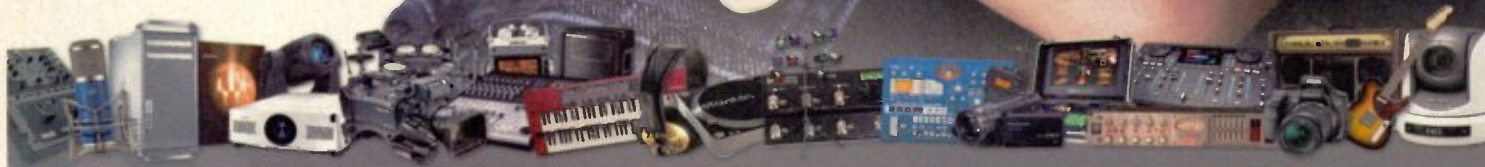
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Rob Freeman at the MCI 500 Series in Soundmixers with Charlotte Caffey and Gina Schock

drum mics, which contained plenty of guitar leakage, that really opened things up nicely.

“You can hear that leakage in the intro to ‘Our Lips Are Sealed.’ The opening guitar is panned to the right, but on the left, you hear its leakage; to me, that’s beautiful.”

For the bass sound, Freeman built a tunnel-like enclosure around Valentine’s amp and placed a large-diaphragm mic a couple of feet from the cabinet. He also took a DI, giving Freeman the opportunity to use one source or the other, or combine the two.

Three decades later, Freeman says he doesn’t remember all the exact mics that were used throughout the sessions, but he can picture Carlisle singing into a vintage Neumann U47. “Pennylane had a good assortment of very useful mics, including a wealth of U87s,” he says. “For drums, they had an AKG D-12 ribbon mic that I put inside the bass drum. I used closely placed dynamic mics as top mics on snare, hi-hat and each of the toms—Sennheiser 421s and 441s. Overhead, I used a couple of nice pencil mics—most likely Neumann KM56s. I believe the ambient drum mics were AKG 414s. The drum setup was recorded on seven tracks, plus two more for the ambient tracks, which I had fun compressing and doing other things with [during the mix].”

During tracking, Freeman says he employed only a touch of compression—via Teletronix LA-2As and/or UREI 1176s—as he preferred to keep things as dynamic as possible, and very little or no EQ, saving both for the final mix.

Though Freeman would have been happy to take the project from start to finish at Pennylane, studio scheduling conflicts forced the group to move to the multiroom Soundmixers Studios after a couple of weeks.

At Soundmixers, Freeman recorded overdubs on an MCI machine via an MCI 500 Series board. “The studio they put us in had sort of a ‘70s attitude with

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carpeting and acoustic deadening," he says. "But there was a large bathroom down the hall with tiles and mirrors, which made it quite reverberant. So I ran about 50 feet of mic and headphone cables and recorded overdubs in there: vocal lines—including the 'Our Lips Are Sealed' chorus "oos," which I sang together with Charlotte—handclaps, percussion, even guitar overdubs."

After several days at Soundmixers, they decamped again, this time moving to Record Plant Studio B, where a full day was devoted to final overdubs for "Our Lips Are Sealed": shakers, tambourines, handclaps, keyboard touches.

At the end of that day, Freeman worked up a quick mix of the song on the API console. "It was around 2 in the morning, and we were just ending the session and the mix was feeling really good," he says. "So I decided to knock off a rough mix. I liked the pass, but felt something was a little off toward the end of it, so I said, 'Let's roll back and try one more.' I did a second pass, then cut the front half of the first mix together with the second half of the second mix, making a razor blade edit at the bridge, the 'Hush my darling' part. That 'rough' mix became the hit single! It was done in 10 minutes—two mixes and the edit.

"From there, we went back to Soundmixers to begin final mixes for the album," Freeman continues. "Although I tried mixing 'Our Lips Are Sealed' there, it just didn't come close to that Record Plant late-night mix. Where was the magic? Maybe it was in Record Plant's perfectly tuned EMT reverb plates or their Roger Meyer tube limiter; maybe it was just in the moment. In fact, we left Soundmixers after day or two, went back to Record Plant [Studio C] and mixed the rest of the album there in 30 hours, using the 'rough' as our benchmark."

"Our Lips Are Sealed" became a Top 10 single on a double-Platinum album—a great success for Freeman, whose career also included working with Twisted Sister, KISS and ABBA, as well as The Ramones, Blondie and many more. He eventually shifted his focus toward sound-for-picture work, becoming a production sound mixer for films, documentaries, commercials and TV shows. At press time, he was busy mixing on A&E's series *The Glades*.

The Go-Go's, of course, became pop-punk superstars; they've disbanded and re-formed a few times over the years, but are now on tour, celebrating the 30th anniversary of *Beauty and the Beat*.

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RAY LAMONTAGNE

Guitar, Vocals Shine Onstage

By Candace Horgan

It's the voice that first hits you. A mixture of yearning and heartbreak, delivered in a raspy, delicate fashion that bypasses the ears and punches deep within. Backed by his band, the Pariah Dogs (drummer Jay Bellerose, bassist Jennifer Condos, and guitarists Eric Heywood and Greg Leisz), Ray LaMontagne's live performances are low on flash and chatter with the audience. In fact, at Red Rocks (Morrison, Colo.), LaMontagne may not have spoken more than 10 sentences to the sold-out crowd during the course of two hours.

Despite his predilection for analog, Doug Dawson is mixing on an Avid Profile board at FOH. "I use Crane Song Phoenix plug-ins, which I love," Dawson says. "I also use a Crane Song HEDD on the left and right, and it gives me a sort of tube flavor. Ray sings so delicately so I have a few good preamps on the main instruments and that makes a huge difference," Dawson continues. "I have some preamps that are D.I.Y.; they are kits you buy from Seventh Circle Audio in L.A., and they sound fantastic. I have about eight mics spread out through the band and Ray's vocal that I have the preamps on; they are very pristine-sounding."

Dawson keeps the effects to a minimum, employing an outboard TC Electronic M5000 double-loaded reverb unit with two preset reverbs that he uses on LaMontagne's guitar and vocals. He also uses the Waves C4 multiband compressor plug-in on the desk. He mixes in stereo, putting LaMontagne straight up the middle and splitting the guitars to either side.

At Red Rocks, Dawson was flying a Meyer MILO rig with 700-HP subs, with 16 cabinets a side. Near-fills were eight M'elodie cabinets onstage. The rig is powered with Galileos: one for the MILOs, and one for the subs and the M'elodies. To help control the bass, the subs are arranged in a cardioid fashion, with everything delayed and phase-reversed. LaMontagne doesn't like to hear too much bass onstage because he feels it distorts and gets in the way of what he's trying to do. "We go for a quarter wavelength, centered at 63 Hz," says system tech Mike Savage. "The mid-center two are phase-reversed and delayed so that everything is lined up nicely, and it cancels at the back."

Like his longtime counterpart, monitor engineer Dean Norman is using a Profile desk. "A few standard compressors and reverbs, and a Waves C4 is about the only plug-in that

Pictured here from a concert in 2007, Ray LaMontagne has retained his oneness with his guitar.

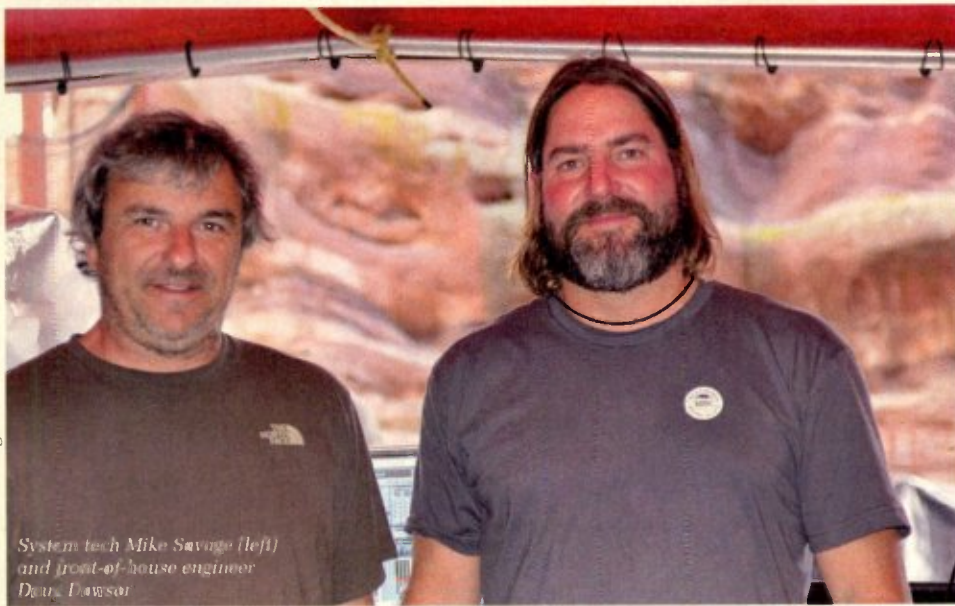


Photo: Candace Horgan

System tech Mike Savage (left) and front-of-house engineer Dean Dawson

doesn't come on the desk," says Norman. "It keeps things in balance, especially with the acoustic guitar. The dynamics of this show are pretty amazing, from barely a whisper to out-and-out rock. It helps keep the guitar in check, depending on how hard he is playing. These guys prefer to find their mix, where they can hear one another and kind of mix themselves."

Wedges are L-Acoustics 15XTs for all the supporting players, but because LaMontagne wants to hear more of the hall, Norman uses a pair of M'elodie cabinets onstage placed about 10 feet away from LaMontagne and angled slightly upward. Says Norman, "With the M'elodies, it

BACKSTAGE PASS

FOH Engineer/ Console:
Doug Dawson/Avid Profile

Monitor Engineer/ Console:
Dean Norman/Avid Profile

P.A.: Meyer MILO System Tech:
Mike Savage

fills that whole side of the stage with his vocal. It kind of works like a sidefill, but because Ray is stage-left, traditional sidefills wouldn't work. The guitar just sounds so much more natural coming from a distance instead of from a wedge right at your feet blowing up at your face."

For the summer tour, Norman switched out LaMontagne's vocal microphone from a standard Neumann KMS 105 to a Shure Beta 58a because he found

the Neumann was too sensitive. He expects to go back to the Neumann in the fall when the band is playing theaters again. The rest of the microphones are mostly Shures.

IRON & WINE

When Iron & Wine's Sean Beam put together a big band for their current tour, he needed someone to mix the new arrangements. As front-of-house engineer Jeremy Lemos knew most everyone in the band, bringing him onboard was a no-brainer. With 11 bandmembers onstage, it was imperative to bring along their own monitor package as most of their stops—ranging from Chicago's Millennium Park for 15,000 people to a beat-up rock club—couldn't accommodate that many monitor mixes; monitor engineer Tim Iseler is manning an Avid SC48. The tour also has a full Shure mic package, with Lemos saying it's the only way he can tame so many variables in different club P.A.s and mixers every night.

"I'm using really simple reverb and compression, just to keep everyone in check," Lemos says. "The keyboard player has a dozen different keyboard sounds and 1



Photo: CJ Forckler



Photo: Bratly Lemos

don't always have my hand on his faders. I've fallen in love with DCAs after mixing Iron & Wine. Sam's singing can switch from chest to throat in the same line, so a little hard limiting to catch the low end from popping out can really help. It also really helps in reverberant venues to keep all the explosive 'p's and 's's from saturating the room with energy and then having them decay over your mix.

"If Sam shows up with an acoustic guitar out of the trunk of a cab or his huge band with two buses, it's still an Iron & Wine show," he continues. "People come to the show to hear him sing his songs, so I have to keep that in mind all the time. My mixes are relatively quiet to keep the vocals out front, [though] you can still hear what everyone is doing, with a real strong rhythm driving everything."

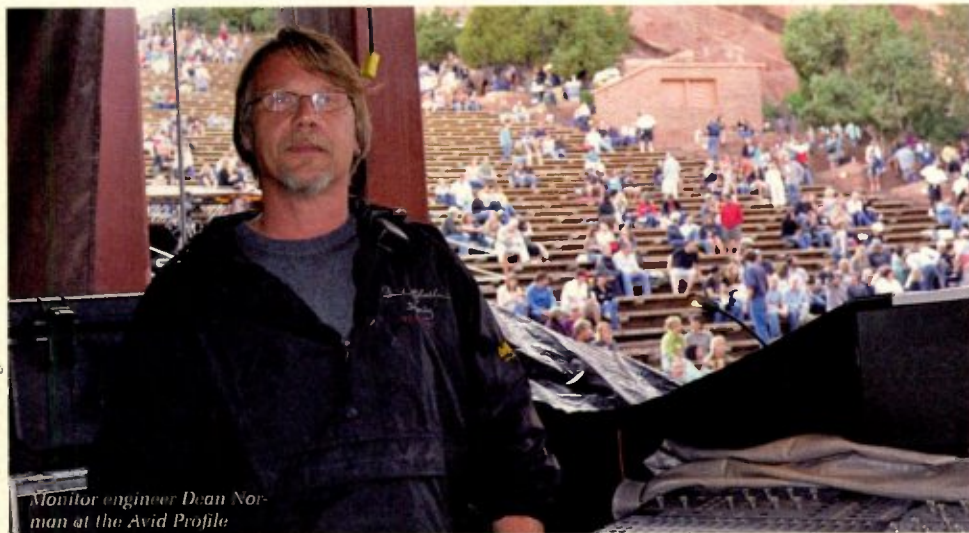


Photo: Candace Horgan

Monitor engineer Dean Norman at the Avid Profile

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by HARMAN

AL-TEE, JAY SEAN, ON THE YAMAHA TRAIN

Currently out with Jay Sean, FOH engineer Al-Tee is mixing on a Yamaha PM5D, noting that it's a board he can easily find no matter what venue he finds himself in. "The console's dynamic performance helps [Sean] keep the rhythm pumping on the stage. Jay and I flew into India for a show with no time to do a soundcheck, and I was able to load my scenes into the console and make some EQ changes, and off we went. I was mixing monitors and front of house from the same mixer."

As he's re-creating the album's sound in his mix, Al-Tee's using a little reverb based on the room's size. "I route the effects on aux 24 and then select the effect channel," he says. "Then I assign the effect to his ear mix. I keep everything as natural as possible and add very little EQ to the instruments."



Al-Tee Williams (left) and Jay Sean



LUKE BRYAN MONITOR ENGINEER ED JANISZEWSKI

FIXIT I have one musician who requests changes more frequently than the rest of the band. In the past, it meant flipping to his mix to make the changes. On the [DiGiCo] SD8, I have one of the three sets of assignable rotary encoders assigned to his mix, which means it's always accessible without flipping banks or hitting a button, and I still have the other two sets of encoders for other purposes. Also, having two talkbacks is really helpful. I have one assigned to the crew mixes and one for the musicians, which benefits both problem-solving and gossip. And because of the flexibility in configuring the layout, I can put different output channel types on one bank; I use aux sends for the band's mixes, a master group bus for Luke (so his effect sends are post-fader) and I use a matrix for a spare/backup output, all of which are side-by-side on the same bank. I use a set of macros to instantly route any mix to the spare/backup matrix output, so if there is a problem with someone's pack I can swap it out easily, quickly and without re-configuring anything.

ACENTECH SPRUCES UP VENUE

The Spruce Peak Performing Arts Center, a 420-seat, 13,000-square-foot performance hall in Stowe, Vt., hosts a variety of music, dance and theater performances, as well as lecture and video presentations, and cinema screenings. Acentech (Boston) designed the A/V systems and acoustics of the space, which is particularly well-suited to unamplified and lightly amplified music gigs. The acoustic design includes noise control for mechanical systems, resulting in a very quiet room (NC-20) with minimal reverberation (1.3 seconds). Equipment installed includes a Soundcraft Si1 digital console, full-range Renkus-Heinz loudspeakers and subs at the proscenium.



METRIC HALO TO THE THEATER

Paul Kavicky, owner/operator of Pater Street Audio Company (Columbus, Ohio), is working the FOH position for Threesixty Theater's production of *Peter Pan*, which will run in four different cities for a total of 350 shows. In his home studio, he creates and records sound effects and voice-overs for theatrical work. New to his space are six Metric Halo FireWire interfaces with eight I/Os each: four 288s, an LIO-8 and a ULN-8.

When he travels with shows, Kavicky takes a 2882 with a 2d expansion card and +DSP capabilities. "Aside from a microphone and a computer, the expanded 2882 provides every other tool in my audio recording toolbox," he says. "That lightens my load as I don't have to travel with any ancillary gear—no outboard mic pre's or compressors. I can do it all inside the Metric Halo box."

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FLORENCE AND THE MACHINE



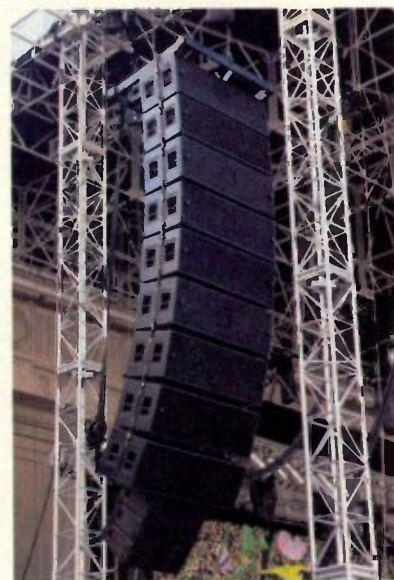
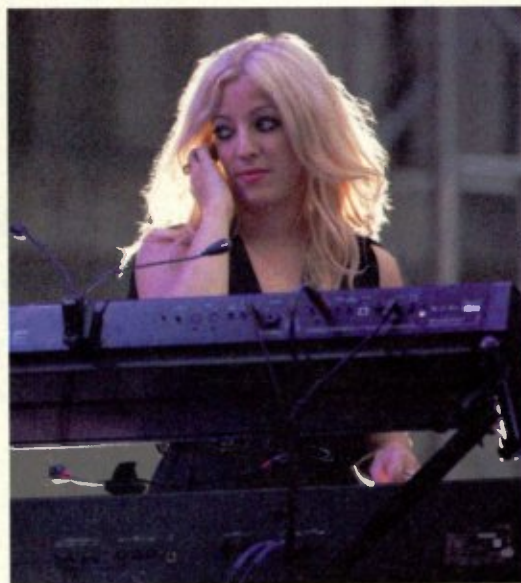
Florence sings through a Sennheiser GT5200 with a Neumann 105 capsule.

Florence Welch is having a good run, basking in the critically acclaimed success of her debut, *Lungs*. As for "The Machine," it can be Welch and a drum kit or a piano, but right now it's a seven-piece band including long-term collaborators Rob Ackroyd (guitar), Chris Hayden (drums), Isabella Summers (keyboards) and Tom Monger (harp). "I've worked with most of them for a long time and they know my style, know the way I write, they know what I want," says Welch. And she's bringing them out onstage for her current run of dates. *Mix* caught the first show of the tour at the Greek Theater in Berkeley, Calif.

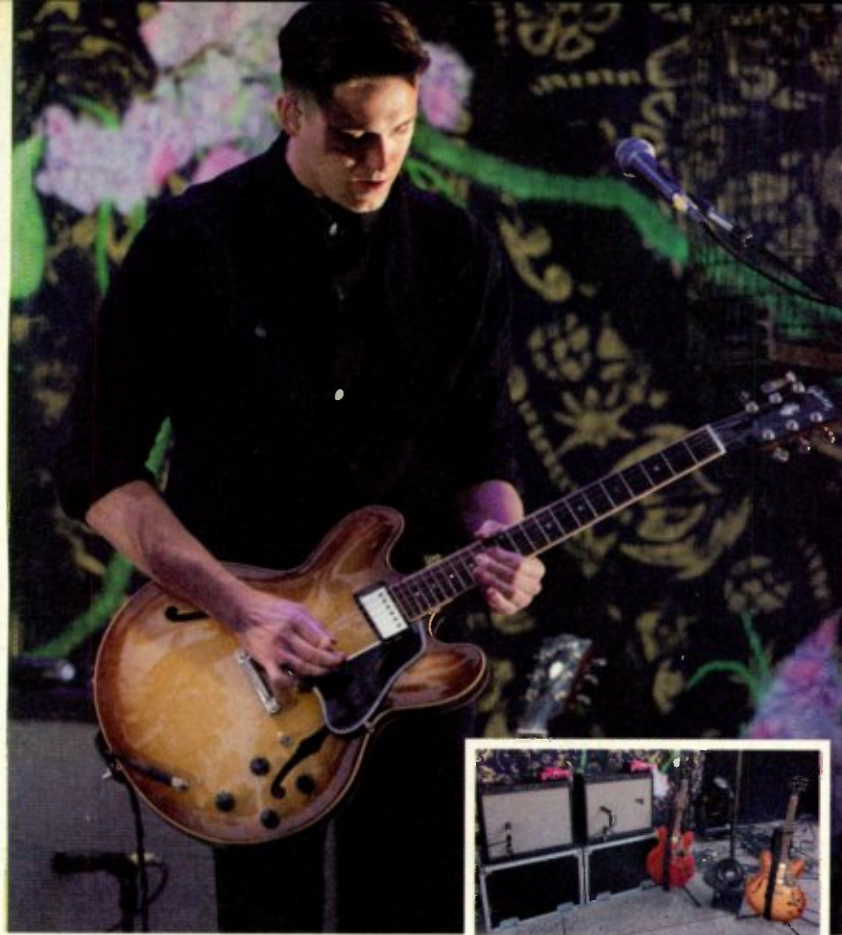


Front-of-house engineer Ian Laughton is manning a Yamaha PM5D, using the onboard reverbs (hall for Florence's voice and two for drums) and delay. In his outboard rack are a Furman PL-8, a Portico II and an Avalon Vt737sp. "I've always been a fan of valve/tube, and I've carried my Avalon around the world," Laughton says. "We have a great crew who make the touring side of it really easy."

Keyboardist Isabella Summers plays a Roland Juno-Stage Synth and a Yamaha CP300.



Sound On Stage provided the P.A. system (pictured) for the Berkeley show. General manager Wes Norwood explains the hang: L-Acoustics V-DOSC (nine per side), with three dV-DOSCs underhung on each array. Outfill arrays are three ARCs each, frontfills are four JBL MS-28s and subs are L-Acoustics SB218 (six per side).



Guitarist Robert Ackroyd has two Fender Hot Rod DeVille 212 amps. "They have a great drive sound without getting the levels too loud," says guitar/bass tech Djimir "Penguin" Filho. "Added to the amps are two THD Hot Plates. I can control the levels and have the tubes always 'full-on' while keeping the volume correct for the show. We mike each amp with a Shure SM57." Ackroyd's footpedals comprise a H.O.G. (harmonic octave-generator guitar synth); Boss Loop Station RC-2, TU-3 chromatic tuner, FZ-5 fuzz, TR-2 tremolo and DD-7 digital delay; DigiTech X Series digital reverb; and Ibanez TS-9 Tube Screamer.



According to drum tech Michael Noon, **Christopher Lloyd Hayden's** drum kit is miked with Shure Beta 91A (kick), Beta 52 (kick), SM57 (snare top) and SM81 (overheads); Neumann KSM32 (snare bottom) and KM184 (hi-hat); Sennheiser 904 (rack, floor toms); and AKG 414s (overheads). Meanwhile, Welch's floor tom is miked with Sennheiser 904.



Monitor engineer Phil McDaniel mixes on a Yamaha M7CL-48 using Apogee Big Ben external word clock; onboard, he employs mostly Rev-X programs. Outboard-wise, he's carrying an Avalon 737SP inline with Florence's vocal; inline with her IEM mix is an Avalon 747SP mastering EQ/comp. "Consistency is the most important thing for me when it comes to monitor mixing, as we move between tiny club gigs, large theaters, arenas, and even stadiums, where we've had some dates with U2," says McDaniel. "The crew is also 'all diamonds,' with a good sense of humor and professionalism." Pictured (L-R) at monitor world, from left: guitar/bass tech Djimir "Penguin" Filho, monitor engineer Phil McDaniel, systems tech Eddie "Flash" Valencia and drum tech Michael Noonan.

Harpist Tom Monger has an Akai MPC 2500 drum/phase sampler, along with a Roland FC-300 MIDI foot controller.



Bassist Mark Saunders has two Mark Bass Classic 300 bass heads; one is a spare. The Mark Bass CL108 Closed Neo cab is miked with Sennheiser MD421s. His foot pedals comprise a Moog Moogerfooger lowpass filter; Boss line selector, TU-3 chromatic tuner and PS-5 Super-Shifter; Markbass Super Booster and Super Synth; MXR Blow Torch; and Electro-Harmonix Big Muff. His snare drum and floor tom are each miked with a Sennheiser 904, and his tambourine and block take AKG 414s.



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START WITH THE **SINGER**

Four Top Engineers on Recording Lead Vocals

From the breathy smoothness of Diana Krall to the growl of Tom Waits to the screams of Linkin Park's Chester Bennington, no two singing voices are quite alike. For producers and engineers, the challenge is to find the most flattering way to capture a particular singer's sound. But successful vocal recording requires more than engineering skill; you also need psychological chops. Coaxing the best performance from a singer is often a lot trickier than selecting the right vocal chain.

There are plenty of different approaches when it comes to recording vocals. While there are areas of general agreement—make the singer comfortable, provide a good cue mix and use a quality vocal chain—when you drill down, you find that producer/engineers all have their own individual techniques, or at least variations of standard ones that they use to capture the best vocal possible.

By Mike Levine

Session Prep

There's a lot more you can do before a vocal session than simply setting up a mic and making sure you can hear the cue mix and mic output in the artist's cans. Whenever possible, learn as much as you can about the singer and the music so you can make the best choices in terms of vocal chain, vibe and psychological approach.

"Preparation to me means I actually visualize myself in the session from the moment I walk in the door until the end of the day," says engineer Dave Reitzas (Barbra Streisand, Seal, Guns 'N Roses, Celine Dion and Andrea Bocelli, to name just a few). "I do a mental walkthrough, a training for my mind for what to expect.

"I walk through problems that could arise, like maybe the headphones aren't right. So I want to make sure that I have another pair of headphones, ready to fix that problem. I want to have option microphones available, I want to have option preamps, option everything—plan B, maybe plan C for anything that could arise. I'll do a little Internet research and see if there are any kinds of quirks or references or stories, or maybe the artist works with an engineer that I know, and I might give a phone call, and say, 'Anything I should know about this artist?' So it's basically just a little homework to give me an edge in making the session flow seamlessly."

Foreknowledge of the artist can help you choose the appropriate mic, or at least help winnow the mic choice in advance. "I'll kind of narrow it down, just by knowing what they sound like based on pre-production or a previous record that I've heard," says New York City-based engineer Joel Hamilton (Tom Waits, Elvis Costello, Pretty Lights, Sparklehorse and more), "or if it's just the scratch vocal that I've heard during basic tracking."

"More than likely I'll already have the music if I'm recording the vocal," points out Miami-based Marcella Araica (Missy Elliot, Joe Jonas, Nelly Furtado, Usher and many others). "I like to get a sense for the feel and tone and what the range is, and that really determines what type of mic I use and what preamp."

Knowing which of your mics and pre's are most flattering for which types of voices and musical styles will give you a big advantage when it comes to choosing the appropriate ones in advance. One thing you want to avoid is spending a lot of time testing out vocal mics and other vocal-chain components while the singer is there.

"My goal is to make the first mic choice the right mic choice," says Reitzas. "So with my 26 years of experience, I have a sonic imprint in my brain of what hundreds of microphones sound like and which mic would be a good pairing with the singer, especially if it's someone I've worked with before whose sound I'm familiar with. But I basically will pick the mic that I think will work best for the singer and the song, with the intention that the moment they open their mouth, that's what we're keeping. There's so much spontaneity and magic in a first take that you have to have your s**t together to be able to use that."

Hamilton says he typically has three mics set up before the session starts, but makes his choice

quickly. "I don't even bother with a whole take," he says. "Usually when somebody steps in front of it and starts talking, it's as if the glass comes down and you just hear them the way they were just talking to you in the room."

To give the mics a fair comparison, he uses the same chain for all three mics. "I'll switch the patch rather than have three mics through three different pre's," he says, not wanting to add more variables to the process. "I'd rather just hear the singer. He or she is the variable, and the performance is the variable, and I'm looking for constants at that point."

He also concurs with Reitzas that it's best not to spend much time experimenting with different mics at the risk of missing a good take. "You don't try 50 different cameras right as the bus is about to jump the canyon," he says. "You go with it, and you do what you can afterward in the editing to tell the story in an engaging way. In general, I would say that I'd go with an inferior microphone choice and a killing take because there are 9 million ways we can make it shine later."

Araica also sets levels very quickly. "It happens sometimes that they're in the middle of doing levels and they do that money take," she says. "I always record. Even if the music stops and they're in there talking or just messing around, because sometimes they might do something really cool, or their mind might take them somewhere to do a different creative idea, and they'll realize that they went somewhere, and say, 'Oh my God, that was so cool, did you record that?' And I'm like, 'Yup.'"


Cue It Up

Another item to check off your list before the session starts is setting up a good cue mix. Obviously, you'll likely have to tweak it later at the singer's request, but at least get something in place that sounds good to you and confirm that everything is working.

"I'll get a great music mix in the control room," says Reitzas, "using the same headphones that the singer is going to use and the same headphone box, and I'll put my music on one group fader and then I'll pull that fader down. Then I go out to the mic and I do a mic check. I'll get the level on the mic to where I can give it a little bit of volume and make sure that the sonics sound like I expect them to sound. Based on my experience, I'll set the headphone box to where I think it's going to be a perfect vocal level for the singer, including reverb and delay levels. I'll get the vocal to sound perfect without the vocalist being there. Then, while at the mic, I'll have the assistant in the control room push up the music fader until I think the music is at the right level. So 99 times out of 100, we're ready to go right from the first note."



Dave Reitzas says it's more productive to focus on what the singer is doing well during a session rather than dwelling on what they're doing wrong.



Marcella Araica finds that getting an artist a handheld mic to use, like a Shure SM58, can sometimes do wonders to get a great performance.

Right Angles

Araica, Brainard, Hamilton and Reitzas all say that how you place the vocal mic in relation to the singer varies based on the circumstances of the session. When pressed for their “typical” setup, the four offered some slightly different techniques. “I have a pop stopper about an inch away from the mic,” says Brainard. “I have them sing about two inches away from that, unless there’s a lot of low end, in which case I’ll have them back off another two inches.”

Reitzas and Araica like to start with the mic angled down a little bit, with the singer about four to five inches from the mic. “I usually will put the mic at nose level and then aim it at the mouth,” says Reitzas, who also likes using a very small pop filter to avoid impeding his sightlines with the singer.

Hamilton says he typically prefers an even closer starting point, “so that the capsule is literally like a lollipop in front of the person’s mouth,” he says. “It depends on the shockmount, but as close as the singer can comfortably get, without knocking the thing into the shockmount 100 times with his or her nose—meaning the shockmount is almost touching the pop screen.”

Get in the Zone

Everyone agrees that making the singer comfortable goes a long way toward getting a great performance. So part of your pre-session preparation should include learning what kind of environment the singer likes and tailoring the lighting and vibe of your studio accordingly. Low lights and even candles are often used to set the mood. You might even run into the occasional singer whose comfort zone is decidedly non-standard. “Some artists want to sing in pitch black, where they turn all the lights out,” says Araica. “That’s their choice.”

You can also help by keeping the temperature in the vocal booth or live room warm. “You don’t want your vocalist to be freezing,” Araica says. “I think most professional singers understand the importance of keeping their body temperature warm.” She also recommends having room-temperature water available, which will refresh the singer but won’t tighten up their vocal chords as colder drinks can sometimes do.

Producer/engineer Dave Brainard (Jerrod Niemann, Jamey Johnson, Brandy Clark and others) attributes some of his success with vocalists to the relaxed feeling of his Nashville project studio. “It’s got a great vibe,” he says. “We’ve got a coffee machine, and we’ve got wine or beer available. It is a comfort thing. People come up here and they feel comfortable.”

Hamilton contends that the most important factor for bolstering singers’ confidence in the studio is to make them feel that you’ve got things totally in control on the technical side. “It starts with the comfort factor. Just sort of exuding a confidence that I’m grabbing whatever you’re throwing at me in a way that’s flattering,” he says. “Like if you’re sitting next to someone on an airplane who isn’t freaked out by turbulence, you sort of read their body language, and you’re like, ‘Oh cool, we’re not going to die.’ [Laughs] Like this guy has seen this 1,000 times and he’s not freaking out, so I guess I can chill.”

Araica will sometimes use what some might consider an unlikely technique, at least from a studio standpoint: She’ll have the vocalist sing into a handheld Shure SM58. While it can’t compare sonically to expensive studio condensers, the added level of confidence some artists get from holding a stage mic makes all the difference for Araica. “You can get a better performance out of an artist when they’re in the mindset that they’re on that stage or they’re rehearsing the song,” she says. “It’s my favorite mic to use. I can’t use it on everything, but on certain singers I love it, and they know how to open that mic.”

Taming the Input

Because 24-bit recording doesn’t require as much level to sound good as 16-bit or especially tape, the biggest challenge is keeping the loud peaks in check to prevent distortion that could ruin a take, or part of one. With that in mind, Reitzas, Araica, Brainard and Hamilton all compress to varying degrees on input.

“I use compression when I’m recording,” says Reitzas, “but just subtle: 1 or 2 or 3 dB of compression on the big stuff.”

“When I record vocals,” Araica adds, “I like to really lightly just touch on it, just enough to have some control. You can’t take the life away from it in the beginning process.”

Brainard goes for just slightly more. “The compression I use is just a basic [Empirical Labs] Distressor, and I try to get 3 or 4 dB of reduction.” He tracks through an Endless Analog CLASP system, which means the signal goes through analog tape before hitting Pro Tools. “Now I’m doing all CLASP, and I can’t go back. It’s like night and day as far as what I can do sonically. It just shaves off all those harsh transients.”

Hamilton uses his input compressor, a Neve 33609, mainly for catching peaks. “I wind up with just a little bit, but it’s more like limiting,” he says. “Super-fast release time, super-fast attack time. In the heaviest of sessions, it’s probably pulling back 5 dB in the loudest bit.”



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Photo: Jackie Roman

According to Joel Hamilton, you can make a singer feel relaxed by exuding confidence in your ability to capture their performance.

Another way to control vocal-session dynamics is to ride the levels from the control room during the take. "I'm not afraid to ride the level knob on my preamp as we're recording," Reitzas says. "Sometimes you get the advantage of knowing the song before it's recorded, so you know what to expect. An artist will practice in the control room before, and you get an idea of what they're going to sing. With Streisand, I'm constantly riding the preamp gain. With her, it's usually quiet verses and big, dramatic choruses."

Araica adjusts her Tube-Tech CL 1B compressor as needed during the song. "I just use the output," she says, "or adjust the threshold not to hit as hard. That opens it up even more."

Hamilton points out that like guitar amps, mic preamps often sound better when set above certain gain levels, and it's important to set yours to deliver its best tone. "Think about when you're playing through a Fender Twin," he says. "Put it on 1 and it sounds like crap. Put it on 3 and it sounds amazing. There's a point where amplifiers open up and start to show their colors. And that's absolutely true of a Neve 1073 or a 1066, or a Manley, or whatever you're using. There's going to be a point in that amplifier's gain range where it just starts to rock for vocals. And if you need to, throw something after it [before it hits the converters] to attenuate. I think people would be surprised because they end up with an API turned all the way down and the pad engaged, and somehow their 87 doesn't have any 'air.'"

As for EQ'ing on input, Araica prefers not doing so, if at all possible. "You might never see this artist again," she says. "You've got to keep everything safe as possible. In my belief, if it goes in clean, you have nothing to worry about."

Reitzas typically uses an NT1 EQ3 or the new Maag EQ4 in his vocal chain. "The texture I get from those EQs is so important to the vocal sound that I want that quality to be recorded, especially for when I am only called in to record the vocal. This way, the sound is there no matter who takes over on the rest of a project."

Brainard inserts an API 550B equalizer in his chain. "Usually, I'm just notching a little bit of low end out of the vocal," Brainard says. "I don't play with the high end going to tape." (See sidebar "Chain Reaction.")

Session Strategies

"To me the biggest thing in working with singers is more psychological, where you allow singers to self-correct," says Brainard, "getting a singer to be creative and compelled, and inspired, and [feeling] like they own it, as opposed to reacting to what they think you think is good. That's the worst place for a singer to be. For me that's the key to everything."

Reitzas takes a similar tack. "I stay positive and enthusiastic all the time," he says. "I am focusing on what I hear that I love. I'm not spending my energy hearing what's wrong. A lot of artists are very hard on themselves. They'll do, say, a couple of lines in a verse, miss a few notes and then start bumbling because they didn't get it the way they had hoped for. But I'm listening for the two or three

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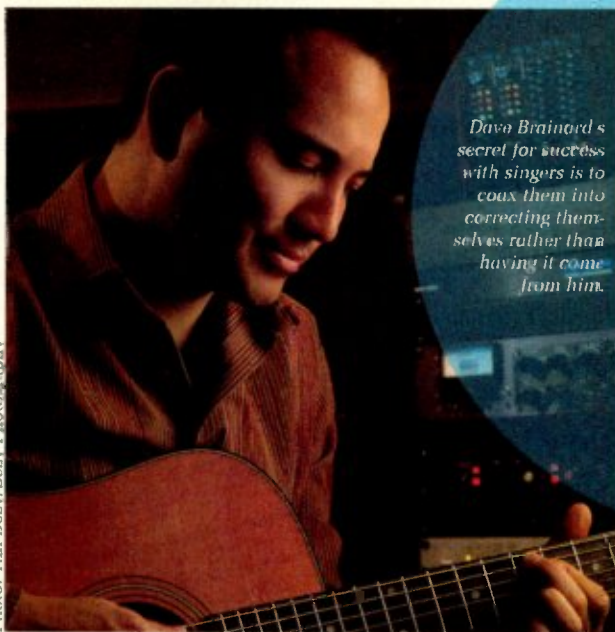


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David Brainard's secret for success with singers is to coax them into correcting themselves rather than having it come from him.

great moments that are definitely 'keepers' that sometimes get overlooked."

When a singer is having problems, especially with pitch, adjusting the headphone mix can go a long way. "I will have the main keys or the piano [on a fader] close to me so that I can push that up in their phones on spots that will help them zero in on the pitch," says Reitzas. "I am also ready to raise the hi-hat or a loop for help with rhythm. I can't emphasize enough how important it is to encourage and teach singers who don't have good mic technique to use the mic to their advantage by getting in close on intimate phrases, and backing off slightly or turning their head slightly on the big dynamic phrases."

You have to be careful pointing out pitch problems with some singers, who then might end up focusing on it so much that it messes up the rest of their performance. But unless you feel that the pitch issues can be dealt with using post-session tuning, ignoring it probably won't help either. "It's like watching somebody running into a wall," says Hamilton. "I'm not going to tell them to 'run faster into the brick wall and see if you make it through this time.' It's like you can steer them around that roadblock with either technology—changing the headphones, physically changing the environment—or having them come listen to how it's reading and they usually internalize it right away."

In the pop/R&B/hip-hop world that Araica works mostly in, it's not uncommon for artists to monitor through pitch correction in their cans while they're singing. Although it can introduce some latency into the cue mix, many singers still want it. "There are some artists where that's the only way they can work," Araica says.

Vocal tuning technology has made it less imperative for the vocalist to nail every note from a pitch standpoint, at least in some genres. "On modern music where tuning is part of the vibe, I'm totally cool with that," says Reitzas of vocal tuning. "On true, honest, singer/songwriter music, I don't like to hear any artifacts."

more online



For a Q&A with Joel Hamilton on recording background vocals, go to mixonline.com / august, 2011

Mike Levine is a New York-area recording musician and music journalist. He's the former editor of *Electronic Musician*.

CHAIN REACTION

Reitzas, Brainard, Araica and Hamilton all stressed that the mics and components in their vocal chains depend on the singer and song. That said, they did offer up some of their typical vocal-chain components:

Reitzas

Mics: Brauner VM-1 or Audio-Technica 4060 with Telefunken tubes; mic pre: NTI PreQ3 or Maag PreQ4; EQ: NTI EQ3 or Maag EQ4; compressor: Tube-Tech CL 1B

Brainard

Mics: Rode Tube Classic, Audio-Technica 4060 or Peluso 2247 LE; mic pre: API 512; EQ: API 550B; compressor: Empirical Labs Distressor; tape-based input hardware: CLASP system

Hamilton

Mics: Neumann FET 47, U87, U47, GT md 1 or Blue Mouse; mic pre's: Neve 33114 1084 or 31102; compressor: Neve 33609

Araica

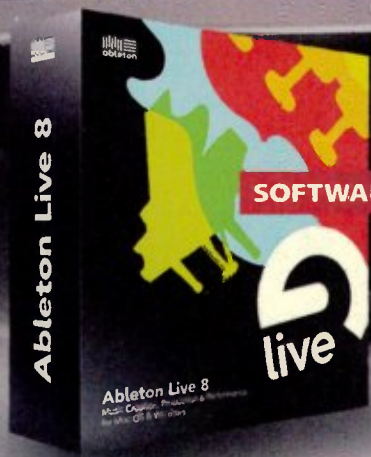
Mics: Sony C800, Neumann U67 or U87, Telefunken 251, Shure SM7 or SM58; mic pre's: Martech MSS-10, Neve 1073 and 1084, Avalon 737; compressor: Tube-Tech CL 1B



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As LDCs continue to evolve with new models released on a regular basis, *Mix* felt it was time once again to survey manufacturers for their newest offerings. The mics in this roundup come in tube and solid-state versions, each having their own distinctive personality, giving users a range of options when trying to match a mic to a particular vocalist. The prices given are all retail prices, so be sure to shop comparatively online and in brick-and-mortar retail outlets.

With a broad range of products and expanded feature sets available at a variety of price points, now more than ever, it's possible to find the best mic suited for a given application. In the chart that follows on pages 52 and 53, *Mix* presents specifications for LDCs that began shipping during last fall's AES show (November 5 to 7, 2010), up through mid-July 2011.





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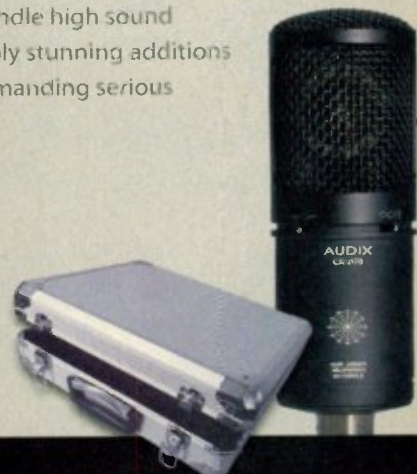
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ADK Microphones	Custom TT-49Au	tube	9 patterns	no	no	125 dB	\$2,219	Reference curve to a vintage M49. Includes two shockmounts, two windscreens, two Accu-Sound OFC XLR, premium flight case.
ADK Microphones	Custom CS-49 Full Mod (CS-49J/CS-49L/CS-49S)	tube	9 patterns	no	no	125 dB	\$3,363 to \$3,463 (based on transformer option)	Select Jensen, Lundahl or Sowter transformer. Reference curve to a vintage M49. Includes two shockmounts, two windscreens, two Accu-Sound OFC XLR, premium flight case.
Apex Electronics apexelectronics.com	Apex520	solid-state	C/O/Fig-8	80 Hz	0/-10 dB	134 dB	\$230	Hardened low-carbon steel grille. Integrated 3-stage grille mesh for added pop/wind noise reduction. Die-cast metal housing. Includes shockmount and carrying case.
Apex Electronics	Apex530	solid-state	C	80 Hz	no	135 dB	\$160	Extremely low self-noise. Internal user-selectable LF roll-off switch. Includes shockmount and leatherette mic pouch.
Apex Electronics	Apex540	solid-state	C	no	no	126 dB	\$250	FET condenser. Low self-noise transformerless circuit design. Heavy-duty cradle mount. Includes wind screen and aluminum case.
Apex Electronics	Apex550	solid-state	C	80 Hz	0/-10 dB	145 dB	\$240	FET condenser with 34mm gold-sputtered capsule. Low self-noise transformerless circuit design. Heavy-duty cradle mount. Includes wind screen and aluminum case.
Audix audixusa.com	CX212-B	solid-state	C/O/Fig-8	120 Hz	no	133 dB	\$425	Includes custom aluminum case and isolation shockmount.
Blue Microphones bluemic.com	Reactor	solid-state	C/O/Fig-8	no	no	135 dB	\$499	Capsule head rotates 90 degrees. Includes metal carrying case, shockmount and magnetic pop filter.
Bock Audio bockaudio.com	241	tube	C	no	no	94 dB	\$3,600	Brite/Normal switch. Transformer balanced output. Includes 6-pin Tuchel cable, AC cable, wood box, spider-type shockmount and shipping system.
Brauner Microphones brauner-microphones.de/en	VelvetX	tube	C	no	no	142 dB	\$3,150	Pure cardioid. Includes lightweight cradle suspension, power supply unit, case, manual and custom Vovox 5m Sound conductor cable.
CAD Audio cadaudio.com	GXL2200BP	solid-state	C	100 Hz	no	130 dB	\$140	Features a 1-inch gold vapor-deposited diaphragm promising exceptional sensitivity and low distortion. All the mics come in a black pearl-chrome finish and include a shockmount or mic clip, vinyl pouch and polishing cloth.
CAD Audio	GXL3000BP	solid-state	C/O/Fig-8	100 Hz	-10 dB	135 dB	\$140	Features a precision-engineered 1-inch gold vapor-deposited dual-diaphragm capsule. All the mics come in a black pearl-chrome finish and include a shockmount or mic clip, vinyl pouch and polishing cloth.
Equation Audio equationaudio.com	F.20	solid-state	SC	80 Hz	16 dB	150 dB	\$599	Comes in a padded-foam gig bag. Includes metal pop filter.
innerTUBE Audio innertubeaudio.com	MMx2	tube	C/O/Fig-8; continuously variable	no	no	not specified	\$5,995	Stereo tube mic with two dual 1-inch capsules. Comes with shockmount stand adapter, foam windscreen pop filter, power supply with remote pattern adjustment for each dual capsule. Special 12-wire cable in 30, 50 or 100-foot lengths; custom lengths available. Mic usable to 1,500 feet of cable.
Josephson Engineering josephson.com	C716	solid-state	C	no	no	134 dB	\$3,995	Dual-diaphragm capsule. Advanced internal shockmount. True balanced discrete transformerless output. Acoustically transparent aluminum foam screen/basket. Includes weather-resistant Pelican hard case.
JZ Microphones jzmic.com	V12	solid-state	C	no	no	134 dB	\$1,913	Includes wooden box.
JZ Microphones	V47	solid-state	C	no	no	134 dB	\$1,913	Includes wooden box.
JZ Microphones	V67	solid-state	C	no	no	134 dB	\$1,913	Includes wooden box.

*Key to Polar Patterns: C = cardioid; O = omnidirectional; HC = hypercardioid; WC = wide-cardioid; SC = supercardioid; Fig-8 = figure-8.

MANUFACTURER	MODEL	TYPE	POLAR PATTERN*	LF FILTER	PAD	MAX	RETAIL	NOTES
Karma Mics karmamics.com	Trinity	solid-state	C/O/Fig-8	100 Hz	-10 dB	130/140 dB	\$249	Large, 6-micron, gold-sputtered dual-diaphragm capsule. Includes shockmount and flight case.
Karma Mics	Unity	solid-state	C	no	no	135 dB	\$199	Includes shockmount and flight case.
Marshall Electronics mxlmics.com	Genesis II	tube	C	150 Hz	0/-10 dB	130/140 dB	\$1,100	Vintage NOS Mullard tube. Patented dual-capsule design: one warm and one slightly brighter.
Marshall Electronics	Revelation Stereo	tube	X/Y 90-degree stereo	125 Hz	0/-10 dB	138 dB	\$2,499	Dual EF86 Electro-Harmonix pentode tubes.
Marshall Electronics	V67GS	solid-state	C	150 Hz	0/-6 dB	130 dB	\$280	Added switches and pad features.
Marshall Electronics	V88S	solid-state	C	no	0/-10/-20 dB	158 dB (with pad set to -20 dB)	\$750	Added pad features.
Mojave Audio mojaveaudio.com	MA-300	solid-state	continuously variable	100 Hz	15 dB	120/135 dB	\$1,295	Hand-selected 3-micron double-diaphragm capsule. Jensen audio transformer. Military-grade JAN 5840 vacuum tube. Internal switchable power supply voltage. Carrying case with microphone, power supply, shockmount and cables.
Nady Systems nady.com	SCM-2090	solid-state	SC	no	no	128 dB	\$160	Polar pattern offers 90-degree directionality. Includes 16.3-foot stereo XLR Y-cable (5-pin XLR—dual 3-pin XLR), protective leatherette pouch.
Neumann neumannusa.com	TLM 102	solid-state	C	no	no	144 dB	\$1,058	Capsule is elastically shockmounted. Ships with the SG 2 stand mount.
Pearlman Microphones pearlmanmicrophones.com	TM-250	tube	C/O	no	no	140 dB	\$4,350	Based on the Telefunken ELA M250. Capsule is a handmade CK12-type made by Tim Campbell in Denmark. Comes with shockmount, power supply, custom Mogami / Neutrik 7-pin cable and aluminum carrying case.
Peluso Microphones pelusomicrophonelab.com	22 47LE	tube	9 patterns	no	no	140 dB	\$2,436	MK2 version with new connector system. NOS German EF Stahlröhren tube. Comes with wooden box, power supply, new-style 8-pin screw-on cable assembly, shockmount, flight case.
Peluso Microphones	22 47SE	tube	9 patterns	no	no	140 dB	\$1,967	MK2 version with new connector system. NOS 5693 steel tube. Comes with wooden box, power supply, new-style 8-pin screw-on cable assembly, shockmount, flight case.
Peluso Microphones	P-67	tube	9 patterns	100 Hz	10 dB	148 dB (with 10dB pad engaged)	\$2,310	EF 95 tube. Includes wooden box, power supply, new-style 8-pin screw on cable assembly, shockmount, flight case.
sE Electronics seelectronics.com	2200T	tube	C	100 Hz	10 dB	125 dB	\$599	Handmade gold 1-inch capsule in a tube version of the 2200a. Comes with shockmount, power supply, cables, flight case.
sE Electronics	Gemini 5	tube/ solid-state	C	no	no	130 dB	\$1,299	Handmade 1.07-inch gold capsules. Simultaneous twin JFET Class-A and tube outputs; combine or use separately. Comes with shockmount, tube power supply, cables, ATA-grade flight case.
sE Electronics	G 3500	solid-state	C	no	no	125 dB	\$849	Class-A JFET version of Tube Gemini II. Handmade 1.07-inch gold capsule. Comes with shockmount and flight case.
sE Electronics	T2	solid-state	C/HC/O/ bi-directional	60/120 Hz	10/20 dB	140 dB	\$1,499	Handmade 1-inch titanium capsule. Comes with shockmount and flight case.
sE Electronics	X1	solid-state	C	100 Hz	10 dB	125 dB	\$249	Class-A circuitry. Handmade gold 1-inch capsule. All brass body.
Shure shure.com/americas	KSM42/SG	solid-state	C	no	no	139 dB	\$799	Includes ShureLock® shockmount, Popper Stopper magnetic pop filter, aluminum carrying case and velveteen pouch.
Sontronic sontronicusa.com	DM-1B	solid-state	C	no	-15 dB	155 dB	\$299	Ships with yoke-style mount in a foam-padded aluminium flight case. Comes with a free download of Toontrack EZ-drummer Lite.
Telefunken Elektroakustik telefunken-elektroakustik.com	Copperhead CU-29	tube	C	no	no	138 dB	\$1,295	Comes with power supply, 20-foot mic-to-power supply cable, shockmount and wooden box.
Wunder Audio wunderaudio.com	CM67	tube	C/O/HC/Fig-8	no	no	123 dB	\$4,200	Includes Quarter Sawn Mic box, tweed and leather flight case, shockmount, power supply, 7-pin cable.

Beyonce

RUNS HER WORLD

Inside the Recording of 4

By Blair Jackson

It only seems as though Beyonce has been a superstar forever. Since her days fronting the hit machine known as Destiny's Child in the late '90s, she has conquered the world with her four solo albums—selling 75 million records and picking up 16 Grammys along the way—triumphed on a succession of increasingly extravagant tours, been praised for her acting in several major feature films, launched successful fashion and fragrance lines, and become one of the highest-paid commercial spokespeople in the U.S. Her latest album, *4*, was an instant smash when it was released in late June while she was on tour in France; two days after it came out, she headlined the Glastonbury Festival in England in front of 170,000 people. She's beautiful, talented, independent—and driven.

One reason Beyonce has ascended to these lofty heights is that she is a perfectionist with a fierce work ethic. To quote a previous generation's R&B giant, she works hard for the money. And that includes the many long days and nights she puts into recording her albums. This isn't some diva who pops into the studio after everything has been tracked, lays down some lead vocals and then splits. Instead, she's involved with co-writing most of the songs she sings, often has very specific arrangement ideas, and is always deeply invested in the album's production.

Like so many contemporary R&B albums, *4* is loaded with songs by multiple writers and producers, many of them high-wattage hit-makers, including The-Dream, Babyface, Kanye West, Switch, Tricky Stewart, Jeff Bhasker, Shea Taylor, Symbolyc One (Si) and others.

"The majority of the album, we would bring writers in and B [Beyonce] and I would be in one room, and then we'd have one or two writers in one or two other rooms working on things," says Jordan "DJ Swivel" Young, who was the principal engineer throughout the project, which stretched out over a year. "I think there was a period of about three months where we had three rooms going at MSR [Manhattan Sound Recording]. But at every studio, we'd usually have two rooms going. We'd bring different writers in for a week or whatever. Dream would come in, Jeff Bhasker

came in, and they would write and they might already have some tracks together, or Shea Taylor would come up with tracks, and when they were done with the records they would play them for B and she would add ideas of her own, mold the lyrics to fit her and then we'd start cutting them.

"Shea Taylor was sort of the day-to-day producer, so a lot came from him," Swivel adds. "If B wanted to add a bridge section, she would give it to Shea and he would go and add the parts. He wasn't one of the guys who came in for just a couple of weeks; he was there every day. But B ultimately produced the album. She's very hands-on with everything, lyrically and musically. If there's something she doesn't like about a track, we're pulling the track apart and fixing it. A lot of it is B getting her ideas out and then having a team around her to help execute those ideas. But everything was very collaborative and open. It was sort of like 'the best idea wins.'"

Originally from Toronto, the 26-year-old Swivel had some DJ and production experience in his hometown before earning a Recording Arts degree at Full Sail University in Florida. Two days after graduation, he took the leap and moved to New York City, a place where he knew no one. After a brief internship with a jazz studio, Full Sail's placement program found him an opportunity closer to his own musical interests—working as an assistant in the private studio of Desert Storm Records CEO and one of the hottest mixer/engineers in New York, Ken "Duro" Ifill, whose voluminous credits include Jay-Z, Mariah Carey, Ludacris, Busta Rhymes, DMX, Diddy and scads of others. "Everything I learned there was from watching Duro do it and seeing how he interacts with clients, how he mixes a record," Swivel says. "I assisted a hundred or more of his mixes. It was really beneficial having such a good mentor to learn from."

It was one of Duro's artists, Fabolous, who gave Swivel his first big shot at engineering: on the 2006 album *From Nothin' to Somethin'*. "When I did that, I was still assisting Duro at the same time, but eventually the engineering took up so much of my time I stopped assisting. And then in 2010 I got the Beyonce call.

"The way the whole B thing happened," he continues, "a friend of mine, Omar Grant, who had worked with Beyonce during the Destiny's Child days, gave me a call, and said, 'Listen, she needs a fill-in today, can you do it?' So I showed up at Roc the Mic [Studios in Manhattan], and we recorded the song 'Party' [written primarily by Kanye West]. At the end of the session, she said, 'You did a great job, you're really fast.' Several weeks later I got another call, came in and did a few more days. It was that week that she began discussing the beginning stages of the album with A&R [and Roc Nation exec] TyTy. We basically started the next week."

The writing and recording process on 4 encompassed numerous studios along the way, including MSR (used the most), Roc the Mic, KMA, Germano Studios and Jungle City (Swivel's current favorite haunt) in New York; Conway in L.A.; various producers' rooms; and even a few overseas. When Beyonce's husband, Jay-Z, toured Australia and New Zealand opening for U2's 360 Tour this past December, she and Swivel showed up for a nearly two-week stretch in Sydney, during which Jay-Z had planned to



"Beyonce ultimately produced the album. If there's something she doesn't like about a track, we're pulling the track apart and fixing it. A lot of it is B getting her ideas out."

—DJ Swivel



DJ Swivel at the SSL Duality in Jungle City Studio

do some recording with West on their forthcoming *Watch the Throne* disc. Two makeshift studios were built inside a Sydney mansion, with Jay-Z and West working in the living room, and Beyonce and Swivel ensconced in the top-floor's home theater space working on her album. "We had a basic [Pro Tools] HD rig, all the plug-ins I needed and a [Lexicon] 960. There was no booth. I recorded her on headphones and strategically placed the mic and had a reflection filter to take care of some of those issues. There was actually no problem." Swivel's chain for Beyonce's vocals throughout the album was a vintage AKG C24 stereo mic (using only one capsule) through an Avalon 737 mic pre and a UA 1176 compressor.

Another foreign jaunt—also connected to the Jay-Z and West project—took Beyonce and Swivel to Peter Gabriel's Real World Studios in Bath, England. While Jay-Z and West were in the main studio, Beyonce was in Gabriel's personal room,

LINER NOTES

Producers:

Jeff Bhasker, Val Brathwaite, Diplo, Antonio Dixon, Kenneth "Babyface" Edmonds, Mark Gray, Harry Griffin Jr., Kuk Harrell, Beyonce, Brent Kutzler, Cainon Lamb, Caleb McCampbell, Phil Seaford, Jason Sherwood, Luke Steele, Dennis Steven, Christopher Stewart, Switch, Shea Taylor, Ryan Tedder, Terius "The Dream" Nash, Brian Thomas, Pat Thrall, Tom Coyne, Kanye west, Pete Wolford, Jordan Young.

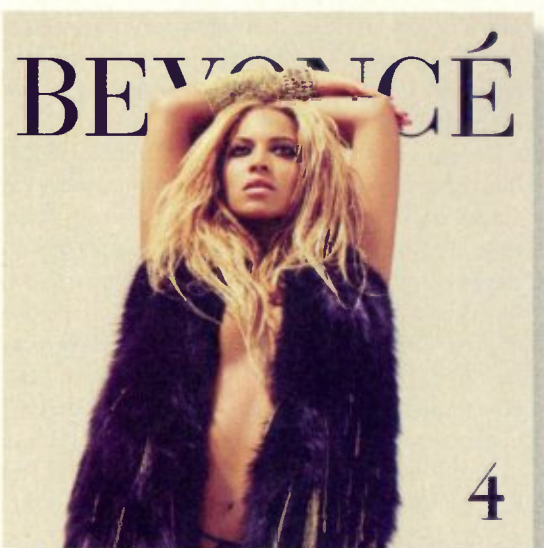
Mixers:

Serban Ghenea, John Hanes, Tony Maserati

"which is like a musical toy factory," Swivel says, "with instruments all over the walls, keyboards hanging from the ceiling. It's such an amazing creative space, and the little village there looks like something out of *The Lord of the Rings*." Once again, vocal recording was the focus of their work.

Vocals, obviously, take center stage on all of Beyonce's albums—her supple, three-plus octave voice is quite astonishing, and she takes great pride in arranging and performing the lush, sometimes silky layers of background vocals that are part of her signature sound. Asked about Beyonce's vocal stamina in

the studio, Swivel responds, "She's good for as many takes as she needs, but she's also one of the best singers in the world, so she doesn't require that many takes. Recording vocals with her is actually the easiest part because I'm fast enough that I can keep up. Usually, we'll cut a whole song very quickly—we can cut a song in an hour, two hours



at the most. I remember there was one time we worked for 36 hours straight and we cut six songs in their entirety—backgrounds, lead vocals, comps, everything. She's so talented when it comes to cutting vocals.

"The more stressful thing is executing all the production ideas she has because she'll bring a horn section or a string section and live drummer and bass and we'll do all this in one day—getting

“One time we worked for 36 hours straight and we cut six songs in their entirety.”

—DJ Swivel

all that set up and making sure the mics are there and everything is running smoothly with no hiccups.”

Actually, the bulk of the music on 4's 12 songs is electronic, generated by various synths and beat machines, twisted by plug-in processing and occasionally combined with more organic traditional instruments. For someone so embedded in the mainstream of popular music, Beyonce is not afraid to take chances. What seems on the surface to be a ballad-heavy R&B album actually has quite a lot of radical sonic underpinnings on most songs. The primal first single—“Run the World (Girls)”—erupts from a sample of Major Lazer's odd dancehall tune “Pon De Floor” and is almost entirely made up of drums, electronic effects and vocals; hardly your usual radio fare (and indeed, the song was not a hit).

Another strong tune, “I Care,” begins with a haunting mix of just looped percussion, a keyboard and Beyonce's lead vocal, then opens up into a much larger musical landscape: “In the hook there's a horn section and she used a lot of baritone sax mixed with a synth to create a new kind of instrument,” Swivel says admiringly. “One of the cool things on that song is she riffed the entire guitar solo, so her vocal is matching the guitar solo perfectly. It's a genius idea and she totally pulls it off. She's pushing the boundaries of music and experimenting with all sorts of things.”

A whopping 70-plus songs were cut during the course of the sessions, with the work of many top writers and producers left by the wayside (for the time being), so who knows what the really weird stuff sounds like!

With so many writers and producers involved, there's always the danger of the finished album sounding disjointed—the “too many cooks” syndrome. Pro Tools sessions came from many sources, but “everything kind of went through me,” Swivel says. “If Shea added parts, he would bounce them and send them to me, and if other producers were sending parts, I'd add them, and, of course, all the vocals. Everything was added and pieced together on my central sessions.”

Beyonce's lead vocals and backing arrangements are a reliable thread throughout, and Taylor's musicality was obviously a steady, grounding presence. The main mixers are among the

best in the business—Tony Maserati and Serban Ghenea—and they seemed to be in sync, as well. (Swivel mixed “I Care” and “Schoolin' Life,” a tune off the exclusive Target double-CD version, which also contains three remixes of “Run the World.”)

“As we got closer to the end,” Swivel notes,

“there was a lot of work molding the album. It was about creating a cohesive sound and making a timeless record. I feel like the best albums have a sound and direction. I think we achieved that here, and were able to make an album that will stand the test of time.”



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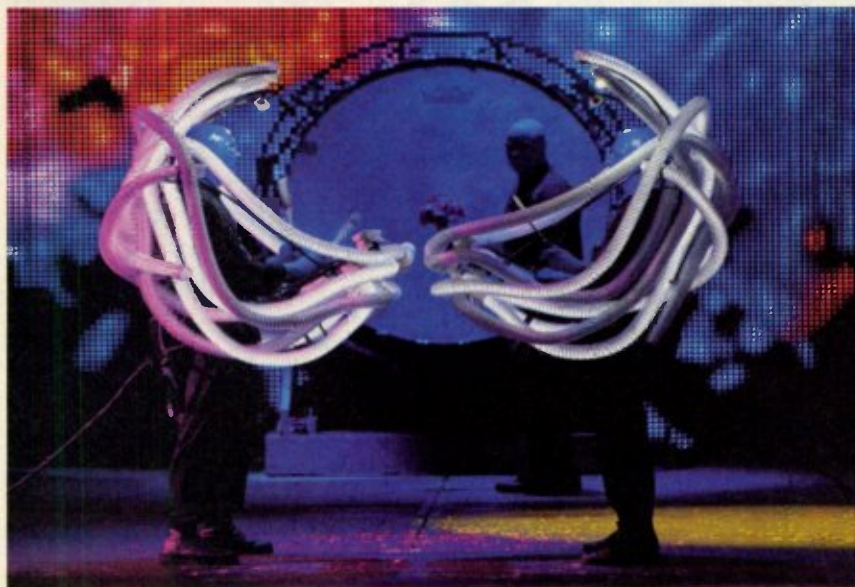


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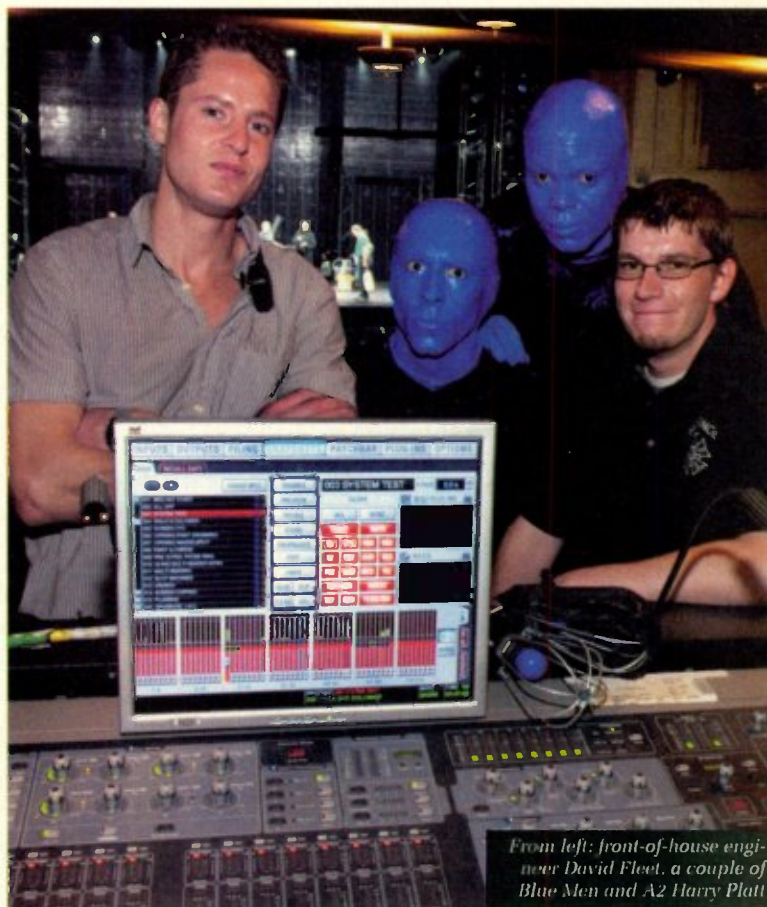
PHOTOS: STEVE JENNINGS

BLUE MAN Group

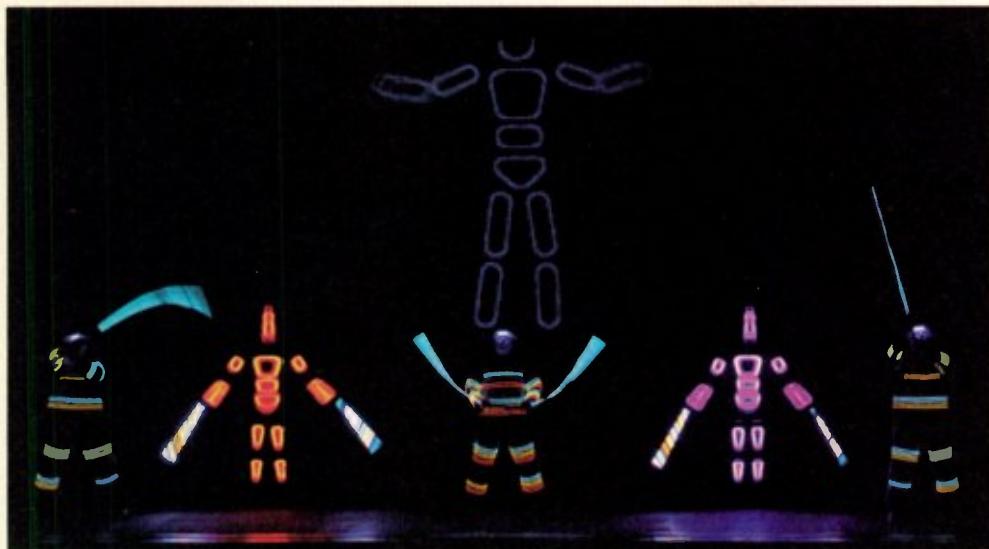
Rock Concert in a Theater Setting

BY SARAH BENZULY

You're never really quite sure what to expect from a Blue Man Group performance. It's a visual experience, with numerous antics onstage to draw the eye—tickers displaying political messages; commentary on social media and human interactions; directions for the audience; flashing-lights costumes; very large inflated balls bouncing around the hall. And for those seeing their current tour—which is happening simultaneously in a number of cities—you get the best of all “Blue Man” worlds, a “greatest hits,” if you will. From their iconic “three guys pounding on bottom-lit oil cans” splashing colored paint on every down stroke, to booty-shaking hits from their album *The Complex*, to



From left: front-of-house engineer David Fleet, a couple of Blue Men and A2 Harry Platt



striking their mallets on instruments created from PVC piping, the Blue Men enthrall their audience.

And while it is heavily visual, music creates the coherency from section to section. It's a theatrical performance, though front-of-house engineer David Fleet creates a more club-like vibe for the Blue Men and a four-piece band. Rounding out his mix is a sound design created by Matt Koenig. "The sound design is to always have the Blue Men on top of the mix, with the band supporting them," Fleet says. "The show goes through a lot of dynamics to try and avoid tiring out the audience members' ears. There are some very loud pieces, as well as some pieces that are meant to sound almost acoustic with very little in the P.A."

At San Francisco's Golden Gate Theater (where *Mix* caught the current run), the d&b system includes amps and

speakers using a single channel of amplification per box. Towers for the left and right proscenium each contain 16 Q1s, two B4 subs and a Q7 for in-fill. "Offstage of the towers," Fleet says, "we stack two B2 subs per side with another Q7 offstage of that as an outfill. For the front rows, we use six T10s for stereo front-fills. Above that is a 24-foot truss in which we hang three line arrays. The center array is eight Q1s and the side two arrays are four Q1s per side. There is also a pair of Q10s upstage under the

BLUE MEN MICS

Zither:

Sennheiser e 609, Beyerdynamic M88

Stick:

Sennheiser e 609, Beyerdynamic M88, Radial JDI passive direct box

Drum Kit:

Electro-Voice ND 868 (kick) and ND468 (toms); Shure Beta 91 (kick) and Beta 56A (snare); Audio-Technica AT4061B (hi-hat, overheads)

Percussion Kit:

Audix D4s (toms) and M44 (snare); Audio-Technica AT4061B (overheads)

Talking Drum: Countryman M2HP6FF1

Audience Mics: AT4061Bs

PVCs:

12 AT4061Bs

Drumbone: Audix M44

J-Bone:

Audix M44

Big Drum: Electro-Voice ND 868 on the back, Audix I5

Blue Man Phil Stanton Drums:

2 Audix I5s

Dopplers: 5 Audix M44s

band lofts that double as effects speakers and stage monitors during a few songs."

THE MAIN EVENT

The sound design also calls for a more tribal-sounding drums for which Fleet uses the Avid Profile's onboard effects, including reverbs for the drum and percussion kits, as well as an additional reverb for the talking drum and for times when he needs a longer, extra-thick reverb. "I also use an auto-pan plug-in for a few scenes on the zither and drums," Fleet says. "As for outboard effects, I use an old-school MXR flanger/doubler and a Lexicon PCM91 reverb unit. These are primarily for the Blue Men instruments."

Those drums are part and parcel of any Blue Man Group show, and Fleet had to enter "Blue Man Boot Camp" to understand the hows and whys. "The best way to describe the way they do things is 'outside the box,'" Fleet says.

"At first, one might think that something is being done so differently that it would almost be wrong, but after seeing how things work for the show, you understand why it is done that way. The most helpful part of this training period was just learning the instruments—getting to know what sounds are coming from where—because they are some unusual instruments."

Fleet says that much of the attack in reinforcing the instruments comes from the tour's past

runs, learning what works and what doesn't. For example, miking the Blue Men's percussive instruments focuses more on putting the mics in the instruments as opposed to on them, using the mics more like a pick-up. "The only mics that are not actually in the instruments are six groups of X/Y formation pairings," says Fleet. "We then made oversized pop filters for them using plastic bulb cages covered in three layers of pantyhose. This is to minimize the slap of this instrument. For the drums, we don't like to have a lot of ring to them; we like them more on the dead side, but without removing all of the drum's tone. Each drum has a note and must be heard to mesh with the other drums. They also should not have too much attack and should sound a little dark."

A LITTLE HELP FROM THE BAND

The Blue Men are accompanied in their sonic quests by a four-piece band—situated upstage in lofts—comprising drums, percussion, zither/guitar and a stick player who also doubles on bass guitar. Fleet gives the band 16 sends from the Profile to their Aviom Personal Mixing Systems, which they can then mix however they choose. The Blue Men's mixes are primarily audience mics with not too much direct signal sent to them. All string instruments have amps and speaker cabinets upstage that are stereo-miked as well as D'I'd. The drums are individually close-miked with a pair of overheads on each kit. The entire band and the Blue Men are on custom dual-driver Westone molds; all receiver packs are Sennheiser EK300s.

With the band, Blue Men instruments rolling on and offstage, playback, effects and more happening within the hour-and-half set, Fleet has his hands full keeping the mix clear, clean and at a club-like level without being too brash, as the audience makeup often has small children and seniors. However, Fleet mixes more in a rock vein rather than the line mixing seen in most theater shows. "Although this show is louder than average, we strive to give every seat a comfortable level in which to enjoy the show," says Fleet. "We also supply ear plugs for the audience. I try to make sure that everyone who comes to see the Blue Man Group leaves with a smile from ear to ear."



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'COWBOYS & ALIENS'

All Eerie on the Western Front



By Blair Jackson



On paper, it's an idea that can't miss: Cowboys (and Apaches) in 1873 Arizona are confronted by an alien invasion! It's spaceships against horses; six-shooters, single-shot rifles, bows and spears against horrifying, zapping destructo rays from beyond the galaxy. *Cowboys & Aliens* is two—yes, two!—movies in one: an Old West saga about a mysterious amnesiac who stumbles into the town of Absolution only to learn he's wanted there for committing heinous crimes he doesn't remember, and one of the strangest sci-fi adventures you're likely to see. Jon Favreau (the two *Iron Man* films) directed this intriguing hybrid, which is based on a 2006 graphic novel by Scott Mitchell Rosenberg. The appealing leads are Daniel Craig, Harrison Ford and Olivia Wilde.

I was about 20 seconds into the first preview for the film last fall when it dawned on me that *Cowboys & Aliens* must have been really fun to work on sound-wise, and indeed, interviews conducted during the final mix in mid-June with supervising sound editor Frank Eulner, FX sound designer/mixer Christopher Boyes and sound designer Dave Farmer confirmed my suspicions. As Boyes puts it, "For both Frank and me, it was a gas because one thing about this film is it honors the Western tradition, and you are very much in a Western film when it opens and whenever we're being cowboys in the West. We're very true to the desert and the town. But then it's this whole other thing, too."

Neither Boyes nor Eulner had a pure Western under his belt (Boyes came close with the wonderful animated *Rango* earlier this year), but each brought extensive experience in different genres to this film—including work on the two *Iron Man* movies together. Multiple Oscar-winner Boyes' CV

lists the blockbusters *Tron: Legacy*, *Avatar*, *The Lord of the Rings* and *Pirates of the Caribbean* series, and *King Kong* among many others; while Eulner's resumé includes such films as *Hellboy*, *Saving Private Ryan*, *The Village*, *Blue Velvet*, *Backdraft* and *Mars Attacks!* For *Cowboys & Aliens*, sound designer Farmer worked exclusively on the alien side, creating creature vocalizations and some alien crafts and weapon sounds. He is particularly well-known for his imaginative creature voices, having worked on *The Lord of the Rings* trilogy, *King Kong*, *Red Riding Hood* and *Underworld: Rise of the Lycans*, as well as videogames in the *God of War* series, *BioShock 2* and many others.

Eulner says that he and Boyes were first approached about working on *Cowboys & Aliens* while they were on the final mix for *Iron Man 2*: "Jon said he wanted us to start thinking about this film, and thinking about spaceships and cowboys and aliens and what they're going to sound like.

It's really exciting having a director who's thinking about sound that early, before he even starts shooting. He plants a seed in your brain and then it gets to grow in there for a month or two before you get to execute any of the sounds. And you start hearing things every day—"That might work for a spaceship," or, "That might work for this other thing."

They were pressed into service just a couple of weeks into shooting when they were asked to prepare a rough scene for Comic-Con (where Favreau and the top cast members appeared). A little later, Eulner says, "We went down to the set, too, which was interesting. We were in Santa Fe for three or four days, and we recorded some production sounds and some of the Native Americans whooping. We recorded gunshots in the canyon, with the black powder rifles they used back then. We try to be as accurate with all the firearms as possible—until we embellish them," he says with a chuckle.

Boyes adds, "We went over to these box canyons



which resemble large metallic dragonflies, except that they are equipped with advanced weaponry, as well as a supercharged version of a cowboy's lariat that can snag somebody off the ground at dizzying speed. Eulner and Boyes developed the initial sounds for the speeders (including some screaming geese Boyes recorded while on vacation and electronically twisted on his trusty Synclavier as one of the elements of the speeder-bys), then had their work embellished by Farmer, who came onboard a little later in the process.

"Chris and I did a pass," Eulner explains, "and then Dave took it to another level. Then I got it back and did some things, and Chris would do another pass. It was nice to get other people's perspective on the same material. It's a cool way to work if you have the right people to work with."

"You need to have the right team," Boyes agrees. "Nobody's here to grandstand, or say, 'I did it all,' and that goes for the entire editorial team. In fact, one of our dialog editors, Marshall Winn, recorded this hummingbird and it's become a signature element in the film. I've recorded hummingbirds in Costa Rica and all over the place, and this is the best recording of a hummingbird we've ever had."

Those hummingbirds came in handy when Farmer was putting together the sound of lights from alien crafts sweeping the ground at night in search of prey to "rope" and take away. "They have these lights that are scanning the ground," Farmer says, "and for that I had a patch I had made in [Virus] Indigo in Pro Tools with a nice throbby sort of pulsing sound. I was working in one of the 'Pod' rooms out at Skywalker—a really nice environment for building 5.1 material, speakers that are very full-range. So I took something from the Ben Burtt playbook when he made the [Star Wars] light sabers. I had a loop of this synthesized sound coming out of the speakers and I took a Sennheiser 416 and did all these mic Dopplers on it. To me, that worked so much better than plug-in Dopplers; there's a realness to them that works. If you generate a synth sound and then cut it in Pro Tools, it doesn't enter the air until it hits the speaker in the theater and then hits the audience. Every other sound you record has been in the air once already, whether it's a tiger growl or whatever. So to take that synth sound and make it not sound like a synth, you can record it with a microphone and that helps bring it to reality some more. So I used that a lot for these light sweeps that were going around.

"Then I also used some hummingbird wings. If you've ever listened to a hummingbird up close, they have a really low-end sound to them. So it was those elements, some arc welding [sounds],

(continued on page 70)

that were really hard to get to. We were on our hands and knees climbing up with a bunch of [production assistants] so we could fire off guns in the canyons and get these tremendous echoes and delays." Along with Sound Devices 744 recorders and shotgun mics, they also brought along a couple of handheld Sony and Zoom 4HN recorders so they could capture the shots from numerous perspectives. "I'm glad we had small ones because it wasn't an easy trek," Boyes says.

Oscar-winner Mark Ulano handled the production recording in a number of challenging locales, many with horses competing for sonic real estate, along with the people being captured with booms and RFs. Additionally, the sound team had a huge library of horse sounds from which to choose at Skywalker Sound in Marin County, Calif., and "the Foley crew supplemented the horses—[Foley artists] Dennie Thorpe and Jana Vance are really, really good at doing horse hooves, and it's a challenge in the effects chair to blend the two," Boyes says. Lora Hirschberg (who won an Oscar for *Inception* last year) mixed dialog and music; the score is by Harry Gregson-Williams. (See the sidebar, "A Western Sci-Fi Mash-Up.") Though the design work and pre-dubbing took place at Skywalker, the final mix, which ended in early July, was at Stage 1 at Todd-AO, Santa Monica, which is a Euphonix System 5 room.

When I mention that between the alien crafts and all the action on the ground, a film like this would seem to have enormous surround possibilities, Boyes laughs and says, "And they keep saying they want more surround! The surrounds are very active in this film. We'll be in the desert and you'll hear the crickets and the air and the wind, and suddenly something will come flying out of the middle of nowhere, and the juxtaposition couldn't have more contrast. You're in this very historically accurate visual representation of the Wild West and you have these cowboys climbing up to look over a ledge, and suddenly here comes this completely foreign sound zooming out from behind you. It creates an incredible dynamic and contrast that we use as a tool to scare and shock—because the townspeople seeing these aliens and the technology are really frightened; you can see it on their faces so it's incumbent on us in the mix to reflect that."

"The technology of the aliens has been challenging because we didn't want it to sound sci-fi exactly and we didn't want it to sound too high-tech either," Eulner notes. "We didn't want it to sound like movie lasers, which are sort of a cliché by now."

Instead, they sought a balance between futuristic and the somewhat plausible. The main alien crafts in the film are multiple-wing "speeders,"



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Director Jon Favreau, left, at the console with composer Harry Gregson-Williams

Photo: Sam Urdank/Universal Studios and Dreamworks

A Western-Sci-Fi Mash-Up

By Matt Hurwitz

How do you write a score for a movie called *Cowboys & Aliens*? Is it a Western? Is it a sci-fi movie? In a case like this, it's best to start simple. "The best path for me is to follow the central character and see what I can find and uncover with him or her," says award-winning composer Harry Gregson-Williams (*Shrek*, *The Chronicles of Narnia*).

In this case, at the beginning of the film, Daniel Craig's Jake Lonergan finds himself completely disoriented and unsure of who he is or where he is right after what appears to have been an alien spaceship landing in Arizona in 1873. "So initially you think, 'Okay, here we are on some lonely prairie and this guy seems to be a cowboy; I mean, he's wearing a cowboy hat and he rides around on a horse! But clearly something bad has happened to him! From this point forward, it's all about discovery for this character. By the very nature of the film, it's kind of a mash-up: It's somewhere between *Close Encounters* and *Unforgiven*, so musically it was always going to be a hybrid. The score has echoes of what you might perceive a Western to be like, but it's also firmly grounded in the 21st century."

The spotting session with director Jon Favreau was also different from most movies.

"We spotted the film quite early," Gregson-Williams says. "The movie still wasn't anywhere near final cut at that point. Consequently, I started by writing music that wasn't too scene specific and made sure that I painted with broad brushstrokes at first. As the cut became more finalized, I began to zero in on specific scenes and set pieces."

Working at his Venice, Calif.-based Wavecrest Music studio, where he has worked since December 2003, Gregson-Williams took several weeks getting a full grasp of the tone he would apply, and then began composing and recording mock-ups of his cues.

Wavecrest has a main composing suite, where Gregson-Williams does his writing, with four additional composing suites occupied by other busy, well-known composers. The building also includes two music editing rooms, a mix room and a recording space. "Our recording space is big enough to get some guitar amps and a bunch of drums in, but not big enough to house an orchestra," he explains. "That sort of stuff gets done at one of the bigger scoring stages here in L.A. or at Abbey Road in London, for instance."

The composer records directly into Steinberg Cubase 6, operating on a PC. Gregson-Williams will record many special instrumentalists or smaller groups of players right into Cubase. For this film, instruments included an assortment of acoustic and electric guitars, vocals, a variety of percussion instruments (such as Native American

drums) and electric cello (played by a longtime friend, veteran Martin Tillman). He engineers the recordings himself with a selection of mics, including Sennheiser MKH 40s (for close-miking), Brauner FETs (overheads) and VM1s (room mics).

"I'm kind of at the controls for that," he explains. "That part of the process is really creative for me because that's an environment I know. And on many occasions, the people I'm recording are friends or people I know and have worked with many times. I'll put them in a booth or in the recording room, and they'll have the video running beside them, and I'll talk them through it." He is assisted in the recording by music technical engineer Costa Kotselas, who also handles anything to do with Cubase, and by in-house music editor Meri Gavin.

Gregson-Williams also uses an array of synths and samples in his original recordings, an ever-expanding library of sounds housed within Tascam GigaStudio and Native Instruments Kontakt (the latter used inside Vienna Ensemble Pro). "MIDI-wise, he has a huge spectrum of sounds, samples and instruments, which color his scores," Kotselas explains. He says that these sounds include "a vast orchestral element," most of which Gregson-Williams will replace with a live orchestra. The composer also uses a variety of VST instruments in Cubase, as well as a number of external hardware synthesizers.

Once a cue has been written and approved by the director, Gavin and Kotselas then create a



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“pre-record” session in Pro Tools|HD3 48/48 IO, a transfer of the recordings and MIDI samples from Gregson-Williams’ Cubase sequence. “These are basically the master recordings,” the composer explains. “They’re the building blocks of the final recordings, and often contain a lot of live elements already, and any orchestral or choral recordings that follow will be done playing along to these stems.”

MALCOLM KNOWS THE SCORE

While Gregson-Williams’ more organic recording elements serve the Western theme, there’s always a place for an orchestra among the 60 cues and 80 minutes of music in a sci-fi film like this. “A big orchestra is the powerhouse that one tends to lean on when things get nasty,” Gregson-Williams says of the tension-filled battle scenes in the film. “And the last couple of reels are when one really needs weight and gravitas.”

The main orchestral and choral recording for *Cowboys & Aliens* took place at the Sony Pictures Scoring Stage in Culver City, engineered by long-time scoring mixer/collaborator Malcolm Luker.

The synth masters—now loaded onto a Pro Tools rig and brought to Sony—are the building blocks of the recording and meant, to a large degree, to be replaced by live recording. “We’re able to add these large live recordings and replace my samples,” Luker explains. “And by doing that,

it changes everything—for the better. You put a bunch of live players on a track, and they live and breathe and move. Suddenly it brings things to life, and that’s a very satisfying experience.”

As is often the case, a second Pro Tools rig (Pro Tools|HD6 64/80 IO, with Advanced Audio Genex AD/DA converters) will be running in the control room for recording, with the first rig playing the synth masters through the console for monitoring. “We usually have two Pro Tools operators: one taking care of the record side of it, and one taking care of the pre-records and making sure that everything’s going to where it should go,” Luker says. “We just have it so that it’s available, and we can mute it so that when we’re replacing strings and woods, et cetera, it’s available to hear, as a guide, if needed.”

The rigs are satellite-locked, via Ethernet. “What’s great about that is, if you’ve got the video running off one rig, off of our synth master rig, then you can actually rock and roll it from the other rig,” Luker explains. “If you frame jump, you remain in sync all the time.”

The orchestra contained 14 first violins, 12 seconds, 12 violas, 12 celli and eight basses, double woodwinds, as well as two trumpets, four horns, four trombones and a tuba. Luker is assisted on the Sony stage by his son, Jamie, a partnership in place for a number of years.

The two own a substantial collection of microphones for use on such sessions, including Luker’s

main mic of choice, the Brauner VMI. “Those are hand-built from Dirk [Brauner] himself,” he notes. “We’ve also been using a number of mics from a company in Australia called Bees Neez—their Lulu FET mic, which we use for spot [miking].” Luker is particularly keen on the Brauner VM1S, a stereo version of the company’s VMI. “I use it on different things, like for woodwind overheads or in front of the horns. It’s especially amazing on harps, because the top is just gorgeous. You can put it six feet away, and it gives you a little bit of a stereo spread, instead of just coming from one pinpointed position.” He also used Sennheiser MKH Series mics, and Neumann TLM 50s and TLM 170Rs. They use Swiss Vovox cables for the mics, and employ 64 channels of Grace Design m802r preamps.

“The cable run from the microphone to the microphone amplifier is as short as possible,” Luker says. “So you amplify the signal up to +4 and then you do your longer run. And they’re remote controlled. I have the control unit right next to me, so I can be adjusting mic level from the control room, which is perfect.”

Luker brings his favorite monitors—Quested V3110 self-powered speakers—wherever he goes. “Roger Quested, who designed them, was the chief engineer at a studio where I first started in London, Morgan Studios, when we were kiddies,” he laughs. “He’s developed a product which is absolutely excellent. And it’s great for what we do.”

Once recording is completed, the team heads back to Wavecrest for mixing. The studio has an Avid Icon D-Command ES Console, with an extended surface containing 40 faders. The room also has Quested 5.1 monitors, another plus for Luker.

Luker brings in his own reverbs, including a pair of Bricasti M7s, four Lexicon 96S surround processors, and a Lexicon 480. Luker's collection of favorite plug-ins includes Waves, Lexicon, and SoundToys plug-ins. Equalization is accomplished using the Manley Labs Massive Passive Vari-Mu passive equalizer.

Three Pro Tools rigs are used during mixing: the main mix rig (96 I/O HD6), a print rig (72 I/O HD6) and an extra, for any additional work, if needed (64 I/O HD3). Luker makes use of a number of Apogee A/D and D/A converters, including 16Xs and Rosetta. "I'm looking forward to working with their new Apogee Symphony system, as well," he notes.

The stem layout is 64 channels wide, with 5.1 strings, 5.1 brass, etc., as well as 3.1 bass channels. Luker also creates surrounds from Gregson-Williams's stereo sampled material. "You add surrounds, so that each stem has its own dedicated surrounds and LFE. So whenever any of that's edited on the stage, everything remains together." The reverbs come along for the ride, as well. "That's really important. All of the different reverbs and effects are all dedicated for each individual stem, so that if you want to take out any one element, you can remove it, and it's gone."

Gregson-Williams, of course, counts on the expertise of his experienced music editors, Richard Whitfield and Meri Gavin, to keep up with any picture changes and keep a clear log of all and any versions of a cue. "As soon as a new cut arrives at our studio, we hit the ground running and make the changes immediately together. Harry likes to keep on top of it," Gavin explains. "If we get a new set of reels, he likes to go into Cubase right away and make the alterations needed, thereby rarely leaving us to cut up his cues!" Adds Gregson-Williams, "They started by turning over a new cut to us once a week, but toward the end, we were seeing reels arrive every day." This meant having to change start times and addressing any music edits for the 60 or so music cues in the film.

As challenging as the process might be, Luker still finds working projects such as Gregson-Williams' here in the States a satisfying experience. "I've worked here, as well as in Europe, and the difference is that the attitude here is, 'Okay, let's start at perfection and see how much better we can make it. We're doing this for the world market, it has to be the best that it can be, and that's it.' And Harry's music comes together that way. A lot of it is done in the writing and in how it's orchestrated. It's a lot of subtle things that come together. It's a great platform to work from."



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(continued from page 64)

because those lights looked like they might be searing across the ground, and also some Tesla coils I recorded years ago.”

More on the speeders from Farmer: “For the first temp, I tried to make them completely out of animals. I had a loop of some pig groans that I had left the Doppler process running on for about 10 minutes—you let the randomness of the universe present you with some material. Frank and I liked that a lot—just using that one element—but when they got down in the temp with the music and everything else, they weren’t

quite reading the way we had hoped, so Jon mentioned using jets and rockets, too. That became a challenge because I didn’t want to just use plain jets and rockets. I wanted to mix it with other things so it had a certain cool factor that was unexpected. So Frank did a pass using jets and rockets, and Jon is really good about using very descriptive terms when he wants to hear something, and one of the things he said, which I would never have thought of, was, ‘When these things are flying by and the air passes through their wings, I want it to have a tonal sound, sort of



Supervising sound editor Frank Eulner



Effects sound designer/mixer Chris Boyes

like a didgeridoo.’ So I had some didgeridoo recordings and I did the same process—the mic Dopplers with the same speakers. So we had the animal element, the didgeridoos and the rockets and jets, and then I wanted to do one more thing to give it some ferocity. I had recorded these Ferrari F1s a couple of years ago and those things really have a sound that indicates speed, even if they’re not going fast around the track. So we had another layer of those and we delivered all those elements to Chris.”

When it came to alien vocalizations, Farmer once again turned to his extensive library of animal recordings (as well as some of Skywalker’s material), mixing in tigers—which he says are often a good base sound for creatures because of the depth and rasp in their growls—coughing and trilling seals, horses in heat (“if you pitch those up you get a scream-y element”), groaning pigs and, at one point, a New Zealand possum.

Rather than building a large palette of vocalizations and then cutting them into scenes, Farmer says he likes to work to picture and build each one from scratch—a painstaking process, “but in the end you wind up with a lot more variety and you repeat yourself a lot less.” Later, Eulner and Boyes did more work on specific alien vocals as scenes required (Farmer was on another project and not available during the final mix for revisions) and, as is typical on a production like this, things were changing up until the last second.

At least in director Favreau they had an ally with good instincts and a strong interest in sound. “He has very good ears and he notices very subtle changes, which is great,” Boyes says. “He’s very specific about how hard he wants things to hit, how much low end there is in them, and obviously he’s very involved with the music and how it evolves and how it plays out in the final. In terms of director involvement, he’s right about where we like them to be.”

Blair Jackson is *Mix*’s senior editor.

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TRANSDUCERS FRONT AND BACK

The How and Why of Mic Differences



By Eddie Ciletti

GEEEK: My friend Paul Wolff doesn't like the moniker, but I embrace it. The positive connotation of "geek" describes someone who is happily hardwired for hardware and technology. I won't share his negative connotation, in case you're eating.

TRUTH: D.I.Y.ers are learning from hands-on experience that it takes trial and error to get things right. Audio is an endlessly fascinating subject, and driving this trend is curiosity and the availability of obscure bits of audio history found on eBay and Craigslist. This resurgence of D.I.Y. tinkering is generating many great questions.

RECAP: In last month's issue, when "Ask Eddie" debuted, the topic was console upgrades and needing to understand what power supplies do. As I write this, one week into July, three topics have already been posted to my new Mix Blog (available at blog.mixonline.com/mixblog). Two related e-mails came from Europe, one from Greece asking why conventional phantom-powered studio condenser mics are not compatible with electret condenser mics (without an adapter). A German query about an obscure Grundig GCM 3 condenser microphone required some clarification about how phantom power differs from an external power supply.

So this month it's...

TRANSDUCERS!

Microphones convert acoustic energy into electrical energy and loudspeakers reverse the process. We know a speaker can be used as a sub-kick mic, and I have even used a pair of cheap dynamic mics as headphones (when I was in ninth grade). Dynamic mics and speakers have three things in common: a magnet, a coil of wire and a diaphragm.

When an electrical current flows through a wire, it radiates a magnetic field. The speaker's "cone" is connected to a coil of wire that lives in a magnetic field. We all know that variations in audio signal current move the cone—opposites attract. You can connect a 9-volt battery to any raw speaker and, depending on how the battery polarity is applied to the speaker terminals, the cone will move out—or in—and stay there!

Conversely, when you scream into a mic, the diaphragm pushes the coil into a magnetic field so that an electrical signal is generated. The signal is naturally balanced—two signals of opposite polarity appear across the two "voice coil" wires, also known as a "differential" signal. The benefit is improved noise immunity (details to come). A transformer matches the low-impedance voice coil (in the 10Ω to 20Ω range)

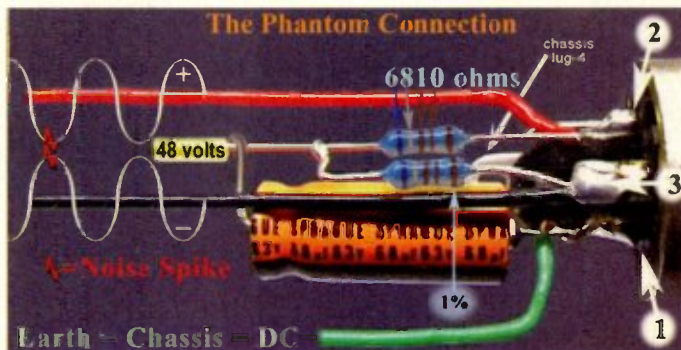


Figure 1: The secret life behind the female XLR jack

to the standard mic impedance (200Ω).

In a ribbon mic, the coil of wire is replaced by a thin strip of "corrugated" aluminum foil, just a few microns thick, that doubles as the diaphragm. Sound pressure moves the ribbon within a concentrated magnetic field, generating an electric signal. A transformer matches the foil impedance, which is less than 1Ω , to the standard 200Ω impedance.

Condenser mics are a different animal. The diaphragm material typically is Mylar, measuring 3 to 6 microns thick, with a metalized coating that is so molecularly thin you can see through it. The diaphragm is suspended like a drumhead over the back plate (a precision-drilled brass disc). The metalized coating and the back plate are conductors separated by an insulator (air). Together, this creates a capacitor; condenser is the olde-skule name.

When a fixed DC polarizing voltage (typically 40 to 80 volts) is applied to the diaphragm, the back plate will be grounded (though it can be the other way round). Sound pressure moves the diaphragm and modulates the DC voltage in the process. If you've ever used a synth, think of sound pressure "pushing" the modulation wheel, adding vibrato to a fixed pitch.

The modulated DC signal is extremely vulnerable and requires a very high-impedance amplifier, either vacuum tube or Field Effect Transistor (FET). In nearly all cases (except the Grundig GCM-3), the amplifier is located in the mic body. Vacuum tube amplifiers require a separate power supply with multiple voltages, while FET amplifiers were initially battery-powered, either externally (like the Sony C38) or internally (like the earliest version of the Neumann U87).

Electret condenser mics are typically found in computers, cellphones, cameras, portable recording devices, communications headsets, boom and "invisible" mics for stage, video and film. The electret condenser mic can be very small, requires very little power (for its built-in amplifier) and supplies its own polarizing voltage via the electret material, which is the

electrostatic version of a magnet, storing an electrical charge instead of magnetism.

SIGNAL DISTRIBUTION

As mentioned, moving-coil and ribbon mics deliver a balanced/differential signal by design. Be-

cause their native impedance is so low, an internal transformer matches the coil or ribbon impedance to the 200Ω standard. Condenser mics also need either a transformer or special circuitry to deliver a balanced signal. Check out the pair of sine waves on the left side of Fig. 1 and note that they are of opposite polarity (a balanced, differential signal). Superimposed on both audio signals are a pair of common-mode "noise" signals (in red) that have identical polarity (in phase). When the common-mode signals

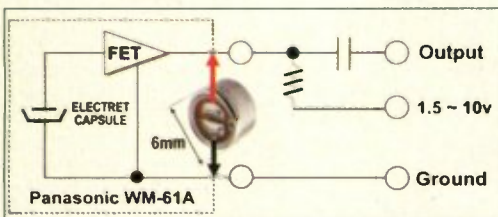


Figure 2: An electret capsule assembly and typical schematic. Inside the capsule is a Field Effect Transistor amplifier. External to the capsule is the FET's "load" resistor, across which the audio signal will appear.

meet a balanced/differential audio input, they are rejected (or more precisely, subtracted) from the differential signal. The degree to which signal and noise can be differentiated is called the Common Mode Rejection Ratio, or CMRR.

Remember how early solid-state (transistorized) mics were battery-powered? Well, that was a "temporary fix" until a very clever solution came along. Some genius figured out that if common-mode noise can sneak in under the radar and be rejected, so could 48VDC, which powers the mic's amplifier and supplies a polarizing voltage to the capsule. That's right: Phantom power is injected as a common-mode DC signal, the beauty of which is that no modification to the existing signal distribution system is required. Unless mic cables are wired incorrectly, dynamic and ribbon mics are safe. Yeah!

Relative to a studio condenser mic, the electret circuitry is simpler, which is one reason why your cellphone and camcorder are not the size of a U47. The wiring of the typical eighth-inch (3.5mm) TRS electret microphone connector (see the table) is determined by whether the mic is mono or stereo. Similar microphones may also be terminated with

MIC TYPE	TIP	RING	SLEEVE
Mono	Audio	5-volts DC	Ground
Stereo	Audio L	Audio-R	Ground


Table: 3.5mm (eighth-inch) "stereo-mini" connector wiring for electret mics. Older electret capsules had three connections because the load resistor was in the capsule. But as the schematic in Fig. 2 shows, the load resistor is now external to the capsule, allowing stereo mics on the same connector.

Switchcraft and Hirose 4-pin connectors. The extra pins are used to program wireless belt packs for a specific mic.

NOW YOU KNOW WHY...

- Studio condenser mics and electret mics are not compatible without a moderately sophisticated adapter.
- A power supply for a vacuum tube microphone is not "phantom" power.
- Balanced/differential signal distribution is less susceptible to noise.

Email Eddie (edaudio@tangible-technology.com), visit tangible-technology.com or drop by the blog.



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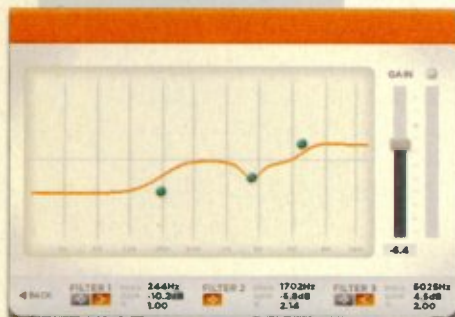
The AX Series



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Tech // new products



CRYOSONIC SPECTRA'PHY V2 PLUG-IN

Precision Gain Control

The Spectra'phy Version 2 (\$144) is Cryosonic's (cryosonic.com) second-generation, look-ahead brickwall audio limiter/maximizer targeted toward mastering, mixing, tracking and general audio/music production. Spectra'phy uses a special physics engine (Nephilim Audio) to accurately simulate multiple response signals to maximize the perceived signal volume, as well as to "brick wall" upper limit to peak set levels. Final response curves are computed on the analysis of multiple simulations, each having different characteristics that are driven mainly by incoming transient signals concurrently. This approach tends to produce a more natural sound, almost completely eliminating the risk of introducing audible nonlinear distortion. Features include a new UI, crossover filter frequency-selection component and 64-bit internal precision.

JZ MICROPHONES VINTAGE 12

Old Meets New

Following the release of its Vintage 47 and Vintage 67 inspired by classic Neumann originals, JZ Microphones (jzmic.com) now offers a version of the legendary AKG C12. The Vintage 12 (\$1,913) employs JZ's Golden Drop Technology, which promises a more detailed and transparent capsule response. The V12 replaces the original C12 tubes with high-quality transistor technology, providing equivalent frequency response with fewer maintenance and care issues. The large-capsule, fixed-cardioid condenser is available directly from the JZ Microphones site.



THE VIENNA SYMPHONIC LIBRARY HYBRID REVERB

High-End Ambience

The VSL (vsl.co.at) Hybrid Reverb (\$745) combines convolution impulses with algorithmic reverb tails, providing extremely flexible editing options in an easy-to-use and intuitive plug-in. The GUI is divided into two pages: "Browse View" features a Hybrid overview display—an overlay of both reverb envelopes with fast and intuitive access to the most important parameters—while "Edit View" provides extremely flexible editing options in two separate convolution and algorithmic sections. Users will benefit from a variety of presets in the categories of Room, Chamber, Church, Hall, Plate and Scoring.



SANKEN CS-1E MICROPHONE

I Said, Shotgun!

Sanken Microphones (distributed by plus24, plus24.net), headquartered in Tokyo, has introduced the new CS-1e (\$850) short shotgun microphone based on the popular CS-1. This version features a longer reach and sharper directivity, making it suitable for a wide range of streamlined video productions. Features include short 7-inch length and lighter weight, extended low-frequency response, wide 50-20k Hz frequency range and standard XLR connection.





IK MULTIMEDIA BLACK 76, WHITE 2A PLUG-INS

Ebony and Ivory GR

IK Multimedia (ikmultimedia.com) has released two new T-RackS mixing plug-ins modeled on two of the world's most renowned analog compressors: the Black 76 limiting amplifier and the White 2A leveling amplifier. Both are available as single plug-ins (\$99) or can be integrated in the new T-RackS suite of mixing and mastering effects, now updated with 64-bit compatibility. The Black 76, modeled after an 1176 (specifically, LN rev E), is designed to mimic the unit's signature input transformer and Class-A output stage. The White 2A is meant to impersonate the signature sound of an LA-2A and parodies a tube amp with photo-resistors, lighted by a fluorescent panel driven by the output signal.

HARRISON MIXBUS 2

Major DAW Upgrade

The Mixbus 2 (\$219) DAW from Harrison (harrisonconsoles.com) offers a variety of improvements for mixing and editing. New features include eight mix bus sends; plug-in effect control sliders, allowing users to map plug-in controls directly to controls on the mixer strip; input trim; makeup gain; sidechain; and master limiter controls available directly from the Mixer window. Other upgrades include improved mixer navigation and display, including narrow mixer strip and the ability to show/hide mix buses as needed; a new phase-correlation meter; and polarity (phase) buttons for each mixer strip. Mixbus 2 is available as a direct download from Harrison's site.



RADIAL WORKHORSE WR8, WM8

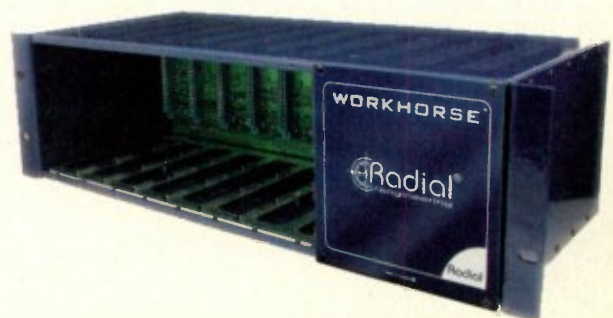
Straight, No Mixer

Radial Engineering (radialeng.com) has released the stand-alone Workhorse WR8 (\$799) 500 Series rack and optional WM8 (\$799) 8-channel summing mixer. The WR8 is an 8-slot 500 Series mixer that is 100-percent compatible with all standard 500 Series modules. Individual XLR inputs and outputs are complemented with parallel 1/4-inch TRS connectors and Pro Tools-compatible 25-pin D-Subs. Like the fully implemented Workhorse with mixer, a special Feed function allows modules to be connected in series without having to hard-patch using a cable. Should the user wish to add the optional Workhorse 8-channel mixer section, a step-by-step mixer installation slide show can be found on Radial's site.

MCAUDIOLAB SHD2CH

Noisy Neighbor

SHD2ch (\$TBA) from MCAudioLab (mcaudiolab.com) is a dual-channel, vacuum tube-based (nonlinear) audio distortion amplifier. Each channel offers independent control over second-order harmonic distortion (0.5% to 99%). Features include Class-A circuitry; independent, switchable bypass; peak LED meters; output level control with +6dB gain; fully balanced line level input and output (XLR); and a 2U solid-metal frame unit with internal power supply.



New Sound Reinforcement Products

InfoComm 2011 (June 15-17, 2011, Orlando, Fla.) was booming with new products for the touring and install professional. Here are just a few that caught our eyes.



BOSCH LB3-PC

Passive Loudspeakers

LB3-PC loudspeakers from Bosch Security Systems are available in two two-way configurations: LB3-PC250 (12-inch/250W) and LB3-PC350 (15-inch/350W). Each model is equipped with a 1-inch high-frequency compression driver that is protected against incidental overload by a self-restoring protection device. The transformer accepts signals between 40 Hz and 22 kHz at 100V or 70V. They are suitable for music and speech reproduction for mobile or fixed install applications—indoors or outdoors—and come with pole-mount and flypoints.

OUTLINE ISM

For Your Floor Monitoring Needs

Comprising the iSM 112 (12-inch woofer, 1.4-inch HF driver, 132dB SPL), iSM 115 (750W LF and 400W HF) and iSM 212 (1,050W LF and 570W HF), Outline's (outlinearray.com) iSM Series offers full remote control of speaker parameters via the integrated iMode Intelligent Digital Loudspeaker Control Platform; an LED array on both sides of each cab provide visual system status. Linear response is +/-3 dB between 76 Hz and 15.5 kHz, and linear phase response of +/-45 degrees between 500 Hz and 16 kHz. Each model is fitted with eight mounting points for wheels or flying rings, plus two integrated recessed handles.



HARMAN HIQNET SYSTEM ARCHITECT VERSION 3

Time to Upgrade

Version 3 of this system configuration software provides Audio Video Bridging (AVB) capabilities, as well as support for dbx SC 32 and SC 64 digital matrix processors and the BSS Audio/NetGear GS724T 24-port Ethernet AVB switch. Signals are routed by dragging and dropping from a filterable list of available source AVB signals onto the destination device icon in the main workspace, singly or multiple at a time. Releasing the mouse launches a pop-up routing dialog for the destination device and signals are assigned to available channel inputs. AVB enables time-synchronized, ultra-low-latency audio and video signals to be distributed over IEEE 802 Ethernet networks.

ELECTRO-VOICE R300

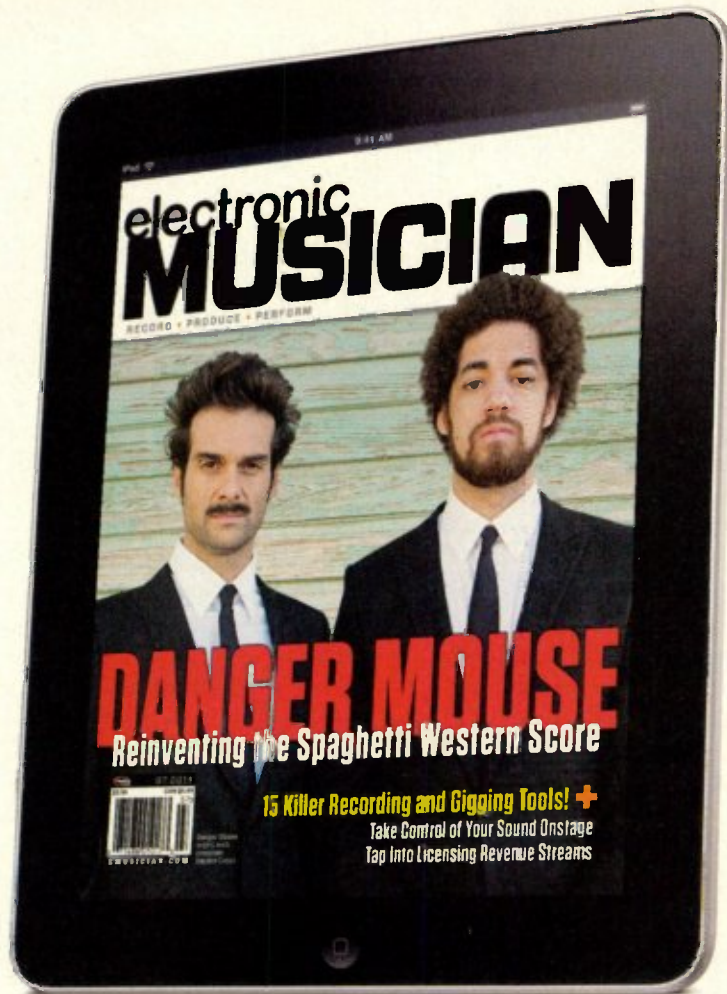
Wireless Miking

Featuring One-Touch ClearScan™ and EZsync™, the R300 wireless mic system comprises the receiver system, BP-300 bodypack (two preconfigured systems available, either a lapel or headworn mic), and HT-300 handheld transmitter with PL22 dynamic mic capsule. It offers 14 hours of battery life from two AA alkalines, and features 32 preset channels with compatible groups of eight channels for simultaneous use. A detachable half-wave receiver TNC antennae offers use with APD4+ antenna distribution system.



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Tech // reviews

FOCUSRITE SCARLETT 18i6 USB INTERFACE

Affordable I/O Boxes Offer 64-bit Operation, Virtual Mixer and Plug-Ins

The Scarlett 8i6 (\$299) and 18i6 (\$399; reviewed here) are two new USB 2 audio interfaces from Focusrite, and they differ only in their respective number of analog and digital line inputs (eight and 18, respectively). Both half-rack units feature two XLR Combi jacks for either microphone, line, or high-impedance DI inputs that use Focusrite preamps for up to 60dB of gain. Both units provide up to six simultaneous audio output channels.

The units have MIDI In/Out jacks and 24-bit/96kHz AD/DA converter chipsets, and are compatible with any DAW, including Pro Tools 9, by way of the included Focusrite Scarlett MixControl software—a virtual 18x6 DSP mixer that operates in 32- or 64-bit modes in Windows 7, Vista and XP SP3, or MacTel computers running OS 10.6.5 Snow Leopard.

The 18 inputs comprise two Focusrite mic/line/instrument inputs with gain controls and, on the rear panel, six balanced analog line inputs, an ADAT Lightpipe for eight more digital inputs (four at 88.1/96 kHz), and a stereo S/PDIF input. The unit's six outputs comprise two balanced monitor line outputs with level control; a stereo headphone output jack that is separate from the monitor output, with its own level control; and a S/PDIF stereo output.

MIXCONTROL DSP MIXER/ROUTER

MixControl software routes and mixes up to 18 input sources with



latency specified at lower than 1.4 ms.

The Mixer section has nine stereo faders and a stereo master fader; each can unlink (split) into two mono faders. In either mode, each has a pan pot plus mute, link/unlink, solo, and PFL buttons. Input sources from the eight analog, 10 digital inputs and six outputs from your DAW are selectable via pull-down menus with the already selected sources grayed out.

The master fader is assignable for either stereo or mono mix channels for up to six mixes total (a stereo mix uses two channels). You can rename, save and copy mixes for quickly creating amended versions of your main monitor mix for alternate mixes and/or headphone mixes.

The wholly separate Routing section is for connecting audio sources directly to any of Scarlett's six physical outputs, and it works globally across all saved Mixer configurations. The Zero Latency



Both the 18i6 and 8i6 interfaces include Focusrite's Scarlett Native plug-in bundle with an EQ, compressor, reverb and gate.



mode routes a mix developed in MixControl's stereo mixer directly to the monitor and headphone outputs, but you can also easily change over to listening to your DAW's mixer.

The Monitor Control section has an onscreen volume control, mute, dim, and Left or Right mute buttons. These virtual controls drive the front panel controls, so you can control the level of both the monitor speakers and the headphones together or independently. You can also elect not to control monitor level and output full level to an external monitor controller.

The Device Status Section indicates sample rate, sync source/status—internal or external coming in on the S/PDIF or ADAT Lightpipe—and USB connectivity. For Windows users, there is a pull down menu for selecting the ASIO buffer size here.

INSTALL, CONFIG, PLAY

After installing the software, I connected to Scarlett a USB cable from one of the rear sockets of

TRY THIS

Running in Zero Latency mode and using just the onboard eight analog inputs, the small 18i6 makes a great live sound keyboard mixer to run alongside your laptop. Besides the built-in MIDI interface, you'd have two microphone preamps for vocals or direct inputs plus six channels for onstage hardware synths or line level outs from other gear. Your laptop would play your song's sequenced instruments and any backing vocal tracks, and so on. Besides building your own stereo mix for front-of-house, you could create a separate in-ear monitor mix with a click track for your drummer to play along with.

my computer; an ADAT Lightpipe output from my Focusrite OctoPre MkII; two 1/4-inch monitor output cables from Scarlett to my KRK Ergo monitor controller; and the S/PDIF out from my CD player into the Scarlett's S/PDIF in—that was for playing CDs directly in the MixControl mixer, although I would have to change the sync source over to the CD player.

With Scarlett powered up I launched MixControl and changed the Sync source to ADAT in order to clock from the OctoPre. I started up my Pro Tools HD3 Accel rig (Version 9.0.2) coupled with a West-

mere 8-core Mac Pro running OS 10.6.7 operating in 64-bit mode, and on the Playback Engine page I changed "HD TDM" over to "Scarlett USB." After restarting Pro Tools, I launched a session that I had created in V. 8 LE on another computer and it came up perfectly, playing back the very first time.

TRACKING

Scarlett's eight analog inputs, stereo S/PDIF channels and the eight ADAT inputs (from the OctoPre) show up automatically as 18 total inputs in the Pro Tools I/O. I planned my tracking session as follows: eight mics on the drum kit were in the Focusrite OctoPre Mk II so that I was assured they were all phase coherent with one another; two Shure SM57s—one for each guitar—in the two Focusrite Scarlett mic pre's; the remaining six analog inputs received line level outputs from my RTZ Professional Audio 9762 2-channel mic pre for a bass guitar DI and amp; and a four-pack of API mic pre's covered stereo miking for my baby grand and two room mics for the drums.

If you are a "one track at a time" songwriter, you can keep all your instruments and mics connected to Scarlett; there is no need to disconnect one analog source to connect and record another.

I switched to Zero Latency monitoring and developed a monitor mix of the 16 sources. Then I copied the monitor mix as a basis for building a different headphone mix that the band liked. Mixes included a stereo mix feed from Pro Tools that stayed muted until we listened to a take or did an overdub.

I kept Pro Tools' edit and mixer windows and the compact MixControl GUI always visible on the Mac's screen, and used Command + Tab to toggle between them. The mixer works well (even Pro Tools' Option+Click shortcut works), but I would like to have fader grouping capability, because accurately changing eight individual drum monitor faders up and down together can be tedious.

Since we were all in the same room and on phones, I could have also used a duplicated rear panel headphone output jack to connect to my Aphex HeadPod Model 454 headphone amp for the band's use. In lieu of that, I used a "Y" cord in the front panel headphone jack to make it work.

RED READY

I was impressed by the small and powerful Scarlett 18i6. It's a solid workhorse that just does what it does well and sounds great. Once connected and configured correctly, it ran all day and night without a single glitch or restart.

It comes with Focusrite's Scarlett Native plugin bundle with an EQ, compressor, reverb and gate. You also get Focusrite's Xcite+ bundle along with Ableton Live Lite, Novation's Bass Station soft synth and more than 1 GB of royalty-free samples.

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

PRODUCT SUMMARY

COMPANY: Focusrite Novation Inc.

PRODUCT: Focusrite 8i6 and 18i6 USB Interfaces

WEBSITE: focusrite.com

PRICE: 8i6, \$299; 18i6, \$399

PROS: Great sounding interface. Easy setup.

CONS: Needs a rear panel headphone jack and fader grouping.

Tech // reviews

LEXICON PCM NATIVE EFFECTS BUNDLE

Bread-and-Butter Processing, and Something Unusual



Stringbox includes a virtual keyboard to select the strings you wish to resonate.

When Lexicon released its PCM Native Reverb Bundle last year, fans of the company's highly prized reverb algorithms rejoiced: They were finally available in-the-box. PCM Native Effects Bundle completes the circle, adding delay and pitch processing to the mix.

For the most part, Native Effects' algorithms are similar to those in the hardware-based Lexicon PCM96. But one of the seven included plug-ins, a compelling debutante dubbed Stringbox, is a shot out of nowhere and isn't available anywhere else.

Available in AU, VST and RTAS formats, Native Effects runs only on a second-generation iLok. I tested the bundle in Digital Performer 7.22 using an 8-core Mac Pro running OS 10.5.8.

INVISIBLE STRINGS

Stringbox emulates the sympathetic reso-

nance that piano strings produce when excited by a loud external sound; click on any of 88 virtual keys to choose which strings will resonate. The single-voice Pitch Shift plug-in can handle monophonic and polyphonic sources; like the MultiVoice Pitch plug-in (which can independently create up to six harmony voices), it can shift pitch up or down in semitones as much as one octave or as little as one cent.

Resonant Chords is an effect first introduced in the Lexicon PCM70. This plug-in resonates eight delay voices when excited by input signal to create chords, arpeggios and weird room sounds. In the Chorus/Flange plug-in, you can modulate, filter and pan a whopping eight independent voices. Dual Delay is similar to Chorus/Flange but offers only four voices and does not have an LFO control; its fortes include double-tracking effects, and slapback and tape echoes. In the 4-voice Random Delay plug-in, a Wan-

der control modulates the initial delay time, increasing it by a value you specify in milliseconds and back to its original value (cyclically or in random fashion). All of the delay-based plug-ins offer maximum delay times of at least 9.5 seconds per voice and can be synched to the host DAW's tempo.

LOOK HERE

The GUI for most of the plug-ins includes stereo I/O meters, preset-category and -program selection menus, a real-time display and up to nine assignable faders for parameter adjustments. Control buttons allow you to deeply edit presets, store the modified version, reload during editing (to null all changes) and make A/B comparisons of the original and modified presets.

Click the Edit button, and you enter Pro mode. (Pitch Shift and Stringbox do not have a Pro mode.) An additional row of buttons appears below the GUI's faders. Click on a button to access many more parameter controls. For example, clicking on the Master button in a delay-based plug-in brings up faders for adjusting wet/dry mix, diffusion and ganged delay times, levels and feedback amounts for all voices.

Pro mode also provides a button for retrieving a fader bank called the Soft Row. The Soft Row compiles copies of parameters you'll likely want to tweak most often (from different and sometimes far-flung menus), providing fast and convenient access in one place. You can assign any parameter you like to any fader in the Soft Row and store your custom setups as a user preset for later recall.

DREAM ON

Slapping Stringbox on a violin track while mixing an atmospheric ballad, I created fluctuating resonances that were tuned to the song's key. (See sidebar "Try This.") The

result was a hauntingly oneiric effect unlike any other I'd heard. You'll most likely want to fade Stringbox in for only select sections of your mix as too much of it can be distracting. I only wish the plug-in's virtual keyboard (useful for mouse-clicking the "strings" you wish to vibrate) could be controlled via MIDI. That would help modulate the resonances in real time to avoid clashes with passing tones.

Routing a snare track to the Resonant Chords plug-in, I made snare hits trigger 8-voice arpeggios synched to Digital Performer's tempo. I set the level, feedback amount, pitch and note value (8th triplet, dotted 16th and so on) for each voice and shaped its tone with one of several included filters. I also automated a transposition fader to modulate the arpeggios in real time to follow chord changes in the arrangement. This kind of repetitive arpeggiation is probably best suited for modal dance, techno and New Age music.

Lowering the Delay Time Master control transformed Resonant Chords arpeggios into a harp-like strum. Once again, I missed the inclusion of MIDI Note On control, which would have greatly facilitated chord changes, temporary modulations and playing passing tones. That said, my favorite uses for Resonant Chords were producing quirky room reverbs with phasey-sounding flutter echoes and triggering white noise on snare tracks. Lexicon provides some outstanding presets along these lines.

MIXDOWN STAPLES

While Stringbox and Resonant Chords may have somewhat limited (but wonderful) applications, other plug-ins in the bundle cover many of the essential time-based effects so crucial to modern mixes. Chorus/Flange sounded terrific on background vocals and guitars. Playing with controls for the eight voices, four LFOs (with nine different wave shapes!), feedback, filtering and diffusion, I could create supersized vocal-ensemble effects and deep flanges for electric guitars that would make Jimi smile in his grave.

The Dual Delay plug-in offered a panoply of grandiose U2-style tape delays, slapbacks and ping-pong delays. Vocals and guitars sounded awesome

TRY THIS

Using Stringbox's controls, select roots and fifths for your song's key across a 3-octave range. Center the lower notes and hard-pan the higher ones by choosing High Spread for the Pan mode. Adjust the chorus parameter to 9 cents to detune the virtual strings. Choose a soft string response for a slightly muted sound, and roll off high frequencies fairly aggressively on the highest strings. The resulting ethereal wash should work well with much of your arrangement where no accidentals are played.

with four voices independently delayed, diffused, filtered, fed back and panned. Random Delay, however, was a mixed bag for music production. With long delay and Wander times applied, the modulated delays produced unsynched multi-tap echoes I wasn't wild about. (Why would you ever not want to lock all discrete echoes to a song's tempo?) But I envisage sound designers putting this plug-in to good use. Imagine a screaming alien plunging into

a bottomless chasm and flying back up to the rim (echoes of the screams getting longer and then shorter). For musical applications, much shorter delay and Wander times emulated early reflections that thickened vocal tracks to fantastic effect.

Next on my plate was Pitch Shift. I got great results processing dual-mono (hard-panned) electric guitar tracks—both distorted riffs and clean slow-hand parts previously recorded with a third-party chorus effect—as long as I showed restraint. Shifting up or down two semitones sounded flawless, but shifting any greater than that started to introduce doubled transients and a slightly gargled sound. Large shifts also suffered from the lack of independent formant processing. Vocal tracks fared even worse. Pitch Shift introduced gargly-sounding artifacts when shifting male lead vocals up as little as one semitone, and shifting down only one semitone made formants sound unnatural.

Using MultiVoice Pitch, I could easily create 6-voice harmonies, each voice shifted up or down as much as 12 semitones and delayed a different amount. Only parallel harmonies were possible, so they often became non-diatonic. Again, the lack of independent formant processing made all but the smallest pitch shifts sound unnatural. Sound designers for horror and sci-fi flicks, take note: You can apply feedback to individual voices to create creepy-sounding ascending or descending dialog effects that excel. MultiVoice Pitch also sounded outstanding when pitch shifts no greater than 20 cents were used to create automatic double-tracking (ADT) effects. Tuning, panning and delaying each voice differently from the others fashioned huge ensemble effects on background vocal tracks.

OTHER CONSIDERATIONS

All of the plug-ins except Stringbox imposed a very light hit on my CPU. One instance of Stringbox used up about 30 percent of my 8-core Mac Pro's resources. All the plug-ins stole control of Digital Performer's keyboard shortcuts, making transport control a hassle. Clicking outside the plug-in and inside Digital Performer's turf restored control. I've seen this same issue with a few plug-ins developed by other companies.

The somewhat cursory operating manual provides enough information that experienced engineers will get up to speed fairly quickly. Hobbyists lacking a deep understanding of signal processing will likely be left scratching their heads often in Pro mode. Thankfully, Lexicon provides well over 300 presets—many excellent—to keep surface-scratchers satisfied.

THE FINAL SCORE

Native Effects earns very high marks for its outstanding delay-based plug-ins and innovative Stringbox. Its pitch-shifting plug-ins don't handle large transpositions and harmonies gracefully, but they come in handy for sound design and frame-rate adjustments (in film post), and create excellent ADT effects for music production. Overall, Native Effects Bundle is a winner.

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

PRODUCT SUMMARY

COMPANY: Lexicon

PRODUCT: PCM Native Effects Bundle

WEBSITE: lexiconpro.com

PRICES: PCM Native Effects, \$999.95 MAP; total bundle (PCM Native Reverb and Native Effects), \$1,999.95 MAP; upgrade to total bundle (from PCM Native Reverb), \$599.95 MAP

PROS: Wide variety of effects, some very unique. Delay-based plug-ins sound outstanding. Low CPU hit (except Stringbox).

CONS: No MIDI control. Pitch Shift often produces audible artifacts. MultiVoice Pitch can't create scalar harmonies. All plug-ins rob Digital Performer's keyboard shortcuts.

FUTURE SONICS, MONSTER, SENNHEISER

Checking Your Mix on In-Ear Monitors

Getting intimate with your mix is the best way to ensure that you're covering all the sonic details and not leaving loose ends. It's often the low-level mix elements that can come back to bite you later. For instance, a shaker, tambourine, reverb tail or delay can sound balanced in a mix heard out of speakers in a room, especially at the end of a long day when your ears are tired. But those mix items can sound out of place when you listen back with fresh ears.

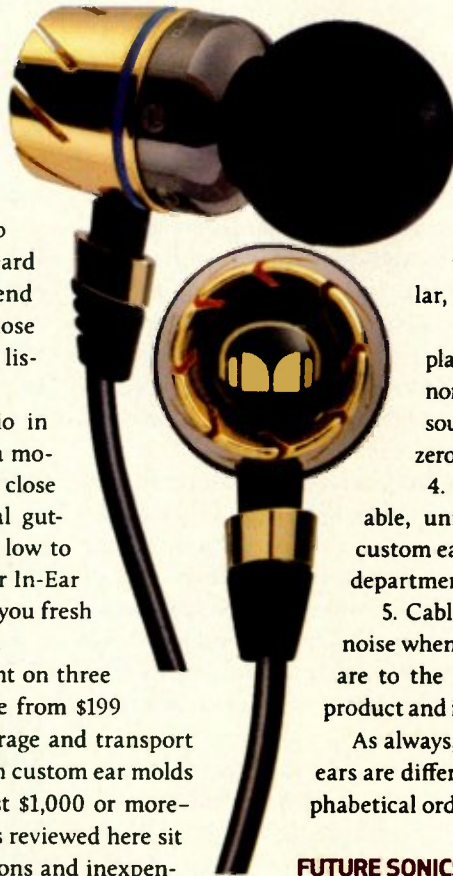
Modern engineers are listening to audio in multiple playback environments, so having a mobile transducer uncolored by the room and in close proximity to your head can be an essential gut-check in the mixing process. Referencing at low to medium level on a great set of headphones or In-Ear Monitors can make all the difference, giving you fresh perspective, even after a long day of listening.

For this review, we're putting the spotlight on three universal-fit, pro-level IEMs ranging in price from \$199 to \$399, each offering a range of fitting, storage and transport options. Certainly, high-end transducers with custom ear molds are at the top of the line, but these can cost \$1,000 or more—which is out of reach for many. The products reviewed here sit squarely in the middle between custom options and inexpensive, generic models that lack the quality necessary for a working audio pro.

Apart from the necessary break-in time needed to achieve optimal listening results (all the units here sounded better over time and took 10 to 20 hours to break in), it's very important to keep the following five things in mind when evaluating in-ear listening devices:

1. **Fit is critical:** The more fitting options (aka, isolating ear tips) you have, the better your chances of getting the right fit. Grabbing the top of the ear and lightly pulling up and back when fitting your IEMs is a great way to get them seated correctly in the ear canal.

2. **Know your source:** IEMs can be brutally honest, revealing



MP3 hash, including shrunken stereo image and nasty artifacts, so know that your listening experience will only be as good as the source. It's also important to have a great headphone amp and DAC when evaluating IEMs. For this review I listened exclusively through a Benchmark DAC1 with its stellar, high-voltage headphone amp.

3. **Listen at safe levels:** By design, IEMs place the transducer dangerously close to your non-renewable, factory-installed listening resource—your eardrums. Having gain down to zero when fitting your IEMs is good practice.

4. **Custom fit beats universal:** Some affordable, universal-fit IEMs can be retrofitted with custom earpieces, kicking them up a notch in the fit department for not a lot of money.

5. **Cable handling noise:** All IEM cables transfer noise when handled, and it gets louder the closer you are to the transducer. This varies from product to product and is something you should test when buying.

As always, try them on for size before purchase. All ears are different. Here, then, are the contenders, in alphabetical order.

FUTURE SONICS ATRIO M5 PROFESSIONAL EARPHONES

Future Sonics (futuresonics.com) is a highly respected manufacturer of custom-fit IEMs like the mg6pro and mg5pro, which are used extensively in live sound reinforcement and other applications. The Atrio M5s are the company's universal-fit IEMs (\$199) featuring new 10mm, MG7 dynamic drivers. Other features include the 51-inch QuietCable II, promising low handling noise, 30dB ambient noise rejection, 1/8-inch mini plug and a one-year limited warranty. The M5s come in five colors and include seven pairs of foam and silicone ear tips

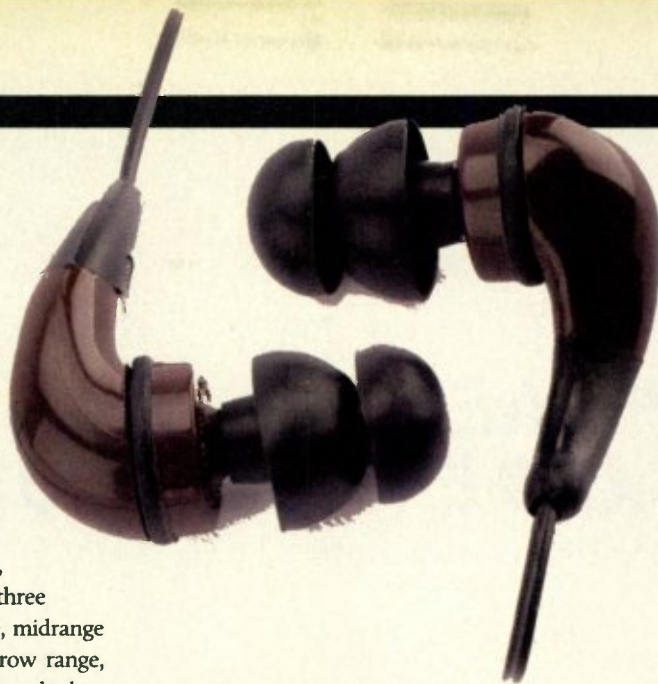
TRY THIS

When fitting IEMs, be sure to try all the eartips provided. Fit is critical for best rejection of ambient noise, best stereo balance and maximum low frequency transmission from the IEM to your ear. Because everyone's ear canals are different, you may have to mix and match the eartip sizes, left to right, for the best fit.

and a loop-cleaning tool.

The M5s ship with a discounted GoCustom option (20 percent), which allows the user to step up to a tailored fit. This is highly recommended, as the M5s only come with three pairs of silicone ear tips. The foam ear tips are great the first time you wear them but quickly lose their elasticity and ability to cancel ambient noise. In my listening tests, the Atrio M5s were my least favorite of the three units. Although the bottom end is adequate, midrange frequencies are decidedly forward in a narrow range, which tended to unbalance my mixes and overshadow the top end. It's possible that the custom fit option can overcome this, but as is, I found the listening experience unsatisfying.

At \$199, the Atrios are the lowest priced of the units tested here—a bargain, especially with the discounted custom fit option—and are a definitive step up from lower-priced IEMs. As this is a subjective evaluation, I recommend that you still consider the Atrio M5s and give them a listen for yourself.



dance of ear tips makes it possible to get a nearly perfect fit. At \$299.95, the Gold IEMs provide the best bang for the buck here and should be on your short list when IEM shopping.

SENNHEISER IE 8 PREMIUM AUDIOPHILE IN-EAR NOISE ISOLATING HEADPHONES

The Sennheiser IE 8s (sennheiserusa.com, \$399.95) ship in a box-within-a-box, the smaller of which is meant for travel. It holds the IEMs, three silicone ear tips (small, medium, and large), ear hooks, a cleaning/tweaking tool (more later) and a dehumidifier section that holds replaceable salt pads assuring optimal humidity during storage. There is a slick sliding cover that protects all these bits and keeps everything where it should be, even when tossed in a backpack or suitcase.

The IE 8s offer a unique low-frequency adjustment on each earpiece, which can be altered with the supplied tweaking tool. Even with this feature set at its lowest, the overall balance is a bit bottom heavy, which is not so bad considering the universal fit may not always be spot-on. In other words, the low end would suffer less if you didn't get the fit quite right. Nonetheless, I found that keeping it all the way off gave me the closest experience I expected from my mixes—all the way up was way too hyped for my taste.

The IE 8s were the loudest tested here and offered the most robust low end via its bass adjustment. Cable handling was as expected from an IEM and the fit was excellent despite offering fewer ear tips than the closest competitor reviewed here. Overall, the IE 8s offered a great listening experience and appear to be well worth the money.

In perspective, it's a close call between the Turbine Pros and the IE 8s; each merits a close listen to hear, fit and feel these products considering their \$100 price difference.

Kevin Becka is *Mix's* technical editor.

MONSTER TURBINE PRO GOLD AUDIOPHILE IN-EAR SPEAKERS

The Monster (monstercable.com) Turbine Pro Gold IEMs (\$299.95) come in a package large enough to hold the bountiful and standard group of accessories for storage and assuring a near-custom fit. Included are two leather pouches, one hard, one soft; more than 20 silicone ear tips of varying types and sizes; a flexible and clever carrying "widget" for storing/transporting up to six pairs of ear tips; a cleaning cloth; adjustable ear hooks; all metal construction; and an 1/8-inch to 1/4-inch adapter.

The cable is more substantial than the others tested here and promises the same features as Monster's other top-end cable products. Although the cable was easier to handle and less prone to kinks and other common small-cable issues, it had the highest handling noise of the units I tested. However, this may be because the Gold IEMs had the best fit and rejection of ambient sound, which certainly adds to their ability to transfer handling noise through the cable. The noise transferred here was still acceptable and not a deal breaker.

The Monster Turbine Pro Gold IEMs provided a great listening experience. They are very musical across the entire frequency range, with an open top and faithful representation of bass and midrange frequencies. Although they didn't have the robust bass or adjustability of the Sennheiser IE 8s, I felt the bottom end was well balanced, especially when fitted properly. The abun-

The Sennheiser IE8s include adjustable LF on each earpiece, while the Monsters come with 20 possible ear tips.



BLUE MICROPHONES EN•CORE 100 AND EN•CORE 200

Live Vocal Mics Add Articulation and Warmth

Established as a leading manufacturer of high-quality studio mics, Blue Microphones has turned its attention to the live sound market with the en•CORE Series. Intended for onstage use, initial offerings in the en•CORE line include the 100, 200 and 300 (all of which are designed for vocal applications), and the 100i, an instrument microphone possessing a tight pattern for reduced leakage. For this review, *Mix* received the en•CORE 100 and en•CORE 200 models, each of which ships in a cardboard box, along with a microphone stand holder and a plush-lined, cloth mic bag.

The 100 and 200 share an identical profile, one similar to that of the Shure Beta 87. They both feature the same proprietary Blue capsule design; the sonic differences mainly arise from the active electronics in the en•CORE 200. The active preamp in the 200 is used primarily as a means of maintaining low noise and remaining sonically consistent over the long lengths of cable one might encounter in certain SR situations. The preamp circuitry yields a hotter output than that of the en•CORE 100, and results in the en•CORE 200's very low 25-ohm output impedance (whereas the en•CORE 100's impedance is 250 ohms). The en•CORE 200 should have no problem mating with any preamp input. A red LED

set into the 200's body illuminates to indicate that phantom power is being received. This feature really needs to be made standard among phantom-powered condenser mics. It would save a lot of time that is otherwise wasted on troubleshooting.

Published frequency-response curves for the mics are very similar, showing mild bumps at approximately 150 Hz in the upper-midrange (approximately 2.5 to 5 kHz) and at 10 kHz. At 2 kHz and 45 degrees off-axis, side rejection is about 15 dB, a figure similar to that of a Shure SM57 or SM58. The en•CORE 100 features a chrome grille with a silver-gray body, while the en•CORE 200 is strikingly finished in matte black with a dark copper grille. To reduce chances of slipping, the mic bodies feature a textured finish, and—as we have come to expect from past experience with Blue products—the mics' fit and finishes are excellent.

ON THE ROAD

I used the en•CORE 100 and 200 while on tour for male vocals in a number of situations with a variety of analog and digital consoles, ranging from Yamaha M7CL, PM1D and PMSD, to Midas H3000 and XL4, to Allen & Heath iLive and Avid VENUE. The most inter-

esting characteristic of both mics was the consistent performance they delivered regardless of which console they were patched into. The en•CORE 100 produced a very smooth response with a slight thickness around 100 Hz (reflecting the published frequency curve), yet it maintained clarity and kept the vocal in front of a busy mix without any trouble. This characteristic precluded the need to apply EQ in the upper-mid region in most situations. The mild LF bump was flattering to vocals, adding a warmth and roundness that can thicken up an otherwise thin-sounding male vocal.

Both mics' off-axis response was consistent to about 45 degrees; once the mic was moved off-axis beyond that range, volume dropped dramatically and frequency response began to thin out. I thought that the off-axis response of the en•CORE 200 was a bit smoother than that of the en•CORE 100, which admittedly should not be the case as the two mics share a common capsule. Perhaps the active electronics in the en•CORE 200 had something to do with this. Proximity effect was not as pronounced as with many other handheld cardioid mics, and rejection of spill from stage monitors was more



The en•CORE 100 (shown) and 200 share the same capsule; the 200 is phantom-powered.

TRY THIS

The placement relationship between a vocal microphone and stage monitor is critical to achieving maximum gain before feedback. The trick is to place the monitor in the "null" part of the microphone's pickup pattern. In the case of the Blue en•CORE 100 or 200, we are dealing with cardioid polar patterns, so that maximum rejection point is at 180 degrees—directly behind the mic. As a result, the optimum monitor arrangement for these mics is a single wedge placed directly in front of the vocalist. If you move the monitor to the side (or use two monitors, one on each side) two things happen: 1. This will reduce gain before feedback, and, 2. Leakage from the monitor will increase, which can cause phase issues in the front-of-house mix.

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PRODUCT SUMMARY

COMPANY: Blue Microphones
PRODUCT: en•CORE 100, en•CORE 200
WEBSITE: bluemic.com
PRICE: en•CORE 100, \$99.95; en•CORE 200, \$149

PROS: Excellent sound. Reasonable price. High SPL capability.

CONS: Cosmetics will not appeal to some.

than acceptable. Underneath the metal grille of both models is a foam windscreen that provides moderate resistance against plosives and wind noise. Handling noise was about average for a mic of this type, which is to say that it is not a distraction, but can at times be audible. As with most handheld vocal mics, I recommend using a highpass filter to prevent excessive low-frequency noise from reaching devices downstream in the audio chain.

If the en•CORE 100's strength is added warmth and body, then the en•CORE 200's strength is articulation: It provides a clarity and definition that works great in a hard rock setting, allowing vocals to cut through crunchy guitars, loud drums and busy arrangements. Compared to the 100, it almost sounded to me as if a slightly "tilted" EQ was applied to the en•CORE 200: The 200 is a hair less beefy than the 100 in the upper bass and

has a bit more emphasis in the upper-midrange for added sheen. The 200 is definitely a few decibels hotter than the 100, and in light of its extremely low output impedance, I'd expect that the en•CORE 200 is more tolerant of long lines and varying input impedances. In practice, this was never an issue—neither microphone seemed to care about what it was connected to. I also noticed that both microphones took EQ very well. In cases where the P.A. system lacked definition in the vocal range, a boost of just a few dB in the upper midrange easily placed the en•CORE vocal mics out in front of the mix.

I appreciated the supplied mic stand holder. It's constructed of hard rubber so it should be resistant to cracking, and a threaded brass insert (as opposed to plastic) mates the holder to the stand.

STRONG CONTENDERS

With the introduction of the en•CORE 100 and en•CORE 200 microphones, Blue has made quite a splash into live sound, delivering excellent vocal mics at very reasonable prices. The price points at which these microphones sell is already crowded, but the market will have to make room for two more very strong entries from Blue.

Steve La Cerra is *Mix*'s sound reinforcement editor and front-of-house engineer for Blue Öyster Cult.

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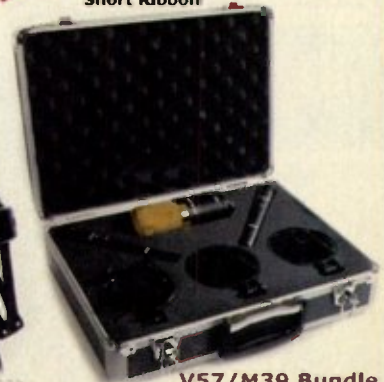
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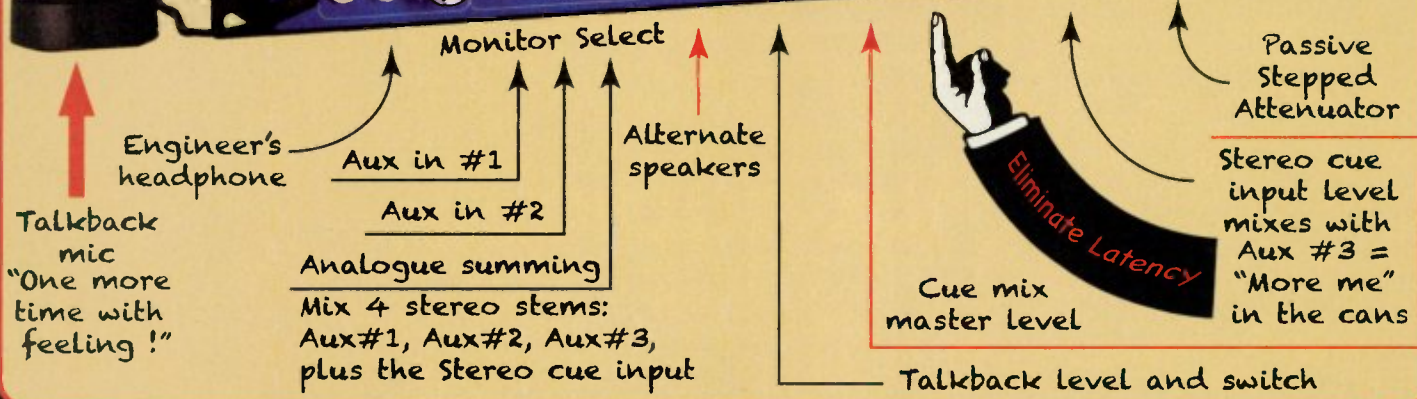
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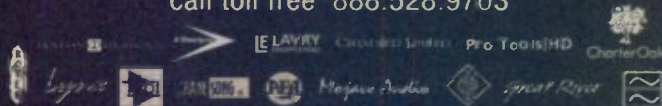
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• John Vanderslice
(Owner, Tiny Telephone - recording studio)



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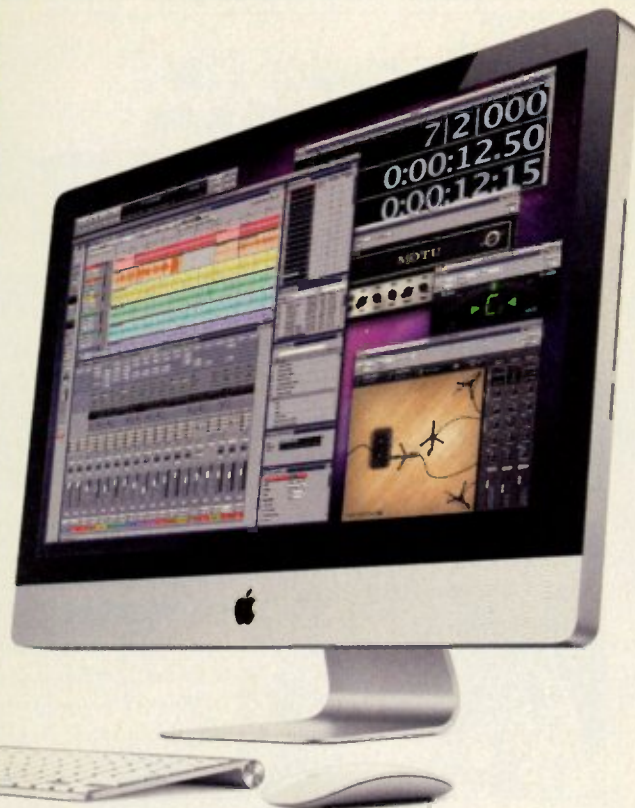
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By Kevin Becka

I remember the first audiophile playback system I ever heard. It was in a high-end Los Angeles home in the '70s, long before I was a recording engineer. I could tell I was hearing something special: A great system transcends simple physics and engages the listener on a visceral level. Since then, whenever I've heard other such systems, that feeling returns. It's like a familiar taste in a great meal or a spectacular wine—you may not know exactly what flavors are spiraling your senses to new heights; you just love it.

Listening to great audio made me want to know more about what made it sound that way. Luckily, I was surrounded by knowledgeable friends who were recording engineers and studio owners so I could start figuring things out. Right away I learned it was about money. High-end cable, speakers not often found in studios, preamps, amps, and then the "extra" things that improve your sound, some of it feeling a bit snake-oily. The Tice Clock for example: A stock, price-inflated Radio Shack alarm clock imbued with a proprietary blessing that aligned your electrons by simply plugging it into a wall socket on the same circuit as your gear. What it lacked in science it made up for in entertainment value.

Once I started working in studios in the '80s, I forgot about high-priced audiophile gear because I was surrounded by excellent "pro" gear used by top engineers: mastering engineer Doug Sax's crossover added to Tannoy Gold speakers; George Duke's digital love affair (he recorded to a 32-track Mitsubishi machine with Apogee converters and mixed down to a Mitsubishi X-80); George Massenburg's 8900 Dynamic Range Controller; and Eduardo Fayad's custom preamp. There was the Tice equivalent: toilet tissue over your NS-10 tweeters. (It really works, but it has to be Charmin.)

Later, when I started writing, I was invited to some press events showcasing super-high-end gear. SSL installed a custom 9096 J Series console at the Todd-AO Radford Stages in L.A. And I spent the night at Skywalker Ranch to write about its new Neve 88R console. But most interestingly, it was here that I also started seeing more audiophile gear: Scoring stages and mastering houses seemed to embrace the audiophile model more readily than most studios. Bowers & Wilkins Nautilus speakers, Pacific Microsonics HDCD converters, Chord amps, MIT cables and more were commonplace among the high-end brands found in some of these studios.

Which brings us back to the present, where the distance between pro and audiophile gear is closer than ever. I've been talking to Essential Sound Products' Michael Griffin, a former GM engineer who is passionate about clean AC power. He manufactures the MusicCord Power Chord



that boasts improved audio quality, backed up with science. Benchmark Media makes a 2-channel converter—the DAC-1—that *Stereophile* editor John Atkinson calls "an audiophile bargain." I own one, and he's right. Black Lion Audio offers impressive upgrades of Avid/Digidesign, MOTU and Alesis desktop I/O boxes. The upgrades are scalable and affordable. Focal's CMS line of speakers see benefits that trickle down from the company's higher-end products. And now you can buy or create a console in a modular fashion. Millennia, Shadow Hills, Grace Design, Inward Connections, SSL and API, among many others, have products aimed at high-end desktop production in 500 Series or rackmount formats.

It's gear like this that is drawing pro audio and audiophiles closer together. I was recently watching a cooking show and they were talking about the state of food now and in the past. One of the chefs said something that I believe applies to audio. To paraphrase: "Some of the worst meals you can get today are light years ahead of the best food you'd get 25 years ago." It's true, more people are eating out, there are more restaurants catering to more customers—to stay in business, the bar has been raised. In audio production, there are more potential customers, and while the prices have come down, the quality per dollar spent is getting better. If you had spent \$600 on a mic or speaker in the '70s or before, your options were limited. Now there are many options and some excellent choices at those price points. While the psychology of high pricing at the audiophile-end will never change, there are many passionate manufacturers trying to keep competitive, offering an excellent product that can make your audio sound better. It's our job as audio lovers to find those products and dive in headfirst. Embracing audiophile gear in the studio setting is putting yourself hot on the trail of quality—and that doesn't suck.

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