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MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

The Art of Listening

TOP MASTERING ENGINEERS REVEAL THEIR SECRETS

A/D Converters

THE COMPLETE GUIDE

'World of Warcraft'

CREATING AN IMMERSIVE GAME SOUNDSCAPE

DAVE MATTHEWS BAND ON TOUR

Lurssen Mastering Hollywood

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PAUL SANDWEISS

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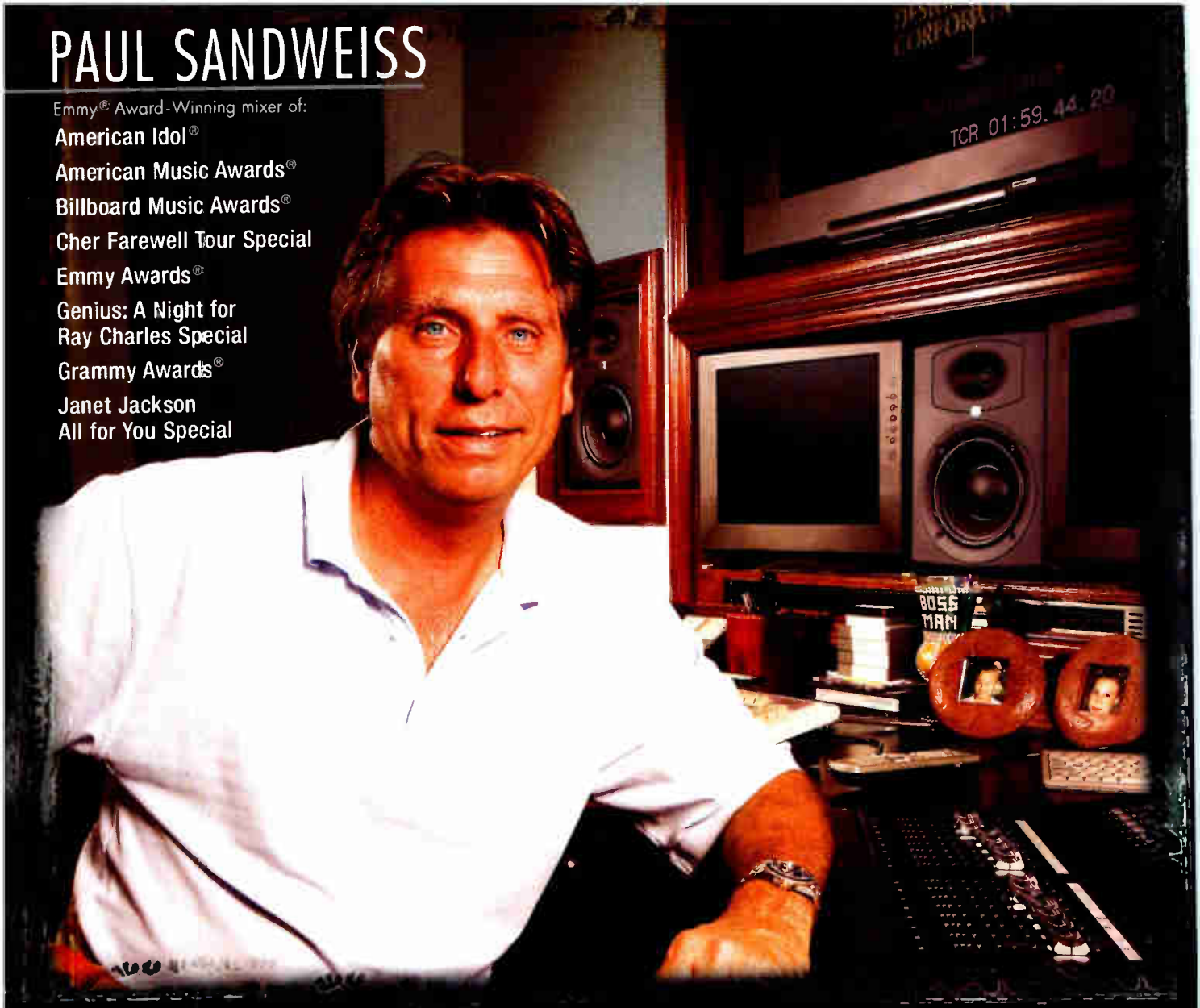

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Steve Law
FOH Mixer for Keith Urban

Jason Spence
Monitor Mixer for Keith Urban

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Steve Law - FOH Mixer for Keith Urban

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Jason Spence - Monitor Mixer for Keith Urban

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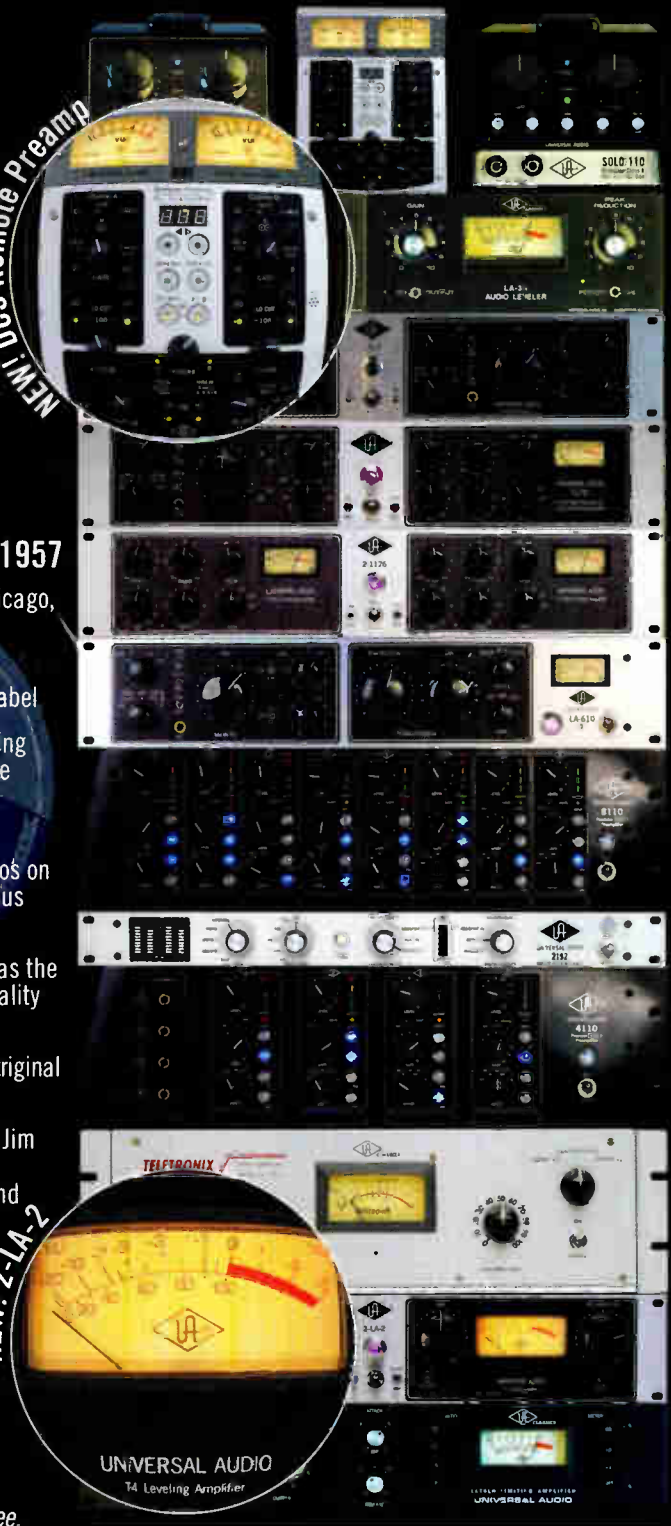

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1945: Milton T. "Bill" Putnam established Universal Recording in Chicago, where he installed a prototype "610" console.

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1957: Bill founded Universal Audio, whose legendary products such as the 1176LN, LA-2A and LA-3A became synonymous with sound quality and hit records.

1983: Bill retired and sold UA (now UREI) to Harman International. His original products became prized collectors items for almost two decades.

1999: Universal Audio was revived by two of Bill's sons. Bill, Jr., and Jim Putnam continue their father's legacy with hand-assembled reissues based on Bill, Sr.'s, drawings, vintage components and design secrets from his personal diaries.

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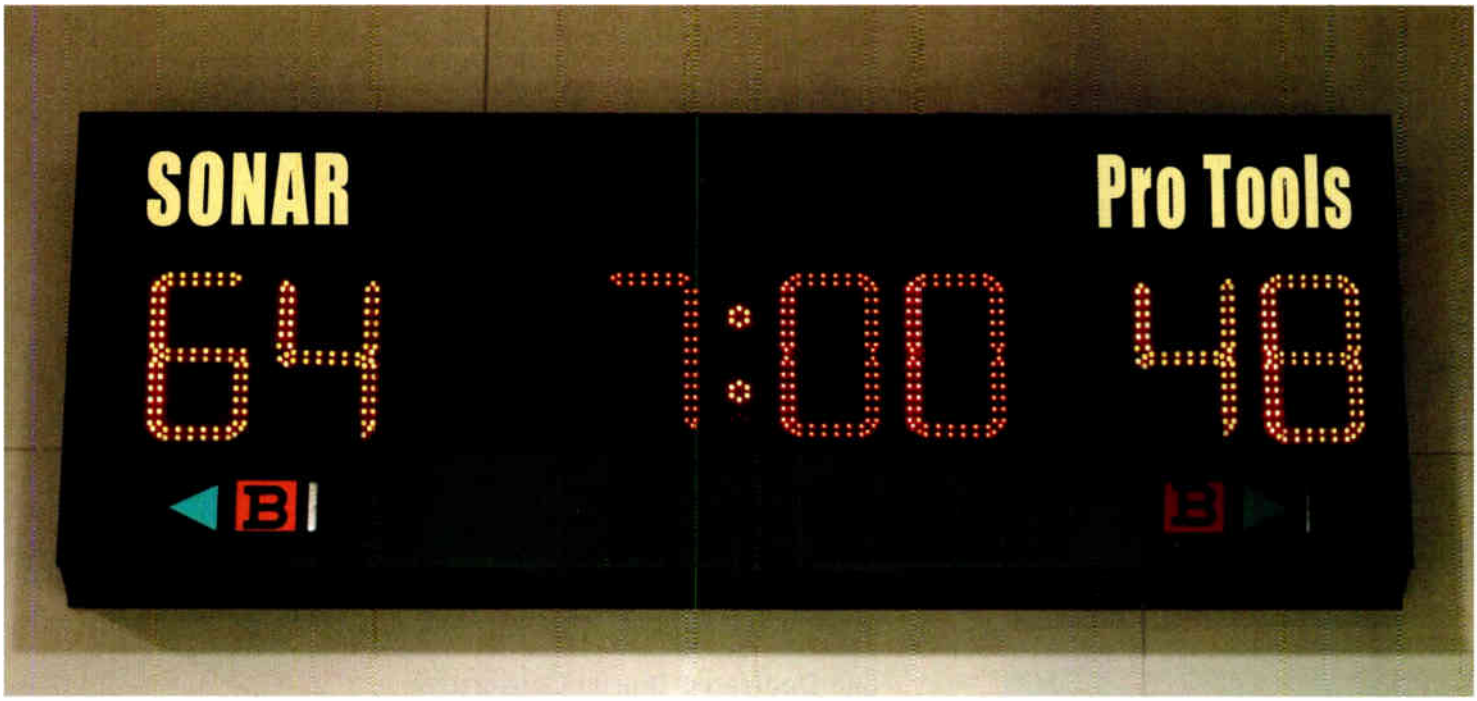

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MIX
PROFESSIONAL AUDIO AND MUSIC PRODUCTION
DECEMBER 2007, VOLUME 31, NUMBER 12


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features

On the Cover: Grammy-winner Gavin Lurssen, who began his career at the Mastering Lab, opened his own studio in December of last year. Lurssen Mastering blends old and new technologies, including Sonic Studio and digital and analog outboard gear. **Photo:** Jason Vaughn. **Inset:** Steve Jennings.

Stick It In Your Ear!
In our January 2008 issue, we'll be featuring in-ear monitoring—trends and what's on the market. Have you recently turned an artist onto in-ear monitors or are trying to figure out how exactly to broach the subject with a musician? Let us know by e-mailing mixeditor al@mixonline.com.

Check Out Mix Online! http://www.mixonline.com

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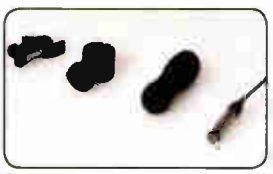

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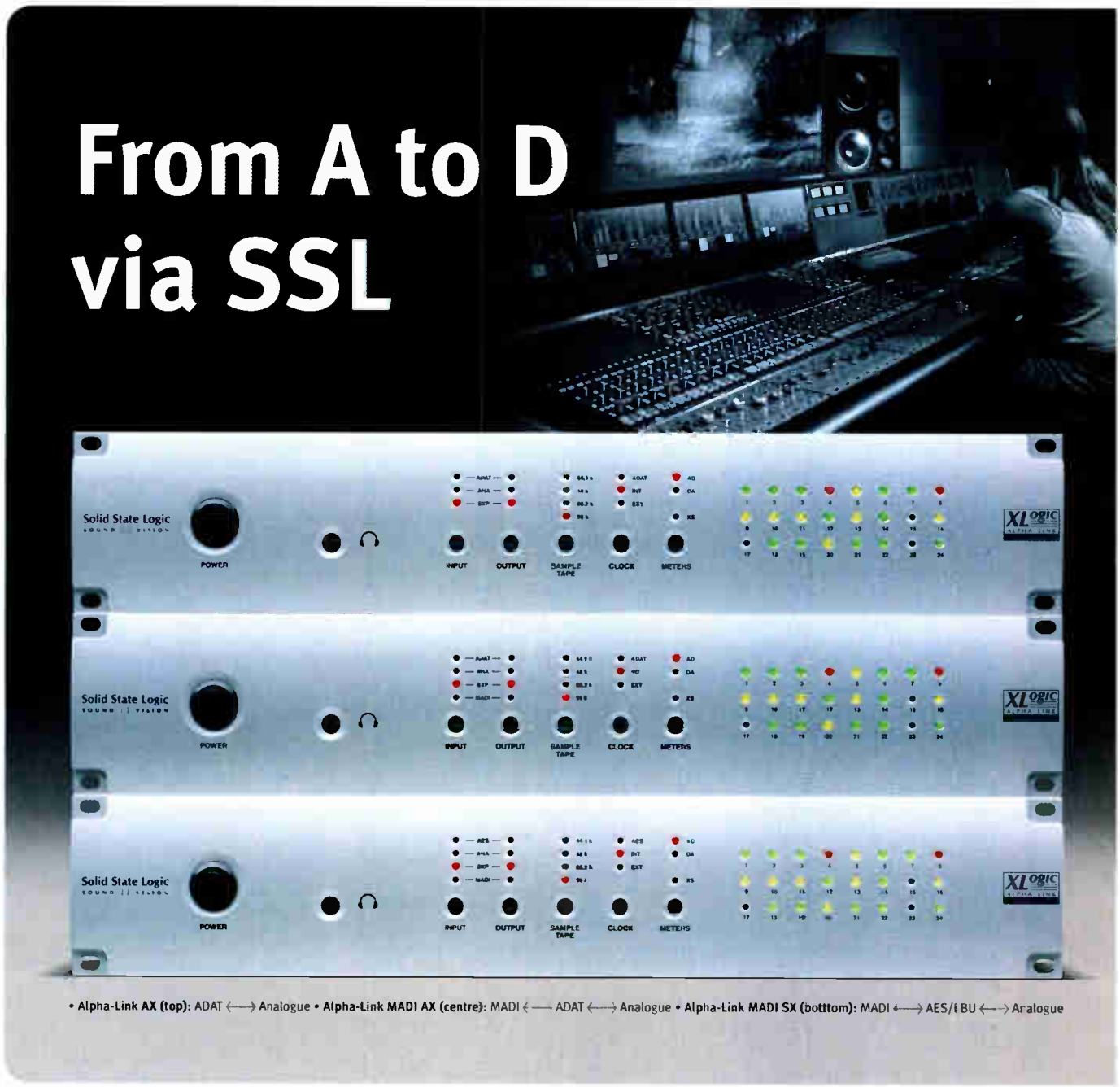
From A to D via SSL



• **Alpha-Link AX (top):** ADAT ⟷ Analogue • **Alpha-Link MADI AX (centre):** MADI ⟷ ADAT ⟷ Analogue • **Alpha-Link MADI SX (botttom):** MADI ⟷ AES/EBU ⟷ Analogue

In critical studio, live and broadcast applications, quality shouldn't be compromised at any point in the signal chain. Designed to avoid complicated workarounds and deliver pristine audio, the new Alpha-Link range is a collection of multi-channel audio converters, each featuring 24-channels of analogue I/O with SSL's premium A-D/D-A converters. The three models offer a choice of digital audio format options, for fast connectivity to MADI-, AES/EBU- and ADAT Lightpipe-equipped hardware.

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The Reluctant Mastering Engineer

Not far from the *Mix* offices is a busy facility called Infinite Studios that's been run by engineer/producer Michael Denten for more than two decades. Walk inside the place and you're greeted by a warm lounge area with walls covered by Gold and Platinum records he's recorded and mixed. These days, the fact that a single-room, owner-operated pro studio can thrive—or even exist at all—is probably worthy of some special recognition, but that's another story.

Over the years, Denten has developed relationships with top mastering houses on both coasts, and has always been pleased with the results. After completing the edits and sequencing his mix files, he'd hand the data file off to the artist/management, who would take the project to one of several mastering engineers he recommended. It was a winning combination, and he always looked forward to getting promo copies of the releases and checking out how the project sounded on CD.

Awhile ago, he played back a disc that sounded awful. It was his same mix, but sounded boomy and shrill, with a nasty edginess. Wondering who mastered this, he checked the album credits, but no one was listed. As it turns out, a friend of the artist offered to master the project as a way of saving money. Evidently, there was no one at the label who could hear the difference, so the test pressing was approved (yet another story in itself) and the less-than-pretty-sounding new release hit the streets.

Now here's the rub: Typically, high-end projects end with pro mastering services; lower-end projects might be self-mastered, but often would benefit from the touch of a professional mastering engineer. It seems unusual that major-label releases would meet with home-brew mastering; it's hardly a recipe for success.

The solution—at least for Denten—was to begin to provide mastering services for his clients who were in a budget crunch. It wasn't something he necessarily wanted to get into, but he did have the tools, ears and environment to do the job, and after hearing his slaughtered mixes it was a solution he could live with. And Denten's not alone in this arena. A mix engineer at heart, "I held out for a long time, trying to avoid what other studios were doing," Denten says.

For Denten, entering the mastering side on his own projects is easier than working with outside mixes as he already takes the approach of "mixing for mastering": never overdoing the bass, while avoiding squashing the mix and leaving some latitude for the mastering engineer to use.

The preferred route is working with a dedicated mastering facility. Clearly, this is not possible in every case, and while Denten's solution works out for some of his projects it's not necessarily the right choice for every project. These days, album production seems more complicated than ever, but one thing is unchanged: After weeks or months of making hundreds of key decisions during the production phase, mastering is still a critical part of the final sound. Your project deserves the best you can afford, so evaluate all your options carefully.

George Petersen
Executive Editor

MIX®

GROUP EDITORIAL DIRECTOR Tom Kenny *tkenny@mixonline.com*
EDITOR Sarah Jones *sjones@mixonline.com*
EXECUTIVE EDITOR George Petersen *gpetersen@mixonline.com*
SENIOR EDITOR Blair Jackson *blair@blairjackson.com*
TECHNICAL EDITOR Kevin Becka *kbecka@earthlink.net*
GROUP MANAGING EDITOR Sarah Benzuly *sbenzuly@mixonline.com*
ASSISTANT EDITORS Barbara Schultz *bschultz@mixonline.com*
Matt Gallagher *mgallagher@mixonline.com*
LOS ANGELES EDITOR Bud Scoppa *bs7777@aol.com*
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CONSULTING EDITOR Paul D. Lehrman *lehrman@pan.com*
CONTRIBUTING EDITORS Michael Cooper Heather Johnson
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SENIOR ART DIRECTOR Dmitry Panich *dmitry.panich@penton.com*
ART DIRECTOR Kay Marshall *kay.marshall@penton.com*
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PHOTOGRAPHY Steve Jennings
INFORMATIONAL GRAPHICS Chuck Dahmer

EXECUTIVE VICE PRESIDENT Darrell Denny *darrell.denny@penton.com*
VICE PRESIDENT Jonathan Chalon *jonathan.chalon@penton.com*
GROUP PUBLISHER Joanne Zola *joanne.zola@penton.com*
ASSOCIATE PUBLISHER Erika Lopez *erika.lopez@penton.com*

DIRECTOR OF AUDIENCE AND BUSINESS DEVELOPMENT
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ONLINE SALES DEVELOPMENT DIRECTOR Angie Gates
angie.gates@penton.com
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SALES & EVENTS COORDINATOR Jennifer Smith
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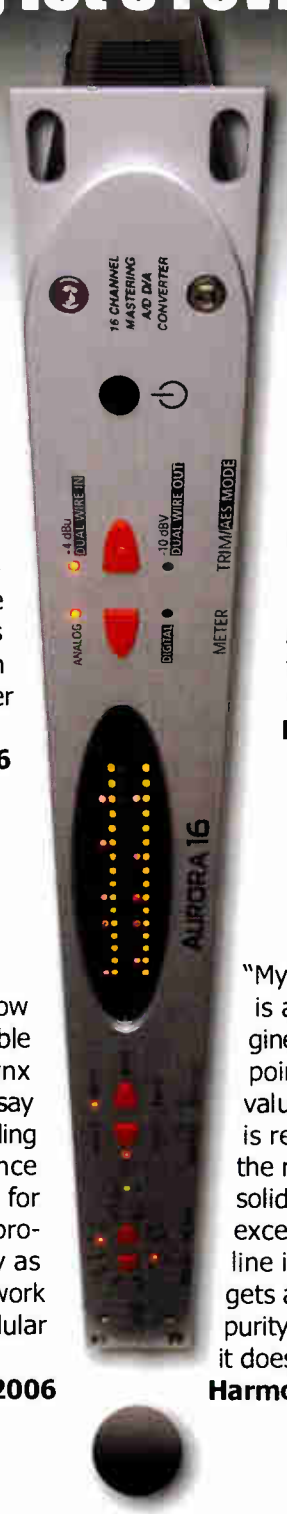

"Aurora offers superb converter quality and small footprint for such a powerful piece of gear. Imaging was so pin-point sharp that I could almost reach out and touch each instrument, and I have never been able to listen so far into reverb tails before. To my ears, Aurora offers something special, and can compete on audio quality with converters from other companies, but often at a significantly lower price per channel."
Sound on Sound, June 2006

"Lynx Studio Technology scores another hit with Aurora. Aurora has the necessities for audio acquisition / playback without some of the pricey extras that mastering facilities and careful audio engineers tend not to use, such as soft distortion or soft clipping limiters. It's no surprise that the Aurora provides superior sound for less than other converters with similar features."
Mix, June 2006

"Aurora has amazing high and low frequency definition and a notable sonic depth. After using the Lynx Aurora for several weeks, I can say that it is one of the finest sounding A/D and D/A boxes in existence today. It is the perfect solution for stereo or multichannel music production or mastering or simply as the front end for digital audio work stations, digital mixers, or modular recording devices."
Pro Audio Review, March, 2006

"My overall conclusion is that this is a very 'pro' setup. I can't imagine that anyone would be disappointed or feel it doesn't provide value for money. It sounds great, is relatively easy to hook up, and the mixer applet software is totally solid. Furthermore, Lynx provided excellent support. So the bottom line is if you have the money, this gets a thumbs up in terms of sonic purity. It's all about conversion, and it does that job really, really well."
Harmony Central, April 2007

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Letters to Mix

MORE ON QUINCY JONES, PLEASE

I always love picking up your excellent magazine. The 30th-anniversary special (October 2007) was a real treat. The only thing I could find wrong with it was that the entire issue wasn't devoted to Quincy Jones ("Mix Interview")! I finished reading the interview and found myself wanting more—much more. What an icon of American music this man is.

Robert Laszcz
Oakville, Ontario, Canada

THE HEART OF ROCK 'N' ROLL IS STILL BEATING

I read the October 2007 issue and, as usual, found it very informative and a great read. But I feel that you missed a very important figure in "30 People Who Shaped Sound."

I have the very distinct fortune and definite pleasure of working beside Shelly Yakus. His credit list is immense, having worked on John Lennon's *Imagine*, U2's *Rattle and Hum* and *Under a Blood Red Sky*, Tom Petty & The Heartbreakers' *Damn the Torpedoes*, Van Morrison's *Moondance* and many others. Just Google his name. Yes, maybe I am biased, but just listen to the drums on "Don't Do Me Like That" or Stevie Nicks' vocals on "Stop Draggin' My Heart Around." Oh, yeah! That's mixing.

His work came from the heart, and it still does. You can feel and hear it, as they are timeless tracks. So please give credit where credit is due. And just in case anyone is wondering, he is still doing wonderful work.

Ted Richardson
Noisia Records/Cedar Street Studios

THERE'S ADVICE APLENTY

Because Mix's November 2007 issue covered audio education, we asked our readers, "What's the best piece of advice you've gotten about your career—be it from a mentor, an educator, your parents, a friend." Here are some responses we received; to give your two cents, e-mail us at mixeditorial@mixonline.com:

When I was a Music Engineering student at the University of Miami in the late '70s/early '80s, I had a work-study job at the School of Engineering's Clean Energy Research Institute. CERI was guided by Dr. T. Najat Veziroglu, a leading expert on alternative energies, including hydrogen. Dr. Veziroglu is from Turkey, as were many of his grad students.

Much of my work-study time was spent stuffing envelopes with announcements of upcoming conferences, as well as opening incoming mail with academic papers for Dr. Veziroglu, who was—and still is—a busy guy.

I spent my last semester as an undergrad interning with the Norwegian Broadcasting Company in Bergen, Norway. When I returned to Miami, I visited my friends at CERI, and Dr. Veziroglu asked me about what I was doing with music recording. He then mentioned he knew a couple of Turkish brothers who were somehow involved in the music recording business in New York City. He said he'd be happy to put in a good word with them if I was interested.

At the time, my head was still spinning from traveling around Europe and coming back to Miami to reverse the culture shock. On top of it all, I wasn't all that excited about leaving Miami to head north to New York City, so Dr. Veziroglu's offer of hooking me up with some friends in New York went in one ear, passed through my brain long enough to be stored away for future reference, and then proceeded out the other. Dr. Veziroglu was an alternative energy specialist; whom could he possibly know in the recording industry?

Fast-forward a few years into my career: I read a brief history of Atlantic Records. Turkish brothers start a record company. In New York City. The list just kept getting longer, and I just kept shaking my head. A golden opportunity lost in the whirlwind transition from school to the real world? The irony of ending up at the cooler end of the Gulf Stream?

No worries! Life has been just fine so far, and I recently got in touch with Dr. Veziroglu after many years. I was proud to hear that his work with alternative energies continues, earning him a nomination in 2000 for the Nobel Prize in Economics for "both envisioning the Hydrogen Economy and striving toward its realization." Maybe on my next visit to Miami I'll get up enough courage to ask him again about his memories of those Turkish brothers in New York City. Until then, I'll keep teaching my own students about the people and the history of the recording community, as well as the art and the science of music recording.

Mark Drews
Music Production & Recording Studies program director/Department of Music & Dance
University of Stavanger

From Wayne Jackson at Indiana University: "You will only learn as much here and out there as you put into it." I have found that statement to be truthful, whether I was touring, doing festivals, working as a production manager or in sales.

Fran Sutherland
Customer service manager
AV Concepts

In the early '70s, I was grousing about a mix of mine that a major producer had chosen to include on an album. This guy would grab monitor mixes, roughs—anything he thought felt great. At the time, we early independent engineers did a lot of comparative listening to one another's stuff—the latest sounds, etc.—and this one had almost no bass drum. Kick was huge back then, and I didn't want to miss out. He turned to me and said, "Bob, you've got to get out of the 'Academy of Recorded Sounds.' I don't even like that bass drum. I don't like what he played." He was right. Feel is everything and it's sure easy to get "serious" about a mix and tweak all the life out of something. Sometimes wild, dangerous and fast plays a lot better.

Bob Schaper

The most important thing that I learned from my educators was to stay responsive to the needs of your employer—whether it be the head engineer in a studio or your boss as an A/V installer. If you can consistently anticipate what they need, they'll always look to you.

Tim Brault
Marketing/engineering assistant
THAT Corp.

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AVATAR, *MIX* THROW BASH

PHOTO: STEVE SAVI

On October 5, during the N.Y. AES Convention, hundreds of industry heavyweights traipsed through Avatar Studios to celebrate two "Big 3-0" anniversaries: Mix and Avatar. Pictured is a reunion of past Power Station/Avatar staff in the famed Studio A. For additional photos and more news from AES, visit www.mixonline.com/ms/aes2007.

MOOGFEST A SCREAM

PHOTOS: ROB OLEWNIK

The Moogfest cast and crew

Jordan Rudess jamming on his Moog Little Phatty

The B.B. King's Blues Club in New York City was the place to be on September 22, as numerous performers entertained the 4th Annual Moogfest crowd, who came to celebrate the achievements of Robert Moog and his namesake synth.

Performers included Thomas Dolby, Jordan Rudess (Dream Theater), Adam Holzman (Miles Davis), Spiraling, Don Preston (Frank Zappa/Mothers of Invention), Gershon Kingsley, Herb Deutsch and Erik Norlander, among others. Kingsley and Deutsch received the Bob Moog Legacy Award.

Xenovibes, who won a contest to be the opening act, started the show, and featured Shueh-li Ong on a Moog Theremin and keyboards, and John Anthony Martinez on electronic drums.

M&K SOUND RETURNS

Loudspeaker company M&K Sound Co. has been taken over by a new team, headed up by longtime M&K distributors Per Becher and Asger Bak. Put under creditor jurisdiction in February, Becher and Bak acquired M&K's intellectual property (brand name, trademarks, Websites etc.) in July.

Effective October 1, M&K's U.S. operation began with audio industry veteran Chris Minto (pictured) stepping in as VP/managing director. Minto had been with the old M&K for seven years as the company's professional division director. "Our focus," says Minto, "will be to maintain and even improve M&K's product and service quality. We intend to provide the best possible listening experience to the audio professional and to the home theater enthusiast alike."

Other M&K alumni joining the new company include chief design engineer Chris Hagen and electrical engineer Jordan Arnos. In addition to new product development, Hagen will also oversee M&K's new service department.

Contact the new M&K Sound Co. in Sherman Oaks, Calif., at www.mksoundsystem.com.

—George Petersen

THE NEXT FRONTIER ONLINE ENGINEERING

OnlineAudioEngineering.com

Taira Entertainment's www.OnlineAudioEngineering.com site provides online professional audio engineering, mixing and mastering services in standard, professional and vintage editions.

Standard Edition services offer budget Digidesign Pro Tools–driven audio mixing and mastering sessions starting from $79. Professional Edition services offer 24-bit/96kHz audio mixing and mastering sessions (using an SSL C200 digital production console and outboard effects) starting from $139. Vintage Edition services provides audiophile-quality "analog" audio mixing and mastering sessions starting from $199, using a SSL SL4000 G+ Series analog board and an assortment of vintage, Class-A gear (Neve EQs, Avalon comps, Drawmer Signature Edition).

ALL-IN-ONE POST SHOP

Academy Award–nominated sound designer Leslie Shatz and sound mixer Chris David, who united to form Los Angeles–based Wildfire Studios (www.wildfirepost.com), announced their collaboration with Hollywood Intermediate, which has opened a satellite DI studio within Wildfire. The first film that the two companies will work on together at Wildfire Studios will be Sylvester Stallone's *John Rambo*.

ADR control room features a Yamaha 02R and Pro Tools HD2.

Earlier this year, Shatz and David acquired the 15,000-square-foot studio formerly occupied by Wilshire Stages and began a multi-million-dollar remodel and upgrade of the facility. According to Shatz, "[Having a full-service post facility] will allow the director and editor to focus on artistic and creative decision-making in both processes simultaneously rather than battling cross-town traffic to be able to focus on one or the other."

Stage C with the new SSL C300 board

Recently completed at Wildfire Studios is Todd Hayne's Bob Dylan biopic, *I'm Not There*, for which Shatz was sound designer. Currently in-house is Jason Reitman's *Juno* and Hollywood Intermediate's first project at Wildfire Studios, Renny Harlin's *Cleaner*.

ON THE MOVE

Who: Avinash (Avi) Vaidya

What: Shure VP of product development, CTO

Main responsibilities: all engineering and configuration management functions and new product development projects.

Previous Lives:

- Emerson Network Power VP, global business development
- Charles Industries, VP of engineering/CTO
- 1982-1996, AT&T Bell various positions

The best part about working in the pro audio industry is...being able to see our products on-stage in many of the most prestigious venues and at some of the world's largest events, live and on television. I remember seeing our microphones on TV as I watched *American Idol* after my first day at Shure.

If I could play any instrument, it would be...an acoustic guitar, because it's easy to take with you and easy to set up. You can just start playing.

Currently in my iPod Nano: The Beatles and Bollywood songs.

When I'm not in the office, you can find me... riding my bicycle or hiking.

GET INVOLVED!

Al Schmitt *Elliot Scheiner* *Ed Cherney*

METAlliance (www.metalliance.com) has formed a partnership program in which professional audio and video companies will work with the alliance to help promote quality in the recording arts. The alliance comprises a group of award-winning audio engineers and producers who have been involved in establishing techniques and technical standards; the Board of Directors includes Chuck Ainlay, Ed Cherney, Frank Filipetti, George Massenburg, Phil Ramone, Elliot Scheiner and Al Schmitt.

For its corporate partners, the METAlliance program will offer, in addition to marketing tools, access to Alliance members for activities that can include product development consultation and testing, demonstrations and educational events.

METAlliance was formed in 2005 to create a pro audio forum that would define and secure the highest audio standards for developing consumer formats.

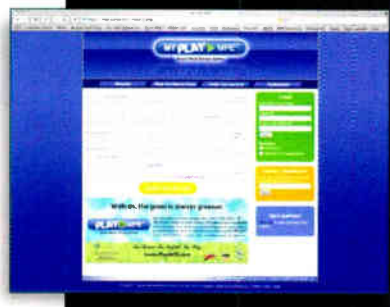
MERCH MADE EASY

For independent artists, efficiently running the merchandise aspect can get tough—packing up for a gig can be heavy enough without having to guess how many CDs you should bring along to sell that night. Digital distribution has leveled the playing field in every corner of the music industry already, and now it presents a solution to this dilemma in the form of Fizzkicks (www.fizzkicks.com). The process is simple: Using the online music service, Fizzkicks members can create their own prepaid music cards (above) to sell or give away to their fans. Each card has its own unique access code, which allows fans to download up to 20 songs per card from the artist's library.

Using Fizzkicks appears to be one solid way that musicians can cut down on the expense and logistics of maintaining a physical CD inventory, as well as give fans flexibility in which songs they want to purchase. Band news, bios, music videos, photo galleries and fan networking tools are all also included on each artist's Fizzkicks page.

Washington, D.C.–based hip hop artist K4sho is one example of an act that has been making good use of the service at his shows. "You set your own price point, and you can sell albums, singles and videos," he says. "It's all in one self-contained site, and you can control your revenue. As long as you market and advertise yourself, you'll get the revenue that you need—all you have to do is work the system." —*David Weiss*

NOTES FROM THE NET



PLAY ME!

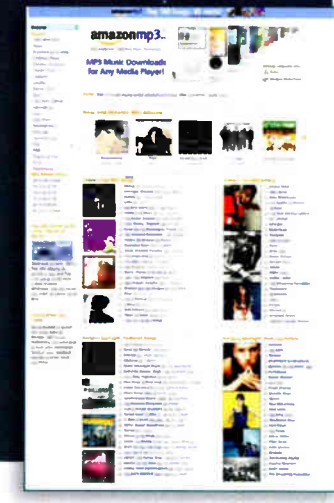
My Play MPE™ (www.myplaympe.com) allows indie record labels/artists to deliver their releases over the Internet directly to radio station program directors, music directors, etc. The self-serve automated system features state-of-the-art encryption to protect content while delivering high-definition audio.

MUSICNET ADDS DIGITAL

Digital music distribution delivery system MusicNet has expanded its content and technology offerings to incorporate new forms of media, including music videos, television and film, and renamed itself MediaNet Digital. The company has provided back-end technology and licensed content to digital music services including Yahoo! Music, MTV's Urge, Virgin, HMV, Samsung, and Microsoft's Zune, among others. Its audio catalog currently comprises 4.5 million tracks.

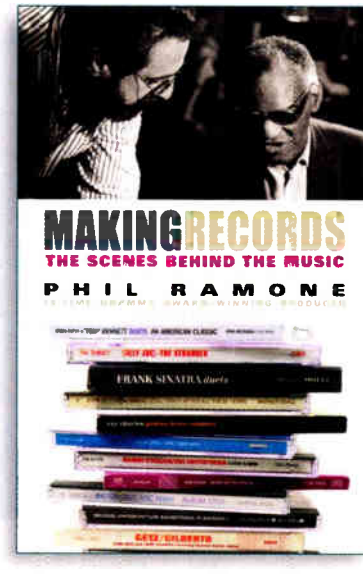
AMAZON JOINS DOWNLOAD FRENZY

Amazon.com launched a public beta of "Amazon MP3," a new digital music download store that offers a la carte, DRM-free MP3s. The site hosts more than 2 million songs from more than 180,000 artists from the majors and indies. Most songs are priced from $0.89 to $0.99; most albums are priced from $5.99 to $9.99. Every song is encoded at 256 kilobits per second. After purchase, users can add the downloads to their iTunes or Windows Media Player libraries.



BOOKSHELF

Fourteen-time Grammy Award–winning producer/engineer Phil Ramone takes his unimpeachable skills from behind the board and onto paper. His *Making Records: The Scenes Behind the Music* (Hyperion) memoir dispenses decades of professional experience and personal stories about working on such high-profile recordings such as Bob Dylan's *Blood on the Tracks*, Billy Joel's *The Stranger*, Paul Simon's *There Goes Rhymin' Simon*, Ray Charles' *Genius Loves Company* and so much more. *Making Records* also delves into Ramone's non-studio work, such *Midnight Cowboy* and *Flashdance* films, as well as live events (Songwriter's Hall of Fame). As the producer says, "Wherever I go, I'm amazed by the curiosity that both casual and serious music lovers express for the marginalia surrounding the records they love." This book was created to appeal to fans and audio pros alike.



CORRECTIONS

The audio department at Sony Music Studios ("N.Y. Metro," September 2007) was represented by Radio and Television Engineers Local 1212 of the International Brotherhood of Electrical Workers.

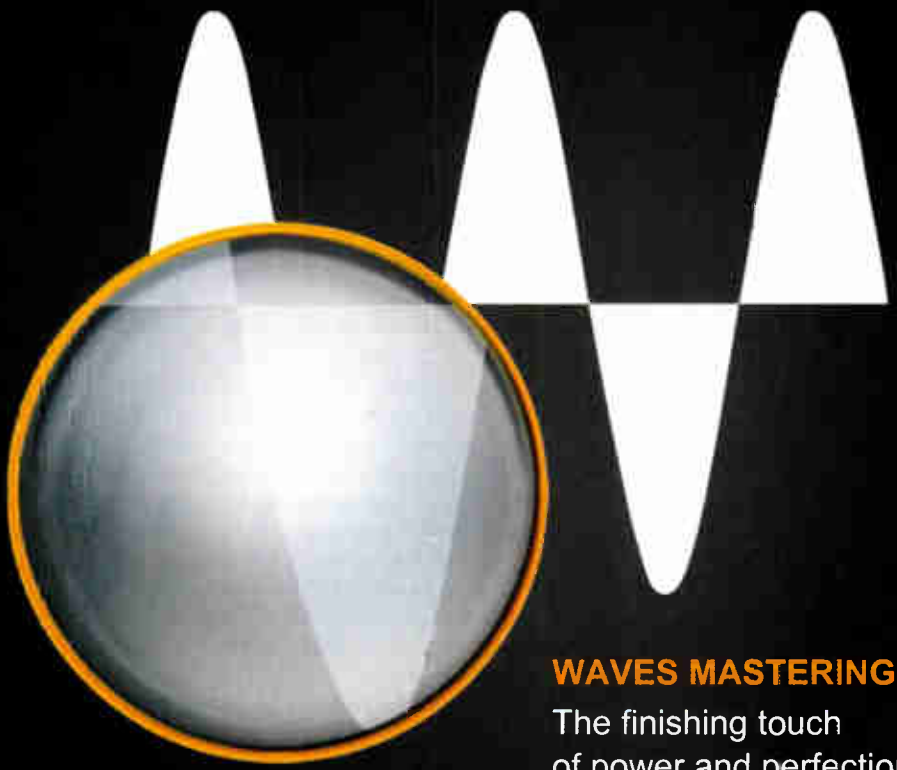
The Ultrasone Edition 9 headphones reviewed in the October issue are priced at $1,500, not $2,092.

Mix regrets the errors.

INDUSTRY NEWS

MusicBox (Calabasas, CA) named **Andrew Robbins** director of film and TV music...**Brian Pickowitz** has been promoted to business development manager for touring sound at **Crown Audio** (Elkhart, IN)...The newest addition to **Sabine**'s (Alachua, FL) sales team is **Don Boomer**, sales director, Western region...New face at **DK-Technologies**' Herlev, Germany, office is **Carsten Rauhut**, sales manager. In other company news, **Monitoring Company** (Nice, France) will distribute DK's products in France...Park City, Utah–based **SoundTube** added **Nat Hecht** to its sales force, where he is managing the Western region, including Alaska and Hawaii...**David Gibson** joined **SIA Acoustics** (NYC) as senior consultant and partner...**EAW** (Whitinsville, MA) added **Michael Perry** and **Justin Walker** to its application support group...New distribution deals: **PreSonus** (Baton Rouge, LA) named **Hyperactive Benelux** (Taunusstein, Germany) as its exclusive distributor in Belgium, the Netherlands and Luxembourg; **TransAudio Group** (Las Vegas) is **Tonelux Designs Limited** (Woodbridge, VA) exclusive U.S. distributor; **Axia Audio** (Cleveland) tapped **Broadcast Bionics** (West Sussex, England) as its UK distributor; **Harman Pro Group** (Northridge, CA) appointed **Vision2 Marketing** (Nashville) as its rep in parts of Tennessee, Alabama, Georgia, and North and South Carolinas; **Reflex Marketing** (Hempstead, NY) was named the sales rep in New York Metro and Northern New Jersey for **APB-DynaSonics** (Totowa, NJ); and **HME** (San Diego) tapped **Warman Marketing** (Bloomfield, CO) for the Southwestern region.

Brian Pickowitz



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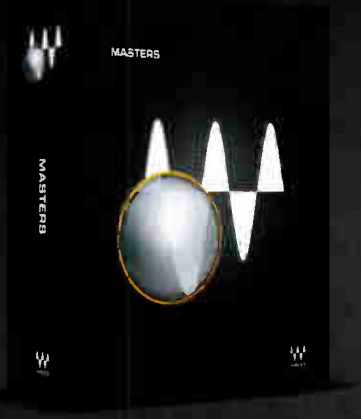

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READ...WATCH

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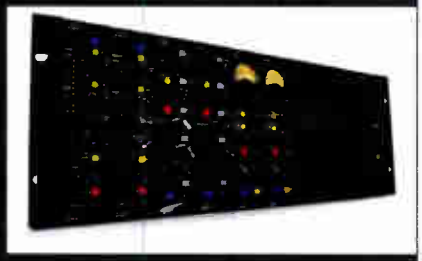
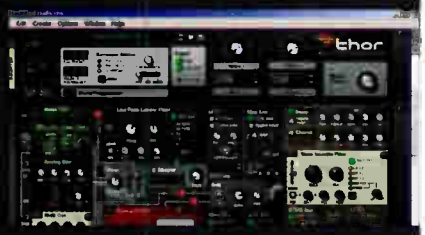


LISTEN:
"Field Test: Audient Black Series"
Listen to a guitar recorded with the Audient Black mic preamp, compressor, EQ and ADC.

READ:
How to Listen While Mastering
Check out what other high-end mastering engineers have told *Mix* about proper mastering techniques in years past.



LISTEN:
Propellerhead Reason 4
This Reason 4 sketch uses two of author Jim Aikin's original Thor sounds.

WATCH:
The Shins and Dave Matthews Band
Get your behind-the-scenes look at The Shins and Dave Matthews Band's current tours.

NOTES FROM THE P&E WING

ENGINEERS BRING THEIR TECH SAVVY AND HUMOROUS ANECDOTES TO LED ZEPPELIN PANEL

By Chuck Crisafulli

PHOTO: MARK SULLIVAN/WIREIMAGE.COM

L-R: Andy Johns, Ron Nevison, Eddie Kramer

Decades after it was recorded, the music of Led Zeppelin still evokes certain descriptions: powerful, thrilling, awesome. And while monster rock tunes like "Kashmir" and "Whole Lotta Love" aren't usually thought of as the soundtrack to a lighthearted, rollicking good time, laughter and camaraderie filled the air at "The Song Remains the Same: Behind the Board With Led Zeppelin," a panel discussion produced jointly by The Recording Academy's Los Angeles Chapter and the Producers & Engineers Wing (www.producersandengineers.com).

Offering a "board's eye view" of the band's history, the panelists included Eddie Kramer, who began his association with the Zep when he engineered *Led Zeppelin II*; his other credits include projects for Jimi Hendrix, The Beatles, the Rolling Stones, David Bowie, Kiss and Peter Frampton. Andy Johns' long history with Zeppelin began with second-engineering work on *II* and went on to include engineering for the band's monumental *Stairway to Heaven*, as well as the Stones' *Exile on Main St.*, and albums by Blind Faith, Joni Mitchell, Van Halen and, most recently, Godsmack. Ron Nevison engineered on the *Physical Graffiti* album; his artist roster encompasses The Who, Heart, Bad Company, Thin Lizzy and Foghat. In the moderator chair was producer/engineer Ed Cherney, who, despite his own stellar credits, made it clear that he considered himself a "pisher" compared to the panelists.

Cherney began the evening pointing out that he and the panelists were speaking through Shure SM58s—the durable mics Zeppelin used on their most famous recordings. But before he had a chance to do much moderating, Kramer and Johns took off on high-spirited digressions about their pre-Zeppelin encounters with the bandmembers: Kramer met Jimmy Page when the guitarist did session work on Donovan's "Hurdy Gurdy Man," and Johns was scolded by bassist John Paul Jones for playing his instrument during a break in some pre-Zep session work. Kramer also recalled his reaction when Page first told him about a new band he was forming: "He said, 'Led Zeppelin,' and I said, 'That's the stupidest name I've ever heard.'"

There was also deep respect for the music—every time a song was played, the three engineers were transported into a state of total concentration. Kramer said that the innovative forward echo effect during the vocal break in "Whole Lotta Love" was an accident; he couldn't erase a reference vocal Plant had recorded so he added reverb to it. Nevison revealed that John Bonham's thundering drum sound on "Kashmir" was achieved by running the drum track through an Eventide phaser.

Page produced the band's records, and all three engineers recalled their collaborations with him fondly. "He had a remarkable sense of direction and focus," Kramer says. "He was similar to Hendrix in that he had a clear vision of where the music was supposed to go." Nevison remembered Page's attention to basic building blocks: "He used to come in for playbacks and turn the guitar way down. At first, I thought it was because he'd made mistakes. Then I realized he wanted to listen closely to the drums. He knew that if we got Bonzo's track right, everything else would work."

The most heartfelt responses of the night came when moderator Cherney asked if the engineers had had any sense that they were creating historic recordings. "When I was in there working, I was just focused on getting things right so that Jimmy didn't take my head off," Kramer replies. "You just try to do your job correctly, which is to interpret the artist correctly, no matter what the recording medium is. We all brought different perspectives to the band's sound and had particular ways of working, but essentially we were servants to the music."

"It was always Led Zeppelin, not us," adds Johns. "If you put Eddie and Ron and me in a studio together, all you'd hear at the end of the session is hiss coming out of the monitors. The band created the magic. We were just lucky enough to catch it." ■

Chris Crisafulli is an L.A.-based writer and co-author, with Jerry Schilling, of Me and a Guy Named Elvis: My Lifelong Friendship With Elvis Presley, *published by Gotham Books.*

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HS50M
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HS10W

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The HS10W powered subwoofer complements the HS speakers and easily handles today's bass-enhanced music or the most dramatic surround effects. The HS10W subwoofer uses a bass reflex design cabinet that maintains high efficiency and low distortion. You can combine HS50Ms or HS80Ms with the HS10W subwoofer to create different 2:1 (stereo) and 5:1 surround sound systems. So check out the new standard in near-field reference monitors at a Yamaha dealer near you.

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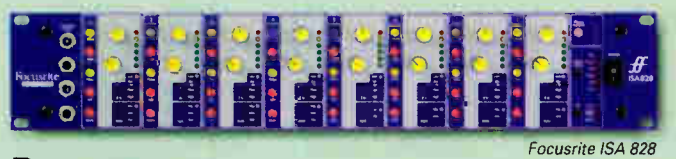

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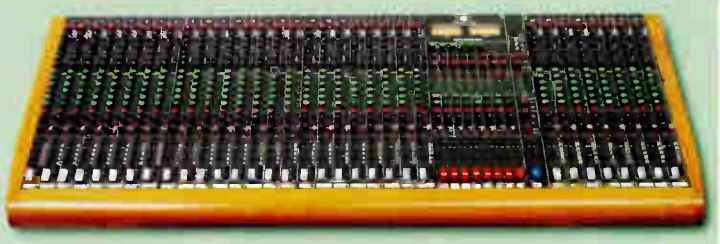

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Whether you're looking for subtle control over the dynamics of your mix, or want to take the "brick wall" approach (or maybe something in-between), we have the compressor that's perfect for you. We stock the best units out there, from renowned manufacturers such as Universal Audio, Manley, Summit Audio, Groove Tubes, and more.

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Lurssen Mastering

By Barbara Schultz

PHOTO: JASON VAUGHN

Gavin Lurssen's Lurssen Mastering houses a broad range of new and old technologies.

Two years ago in this space, *Mix* reported on veteran Mastering Lab owner/engineer Doug Sax's move to Ojai, Calif., near Santa Barbara, where he started fresh with a new facility and a new outlook. However, Sax wasn't the only mastering pro to turn a corner after the Mastering Lab relocated.

The owner/operator of this month's cover studio, Gavin Lurssen, is a two-time Grammy winner who began his career at the Mastering Lab in 1991 as a runner. A graduate of Berklee College of Music, he was fortunate to then apprentice with Sax, one of the most respected mastering engineers in the country. Lurssen has built a career and a reputation based on a careful blend of old and new methods and technologies. When Sax moved his facility north, Lurssen took the opportunity to open his own shop, and business has been booming since Lurssen Mastering went online one year ago.

"The thing I'm most pleased and satisfied with is the way we've been accepted into the community," says Lurssen. "What's really remarkable to me is all the people making a living in this community look at it as that: a community. When I moved, I got well wishes from studios we work with, from competing mastering facilities. There's a general sense of good will. If the community survives, then we all survive."

With that general good feeling, and the help of mixer friend Dan Garcia and technician Charlie Bolois, Lurssen built his new facility in a 3,000-square-foot rented building on the Center Stage lot in Hollywood. "It's a great old building," Lurssen explains. "It used to be a mill shop to mill wood that would be used on early Hollywood film movie sets in the '20s. It's got concrete floors, brick walls, exposed wood ceilings and a loft. It's got a great vibe to it, a great flow."

Lurssen and Garcia built all of the acoustical treatments, and Bolois installed Lurssen's broad, eclectic set of tools. His main mastering platform is Sonic Studio, and he makes extensive use of the system's 302 soundcard and soundBlade. Also on hand is a complement of digital plug-ins and his analog secret weapons: "I have a lot of choices when it comes to analog equipment—EQs, compressors, limiters, de-essers, specific things like that—but a lot of that has been modified."

More important than the tools at his disposal, Lurssen says, is a balanced approach to mastering. "With the tools being as available and as inexpensive as they are, anybody can call themselves anything," Lurssen observes. "You can call yourself a race car driver if you've got the money to buy a race car, but it doesn't mean you know how to drive it. That's an analogy that Doug makes. But from Doug I learned the importance of being responsible with audio transfers. A lot of people think of me as a combination of new school and old school, and I suppose what they mean by that is I understand things like gain structure and how to convert between analog and digital without destroying the audio signal.

"In today's world, you have to compete with a lot of noise coming at you," he continues. "Not only the audible noise of a CD or an iPod you're listening to, or even the noise of ambient traffic around you, but even visual 'noise.' There's so much information coming at your brain that CDs, as a result, have been getting louder and louder. I like to think that I'm able to provide some good level on a disc, but in a responsible way."

Lurssen was somewhat concerned about what would happen to his client base once he opened the new studio, but he was pleasantly surprised that all of his regular clients went with him. Like most successful mastering engineers, he works on a tremendous variety of material, including punk and indie rock albums, folk, film and videogame soundtracks, and a new type of project he finds increasingly common: production music libraries.

"Everything you ever listen to is mastered," Lurssen explains, "so when a music supervisor looks for a piece of music, they expect it to have that mastered sound. The library company will want to go see a mastering person to give it the 'juice.'"

Other notable projects Lurssen has mastered this year include the soundtracks for the films *Ratatouille* and *Across the Universe*; the game score for *God of War II*; and album projects for Lucinda Williams, Tom Waits, Aimee Mann, Matchbox 20, Tomahawk, and Allison Krauss and Robert Plant's *Raising Sand*, which is profiled in this month's "Recording Notes" section.

"I'll get a reputation for working with T Bone Burnett [with whom he shares the Grammy for Album of the Year for *O Brother, Where Art Thou?*]," Lurssen says. "You get known for a certain sound and people come for that, but there will be another bunch of people who know me for another sound. We can work on a classical soundtrack one day and a punk rock thing the next. The genres know no bounds." ■

Barbara Schultz is a Mix assistant editor.

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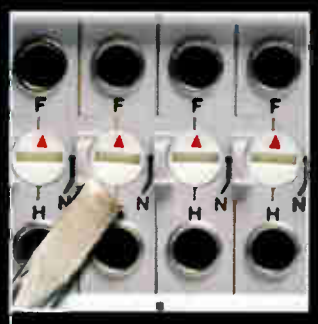

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BY PAUL D. LEHRMAN

You and Me and HDTV

What You Need to Know About Video

Which is the more important sense: sight or sound? Those of us who spend our waking lives working with audio have little doubt that the aural dimensions of reality are more interesting than the visual. And many in the video industry agree, if a little backhandedly: One of the oft-repeated "truisms" heard in video circles is "Television without picture is radio, but television without sound is technical difficulties." Not to mention the variations on the end of that sentence floating around, like "...furniture," "...surveillance" or—my favorite—"...unemployment."

They all point to one thing: Grabbing the eyeballs may be good for getting someone's attention, but most of the really important information coming from the television set is going to your ears. By many measures, our hearing is more acute than our sight: The range of our aural perception (at least when we're young) covers 10 octaves, while our response to visible light barely covers one octave. The dynamic range of the human ear is about 120 dB, and we can go from the lowest extreme of that range to the highest pretty much instantaneously; the dynamic range of the ocular system, taking into account both the physical and chemical changes the eye undergoes to adjust to varying light conditions—some of which can take as long as several minutes—is a mere 60 dB.

Audio people know this both from instinct and from experience. Yet most of us still have to fight the media powers-that-be over the value of good audio. And on the output side, networks, duplication houses and other distribution channels can be abominably careless with sound, whether it's dropping sync, screwing up phase relationships, slamming tracks through brick-wall limiters, grossly misadjusting surround encoders or collapsing your beautiful 5.1 mix into comb-filtered mono.

So we beat our heads against the wall trying to get the video people we work with to understand how to make at least decent audio; we write articles decrying the situation until we're blue in the face (personally, I'm past blue, all the way to indigo); and we make nuisances of ourselves on online forums where videographers and editors hang out.

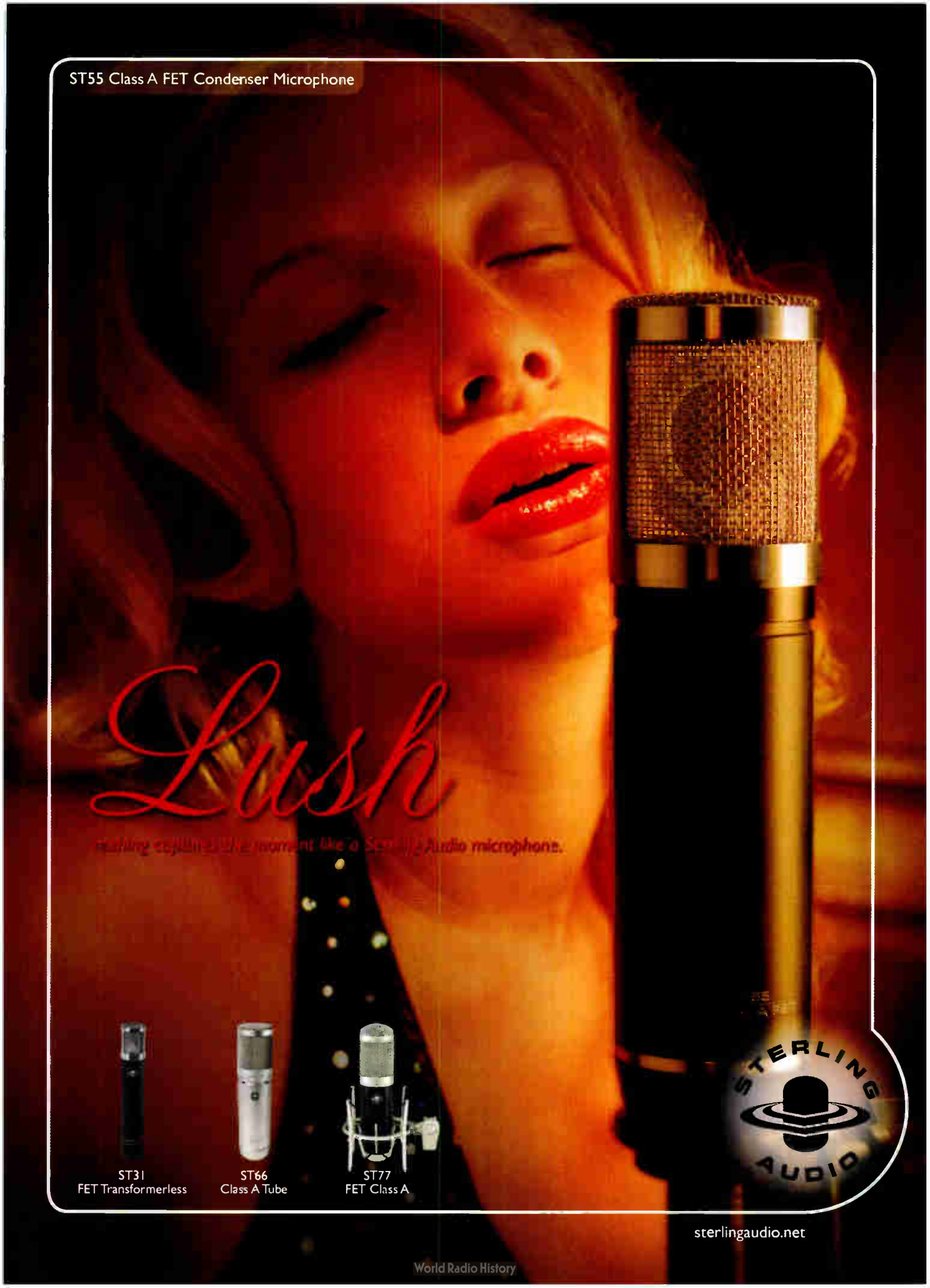
Or we can become video-makers and push them out of the picture altogether. But despite the fact that a surprising number of audio pros have taken up video as a hobby or even a sideline, most of us don't have the inclination to change our primary profession. If you can't join the video-makers, however, you can at least work within the medium to understand the rules of their game.

Getting your hands dirty with video is probably the best way to learn what you need to know to talk intelligently with your clients. And it's a whole lot easier than it used to be. When I first started working with video in

the late 1980s, there were a half-dozen tape formats in use and the machines to play most of them cost as much as I had spent on my entire studio. I had to beg and plead the producers with whom I worked to find a VHS hi-fi machine so that they could make dubs for me. Even worse, I had to try to convince them to put timecode on one of the audio tracks so I could lock to it.

But things got better, and in recent years, since computers got fast enough to handle it, I've been working exclusively with QuickTime video. On those occasions when I need to digitize a tape (or sometimes even a DVD), I have a cute little Canopus FireWire video bridge with composite and S-video inputs that does a good job of converting the video and keeping the audio in sync. I also have Apple's Final Cut Express, and between the hardware and software I have improved my ability to communicate with the world of video immensely: Not only can I now talk the talk, but when necessary I can show the people with whom I'm working what I'm talking about by fixing their mistakes right in front of them—in a nice way, of course.

One thing you need to realize about digital video, if you don't already know this, is that it's almost always compressed. In the early days, computer video-editing systems compressed the data so much that their actual video output was unusable for anything except rough cuts; instead, the systems created an edit decision list (EDL) that was then exported to a dedicated hardware editor, which (or who)



worked long into the night assembling the actual program from the original tapes.

It's really only in the past six years or so that our desktop computers have been powerful enough to work on the actual video program material and produce an acceptable output. But it's still compressed: The most common format is called DV (its proper name is actually DV25), which uses a data-compression ratio of 5:1, what is called "light" compression in the video world. (Have a look at YouTube to see what's considered "heavy.") DV arrived just around the time when computers were ready for it—and thus we saw the explosion of DV-based software like Final Cut, Premiere 6 and iMovie.

But while we've been settling into the DV comfort zone, the game has changed. Nowadays, we have to learn how to deal with high definition, known to its friends—and enemies—as HD. HD presents a huge leap forward in both quality and complexity. Data rates for compressed HD start at 100 Mbps and go up—way up—from there. Standard FireWire connections, which will happily carry 16 channels of high-res audio, have only enough room for a single HD channel, and sometimes have trouble with that. Instead, IEEE 1394b, the 800Mbps version of FireWire, is the preferred way to connect an HD peripheral with a computer.

The fact that there are three primary but incompatible forms of HDTV makes things even more difficult. Factor in the number of frame rates from which you can choose, and you end up with 13 different formats. There is also no audio standard for HD: You can theoretically use just about any sample rate, word length or number of channels, although HD tape formats have a fixed number of channels—either four or eight.

Fortunately, the price of a stake at the HD table has gone down considerably just in the past year or so. Once you get past the horsepower and throughput challenges, finding software tools that work in HD is almost ludicrously simple, especially if you're a Mac owner. Other software makers are following Apple's lead into low-cost HD editing programs, and the hardware manufacturers are right there, too, with some pretty astonishing new tape- and disk-based HD camcorders now available for less than $1,000.

There's still the issue of getting the stuff into your computer. Capturing and spitting out HD video without compromising its quality is a *very* different issue from doing it with SD. You need a new generation of hardware, and it's not going to be cheap. But it may come from some unexpected places.

Don't even think of sending a composite video signal into your computer; you have to have real component inputs. Consumer-level equipment will have analog component jacks, but professional gear uses the Serial Digital Interface (SDI), and you will probably have to deal with both. For outputs, you will need DVI (for computer monitors) and HDMI (for large-screen televisions). It will probably also help you to have external blackburst, word clock and timecode inputs to make sure everything stays locked correctly. And audio? To cover all the bases, you'll need eight channels, preferably in both analog and digital.

There are a number of manufacturers that make HD capture cards and breakout boxes. Usable HD interfaces start at less than $1,000, but to get a full feature set you have to spend more. One of the more intriguing boxes, which is becoming available just as you read this, is the V3HD HD interface ($2,500) from Mark of the Unicorn (MOTU).

Although it may strike some of us as odd that an audio company is making a foray into video (we usually think of it as going the other way around, as for example when

Sony bought MCI or Avid sucked up Digidesign), it's actually not a new phenomenon. Back in the early '80s, not long after Fairlight revolutionized the audio world with its CMI, the company came out with the low-cost CVI (the "V" for video), a real-time video mixer and effects generator that found favor among video artists and music video producers.

A decade later, Sonic Foundry, the original makers of Sound Forge, came out with Vegas Video, which is still supported by Sony, which took over Sonic Foundry in 2003. Passport Designs, a pioneer in MIDI sequencing, never got into digital audio the way its competitors MOTU, Steinberg and Opcode did, but instead went after the video-editing world with Producer. It got excellent reviews and a TEC Award nomination, but was too far ahead of its time to keep the company afloat. More recently, Solid State Logic joined forces with Broadcast Devices Ltd. to develop an all-in-one mixing, editing and asset-management system called Gravity.

The V3HD isn't MOTU's first video product. In the late '80s, it came out with the Video Timepiece, a brilliant, if underappreciated, $1,200 box that saved me from countless disasters having to do with the previously mentioned lousy tape dubs I often had to work with. It could re-generate and jam sync SMPTE timecode, lock to external video clock and do window burn. Best of all, it could let me see what was going on with the timecode on the dubs so well that I could go back to the director and tell him what he was doing wrong, and often help him with his sync problems—in a nice way.

The V3HD has everything you could ever need in an HD interface: It has 32 audio channels in several different digital and analog formats, and RS-422 machine control. It allows for simultaneous ingesting (that's the new buzzword, get used to it) and output of multiple video formats so you can run your SD and HD sources without changing cables, and you can see what your edits look like on SD and HD monitors at the same time. It comes with control software and lets you adjust the delay times on the audio to compensate for the built-in video delays that HD processing systems and monitors introduce. It will do frame-rate, HD format and audio sample-rate conversion, to and from every conceivable standard on the fly.

MOTU is investing a lot in video: "The video market is now at the point where audio was 10 years ago when we did the 2408," says lead hardware designer Paul Sullivan, referring to the company's first PCI audio system, "or where MIDI was 20 years ago." Recall that a little more than 20 years ago, the most sophisticated piece of video hardware for the computer-based music studio was the Roland SBX-80 SMPTE-to-MIDI converter, which had a clumsy interface, no computer programmability and no memory. But a lot of audio people bought it who were hungry to get into the brave new world of video. Now that world is exponentially bigger.

In today's post world, it's not just enough to know more about audio than your clients do; you also need to be conversant in video and that means HD. So shelling out the bucks for some HD hardware and learning what goes into and comes out of it might be a wise move. After all, knowing what your clients are doing better than they do is an awfully good way to show them how valuable your services are. ■

Paul Lehrman is coordinator of music technology for Tufts University and thanks Don Schechter for his help with this column. His Insider Audio Bathroom Reader *is available from Thomson Course Technology and Mixbooks.com.*

Critical LISTENING

By George Petersen

Advice From the Masters

Talking about listening—and the listening process—is one of those seemingly impossible tasks, like writing a book on how to compose music or paint a masterpiece. We can perform the most detailed examination of the auditory process—from ear canal geometry and structure of the tympanic membrane and ossicles to the sensory hair cells within the cochlea and on to the brain—but it won't tell us why we *listen* the way we do.

Every aspect of music production is subjective to some degree, so we put aside the clinical, purely scientific approach and spoke to a number of mastering engineers hoping to shed some light on the art and mechanics of critical listening. Putting hearing concepts into words isn't easy, but their responses proved illuminating, offering insights into the listening process from the vantage point of those who work with the creations of others.

THE EMOTIONAL LINK

One of the top practitioners in the field, with 42 years of experience—including 15 years at A&M Records—Bernie Grundman operates Hollywood-based Bernie Grundman Mastering and has a discography that reads like a compendium of modern pop music. Assuming your ears are healthy—possibly a dangerous assumption these days—the ability to listen critically is largely a craft that can be cultivated, says Grundman. "Listening is like anything else: You have to develop yourself," he says. "If you go to a lot of art museums, pretty soon the really great works stand out. It's the same with recording or performance: If you're an engineer, you'll remember the great ones. You carry that with you, and, until you hear something better, it becomes your benchmark. Listening skills can be learned, but some people have more talent than others."

In the realm of mastering, much of this skill involves reconciling one's ability to listen critically while applying technical and aesthetic expertise to a creative work. "We can sit there and twist knobs on a piece of music, but how do you really know when you've actually made it a better recording or a more effective recording that communicates better?" says Grundman about the process. "You have to be emotionally open to this music, and once you're on the emotional wavelength with that piece of music you'll know whether that knob you turned made it better or worse."

Fred Kevorkian in his mastering suite within New York City's Avatar Studios

PHOTO: ALISON HARTWELL

TAKING A STEP BACK

One of the most critical steps in any mastering project is the first pass, essentially the engineer's introduction to the project. "On the first pass, I'm first listening for obvious issues, major mix issues—distortion or something like that," says Paul Elliott, a 16-year veteran who's the chief mastering engineer for Disc Makers' SoundLab, a three-room mastering facility at the company's headquarters in Pennsauken, N.J. "It's kind of like the 30,000-foot view, where you determine whether there's anything that I'll need to talk to the engineer or artist about. After that, I'm looking at the overall tonal character. Something 'soft' in the top end or 'big' in the bass may lead to a discussion about how much of this you want to keep."

STAYING LEVEL

Playback levels are another important aspect of the listening process. "When I'm first listening, I'm conservative and listen fairly low—around the mid- to low 80s, which is slightly above conversation level," says Elliott. "This tends to point out anything that's a major mix issue with the project, although obviously, with bass, you need to play back a little louder to hear what's going on there."

Some mastering engineers set a reference level and stick to that for most of the project, such as Adam Ayan, who has operated a suite in the Gateway complex in Portland, Maine, since 2001. "I operate at a fixed level whenever I'm EQ'ing, and it's somewhere between 85- and 90dB SPL-A," says Ayan, a Grammy Award winner with a diverse list of credits, including the Rolling Stones, Nirvana, Faith Hill, Linkin Park, Nine Inch Nails and Sarah McLachlan. "That's not really loud, but once I have my EQ set I can give my ears a break and turn it down a little more once I'm running passes down or at the point of doing some editing. Occasionally, I might bring it up a hair or bring it down somewhat when I'm EQ'ing, just to hear what it sounds like at different volumes, but I'm pretty much staying consistently in the 85 to 90dB range when EQ'ing."

Fred Kevorkian agrees about the importance of maintaining consistency in the listening process. Kevorkian operates Kevorkian Mastering within Manhattan's Avatar Studios. He has a background in live sound, broadcasting and studio recording (including nine years as chief engineer at the legendary Sear Sound), as well as more than a decade of mastering experience for acts such as the White Stripes, Iggy Pop, Dave Matthews Band, Beyoncé, Sonny Rollins and others.

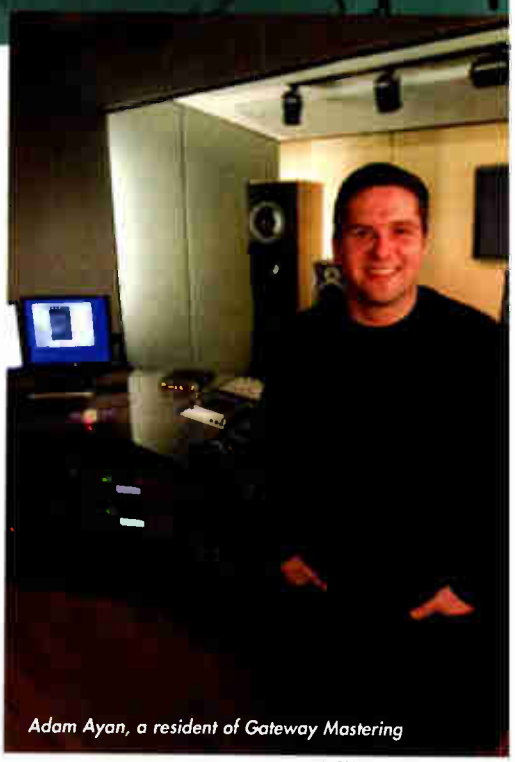
"For the past eight years, I've been using the same monitoring system," Kevorkian says. "I use two sets of speakers: large Dunlavy SC-IVs with a pair of Velodyne subwoofers and customized small powered speakers. I only EQ on the main system and use the tiny ones to check and match the average level 'energy' for each song of the project. It's easy to get fooled by a track that has a lot of low end. My small monitoring system might not be accurate as far as fidelity goes, but it gives me an honest representation of how the track sounds on a cheap consumer system.

"High level monitoring is mostly how I like to EQ the tracks," Kevorkian continues. "I don't know exactly what SPL I'm listening at, but it's always the same and I am very comfortable with it. As long as my ears aren't buzzing and my clients are happy with the result, I'll keep the same approach. Listening at a loud level is more like a feel. I know my room well and that's how I can evaluate the low end and how much presence the track should have. Once I feel comfortable with the EQ, I turn it down, tweak a little more and capture the file. To me, a softer listening level is best when I need to hear details, mix balances, et cetera. It's important to check your work both ways."

PROTECTING THE TOOLS

In any listening situation, ear fatigue represents a serious problem. Fatigue not only affects long-term hearing health, but, by changing the way we hear, it also affects our sonic judgments.

For Ayan, who mostly stays within a moderate playback window, part of the solution is simply being aware of the problem. "The most important thing for me is just to turn the monitor level down when I don't need to listen critically," he says. He avoids the pitfalls of fatigue and keeps his ears fresh, thus extending his work time.



Adam Ayan, a resident of Gateway Mastering

PHOTO BRIAN LEE

Elliott's situation is similar, yet he also supervises other engineers within the facility. "We take our time doing a project and step away from the room occasionally, taking a break and not hammering ourselves," he notes. "Each of our rooms has a dB meter, and I make sure our engineers are cognizant of the volumes we're listening at."

That may sound simple and sensible, but it's not always as easy as it sounds. "It's toughest in client-attended sessions," Elliott adds. "For some of those people, this is the best listening environment they've ever heard and they want it cranked. And as you make improvements, they want it cranked more, so sometimes those sessions are the hardest to deal with."

Grundman listens around 90 dB, which

he feels is a "good, healthy level for listening," and he doesn't experience ear fatigue when working in the 80 to 90dB range. "However, I sometimes go into mix sessions that are really loud and get ear fatigue right away when these mixers play things back loud to impress me."

And other factors, beyond level, can play into the ear fatigue equation, says Grundman. "Here, we don't play back loud, but it depends on the size of the room and the kind of room and speakers you have. If the room is too dead or if the system is brittle and harsh-sounding, you'll get ear fatigue faster. If the room's too dead, you'll be turning up the volume more because you're not getting any return from anywhere—with not much sound bouncing off the walls or ceiling, so you tend to listen louder."

Like Ayan, Kevorkian keeps levels under control in noncritical situations. "Once I'm done with EQ'ing, I turn it down or switch to the small speakers while I'm loading the processed files into the computer," he says, but adds that this period also offers an opportunity to "listen again for distortion and ticks, which are surprisingly more noticeable at low levels. Because I alternate, I don't experience any ear fatigue by the end of the day."

According to Kevorkian, digital production itself also has an unintended effect on hearing. "That's why I like working with tape machines," he says. "With analog, you might be changing reels and the pace is different. You always have that minute or so of silence during rewinding when your ears can recover. It's not like hitting a DAW button and instantly hearing playback."

THE REFERENCE POINT

Establishing a reference is an essential part of tweaking a project and adding cohesiveness. "All of my work involves comparing the current song I'm working on against the previous ones," says Kevorkian. "That's why it's key to get the first one right. I don't necessarily master the songs in the running order. I like to start with the loud ones and compare them to each other as I go on. I keep the ballads and acoustic tracks for last. When it's time to sequence the album, then everything falls into place nicely."

The situation is infinitely more complex when an engineer is working on compilations where the masters not only came from different studios and producers, but also from different artists at various points in their career. "These days, it's common to

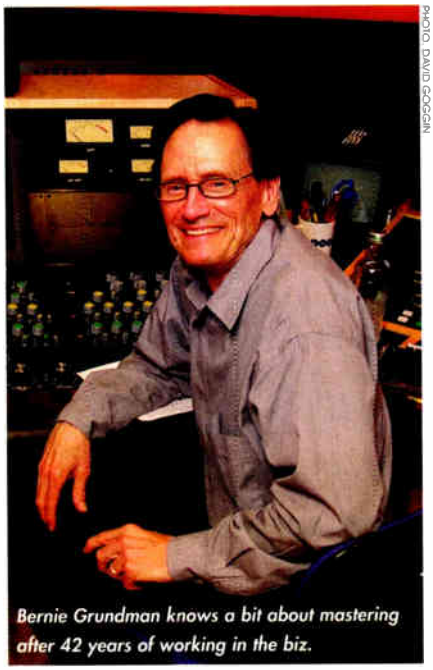


PHOTO: DAVID GOGGIN

Bernie Grundman knows a bit about mastering after 42 years of working in the biz.

get projects that have come from a couple different studios, different mix engineers and different producers," notes Ayan. "Here you have to find some sonic middle ground and make some cohesiveness from track to track so it sounds like an album and not just tracks from different producers. You may have one mix that you can do something different to bring it on one way, but if you bring it in too far compared to the other mixes, they may sound too far apart."

THE LAST STOP

As what is essentially the last stop before a product is released, the mastering studios and mastering engineers have heard it all in terms of mix flaws. Everyone we spoke to cited the issue of receiving material that was overly pre-compressed, making for problems that are difficult to deal with or just unrecoverable audio. This is a real dilemma, although it's caused by unfortunate decisions during the mix rather than by differences in listening perception between the mixer and the mastering engineer. There are, however, common issues that stem specifically from such situations and are confronted by mastering engineers every day.

"A lot of times, the vocal can be buried because the vocal's probably the most foreign element in the recording, and achieving that balance where the vocal should sit is difficult," warns Grundman. "After hundreds of plays, mixers can get used to the song, think they're hearing the lyrics louder and end up burying the vocal because they can hear it and they can 'fill in'

the word in their mind."

A similar psychoacoustic effect can also happen with surround mixes, Grundman adds. "When I hear them I might think that the vocal is kind of low, but when you hear that same cut with the picture, it's perfect because when you see the artist singing, your brain fills it in. It works—it's a really interesting phenomenon."

These days, everyone wants lots of bass, and the perception of low end has more to do with making the listener believe it's there rather than packing your tracks with subsonic rumble. "Another thing that's frequently off in a mix is the bottom end—it's the hardest thing to get right on any monitor," Grundman explains. "One problem with bottom is that it tends to be very resonant and rings a lot. It tends to cloud a whole mix. If you can get a sense of level out of the high end of the bass—essentially the higher-end transients—then you don't need so much bottom. You'll think it's louder than it is if you can hear the punchy snap of the kick drum and the slap of the bass."

Paul Elliott works out of Disc Makers' SoundLab.

LISTENING IS THE KEY

Mastering engineers are valued for their ability to listen, but sometimes the secret to success has little to do with monitors, translatability, levels or even golden ears. As Kevorkian puts it, "Before the first pass, I listen to the clients and find out what they want. To have good ears is one thing, but to listen and find out what the clients want and make them happy is another story. Both of them combine for the best result."

It's good advice. Perhaps a little human interaction is the most important part of the critical-listening process. ■

George Petersen is Mix's executive editor.

Digital Converters

THE DAW'S GATEWAY TO THE ANALOG WORLD

By the *Mix* Editors

Analog-to-digital and digital-to-analog converters are "gateway" processors—the superaccurate portals that pros rely on in digital audio production. In the studio, a truthful D/A is just as important as proper monitor speakers and a good listening space. The A/D converter is even more important because its audio quality—as constrained by sample rate, bit depth, conversion precision, clock stability, analog input section—is permanently embedded within the produced digital data. As if carved in stone, no matter how finely a D/A is used, you cannot recover audio quality that exceeds the original A/D's capability.

High-quality conversion is necessary whenever a master recording is being created or repurposed for commercial use. The best converters spare no expense in their designs, with quality components, power supply technology, clocking facilities and flexible control. If you consider that everything you record and everything you hear is running through these circuits, a consummate audio professional would have nothing less than the very finest.

INSIDE THE HIGH-QUALITY CONVERTER

The actual conversion of analog audio to digital data and digital to analog takes place within chips or chipsets. Chip manufacturers offer many versions depending on price, conversion method, number of channels, ancillary chip(s) required, additional DSP chip-interfacing features, THD/noise floor and dynamic range performance. It's important to note that any converter design that relies solely on the best-rated chips does not necessarily guarantee its high performance. Other factors, such as the specific topology of the analog circuitry that precedes or follows it, or the quality of the clocking facilities, etc., will have a major effect on a converter's sound.

A good A/D converter begins with a great analog front end, one that's capable of wide dynamic range without clipping by using precise, resettable level controls and attenuators. For example, Benchmark Media's ADC1 A/D has a 41-detent variable gain control, a 10-turn calibration trimmer and a three-position (-10/-20/-30dB) first-stage, gain-adjustment switch to preset the converter's analog operating environment.

Universal Audio 2192 Master Audio Interface AD/DA converter

If the A/D converter design objective would include a characteristic "sound," most of it would come from the analog front end (A/D) or the analog back end (D/A). Burl Audio offers the B2 Bomber A/D with its BX1 transformer in a discrete, Class-A, zero-feedback and DC-coupled (no caps) signal path that is said to complement your mic preamp's sound.

dCS' 905 features the company's DXD (Digital Xtreme Definition) format.

A/D converters that output digital streams to accommodate several formats are another plus. In addition to "future-proofing" your master recordings by using high-sample-rate DSD or dCS Ltd.'s new DXD (Digital Xtreme Definition) format, you may be required to provide simultaneous digital audio for other external uses. For example, the Prism Sound AD-2 and Benchmark's ADC1 converters can output two or more streams at different bit depth/sample rates to make simultaneous copies for 44.1kHz/16-bit CD reference discs or 48kHz/16-bit digital video audio uses.

THE OTHER SIDE: D/A CONVERSION

The modern high-end D/A would be able to convert to analog from a variety of incoming digital streams. A fully equipped D/A converter's back panel would bristle with enough connectors for all of the channels of analog outputs and then more for single, dual and quad-wire AES/EBU inputs for PCM, DSD-4, P3D and DXD, and then S/PDIF RCA jacks, ADAT Lightpipe or Toslink optical spigots, SDIF jacks and MADI BNCs. Like its A/D counterpart, a good D/A would have an internal, low-jitter clock and (if need be) the ability to clock from an external clock (BNC jack), or the embedded clock within the audio stream, or a dedicated AES-reference input XLR jack.

Source selection is a bonus utilitarian feature, and the Troisi Design DC224DAC has selectable inputs. The Prism Sound DA-2 has a seven-way input source switch.

The audio output should be balanced +4 dBm on XLR, TRS jacks or on DB-25 connectors. Some converters have extensive control over analog level to accommodate the subsequent audio chain's dynamic range, etc. Apogee Digital's Mini-DAC has front panel level controls, while the Lucid DA9624 has a headphone jack and a large meter. Most of the D/A converters surveyed here had headphone jacks, but the Mytek 8X96 also has slots for up to two cards for DAW and analog interfacing options, as well as 8X192 AD/DA as built-in analog summing for all eight channels in four stereo pairs.

The charts on the following pages provide at-a-glance comparisons of stand-alone A/D, D/A and AD/DA units designed for pro—rather than consumer—applications. Additionally, we've focused on devices in which the conversion function is the product's main intent, as opposed to mic preamp/signal processor/mixers with digital I/O features, or units on circuit boards, soundcards, etc. For further information, visit that company's Website (listed in the charts).

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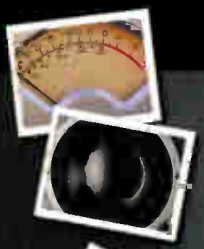

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Analog-to-Digital (A/D) Converters

Manufacturer/Website	Channels	Max SR (kHz)	BNC Word Clock	Digital I/O	Analog I/O	DAW I/O	SRC
Aphex Model 142/www.aphex.com	8	48	In	ADAT	D-Sub 25	None	No
Apogee Digital AD-16X/www.apogeedigital.com	16	192	I/O	AES, 2-Wire, ADAT, SMUX	2 D-Sub 25s, balanced	All DAWs, X-Card FW, S800 FW Card, Symphony	No
Benchmark Media ADC1 USB/www.benchmarkmedia.com	2	192	I/O	AES, 2 coaxials, Toslink, USB	2 XLRs, balanced	USB (96/24)	Yes
Bull Audio B2 Bomber/www.bulaudio.com	2	192	1 in, 2 out	two AES, S/PDIF	2 XLRs	None	Yes
dCS Ltd. dCS 904/www.dcsltd.co.uk	2	192 DSD at 64 Fs at 2.822 MHz	I/O	dual/quad AES; 4 AES/EBU outs; AES I/O (ref); SDIF-2/3 out; DSD-4, P3D	2 XLRs, balanced	None	Yes
dCS 905	2	384 DSD at 64 Fs at 2.822 MHz, DXD at 352.8kS/S	I/O	4 AES/EBU outs; dual/quad AES; AES I/O (ref); SDIF-2/3 out, DSD-4, P3D	2 XLRs, balanced	None	Yes
EMM Labs ADC8 MKIV/www.emmlabs.com	8	384 DSD to 128 Fs at 5.6558 MHz	I/O impedance switching	4 AES/EBU outs; ST-Optical for DSD; SDIF-2 for PCM, 8 SDIF for DSD	8 XLRs	None	Yes
Euphonix AM173/www.euphonix.com	24	96	I/O	MADI out, 2 AES/EBU/S-PDIF; aux ins	24 XLR ins, 2 aux XLR ins	None	Yes
Genex Audio GXA8/www.genexaudio.com	8	192; optional DSD at 64 Fs at 2.822 MHz	I/O	4 AES/EBU	8 XLRs	Pro Tools	No
Lavry Engineering AD122-96MKII/www.lavryengineering.com	2	96	I/O	AES, S-PDIF	2 XLRs	None	No
Lavry Engineering LavryBlack AD10	2	96	In	AES, S/PDIF, Toslink	2 XLRs, 2 ¼-inch ins	None	No
Lucid AD9624/www.lucidaudio.com	2	96	In	AES/EBU, S/PDIF, Toslink	2 XLRs	None	No
Mytek Digital Stereo96 ADC/www.mytekdigital.com	2	96	In	AES/EBU, S/PDIF, Toslink	2 XLRs	None	No
Mytek Digital Stereo192 ADC	2	192	I/O	AES/EBU, S/PDIF	2 XLRs	None	No
Mytek Digital 8X96 ADC	8	96	I/O	4 AES/EBU ins; 4 AES/EBU outs	8 XLRs	Pro Tools, SADiE, Prism, Sonic	No
Prism Sound AD-2/www.prismsound.com	2	96	I/O	4 AES/EBU XLRs; 2 SDIF-2 or AES-3id; 2 RCA S/PDIFs; 2 Toslinks	2 XLRs	None	Yes
Prism Sound ADA-8XR-16AD	16	192	I/O	AES/EBU, DSD, Supermac MDSD	16 XLR ins	Pro Tools HD/Mix, FireWire	Yes (opt.)
RME Audio Mictasy/www.synthax.com	8	192	I/O	4 AES/EBU via DB-25, 2 ADAT 8-channels	8 XLRs, 8 TRS	Optional MADI, MIDI interface, Cascade units	Yes
Troisi Design DC224ADC/www.troisi.com	2	48	In	AES/EBU, RCA S/PDIF, Toslink	2 XLRs	None	No
Troisi Design DC224-96ADC	2	96	In	AES/EBU, RCA S/PDIF, Toslink	2 XLRs	None	No
Troisi Design Octal DC8-224ADC	8	96	In	4 AES/EBU	8 XLRs	None	No
Weiss ADC2/www.weiss.ch	2	192	I/O	2 AES/EBU outs, RCA/S/PDIF out, AES/EBU in for sync and compress, and dithering	2 XLR ins, 2 XLR mics	FireWire	No

Digital-to-Analog (D/A) Converters

Manufacturer/Website	Channels	Max SR (kHz)	BNC Word Clock	Digital I/O	Analog I/O	DAW I/O	SRC
Aphex Systems Model 141/www.aphex.com	8	48	Out	ADAT	D-Sub 25	None	No
Apogee Digital DA-16X/www.apogeedigital.com	16	192	I/O	AES, 2-Wire, ADAT, SMUX	2 D-Sub 25s, balanced	X-Card FW, Pro Tools HD, S800 FW Card	No
Apogee Digital Mini-DAC	2	192	None	AES/EBU, S/PDIF, Toslink	2 XLRs	USB (optional)	
Benchmark Media DAC1/www.benchmarkmedia.com	2	192	None	AES, coaxial, Toslink	2 XLR balanced outs; 2 RCA outs	None	Yes
Benchmark Media DAC1 USB	2	192	None	AES, coaxial, USB, Toslink	2 XLR, balanced outs	USB (96/24)	Yes
dCS Ltd. dCS 954/www.dcsltd.co.uk	2	192 DSD at 64 Fs at 2.822 MHz	I/O	4 AES/EBU ins; dual and quad AES; AES I/O (ref); SDIF-2/3; DSD-4 and P3D (on later models)	2 XLR balanced; 2 RCAs unbalanced	None	Yes
dCS Ltd. dCS 955	2	384 DSD at 64 Fs at 2.822 MHz; DXD at 352.8kS/S	I/O	4 AES/EBU ins; dual and quad AES; DSD-4 and P3D; AES I/O (ref), SDIF-2/3	2 XLRs balanced; 2 RCAs unbalanced	None	Yes
EMM Labs DAC8 MKIV/www.emmlabs.com	8	96/24 PCM, 384/24; DSD 64 and 128 Fs at 2.822/5.6448 MHz	I/O impedance switching	4 AES/EBU ins; ST-Optical DSD; SDIF-2 for PCM, 8 SDIF for DSD	8 XLRs	None	Yes
Euphonix MA703/www.euphonix.com	24	96	I/O	24-channel MADI input, 2 AES/EBU/S/PDIF; aux outs	24 XLR outs, 2 aux XLR outs	None	Yes
Genex Audio GXD8/www.genexaudio.com	8	192; optional DSD at 64 Fs at 2.822 MHz	I/D	4 AES/EBU ins	8 XLRs	Pro Tools	No
Lavry Engineering LavryBlack DA10/www.lavryengineering.com	2	96	None	AES, S/PDIF, Toslink	2 XLRs	None	No
Lavry Engineering DA924	2	96	None	2 AES, S/PDIF	2 XLRs balanced, 2 unbalanced	None	No
Lucid DA9624/www.lucidaudio.com	2	96	None	AES/EBU, S/PDIF, Toslink	2 XLRs, 2 TRS	None	No
Mytek Digital Stereo96 DAC/www.mytekdigital.com	2	192, 96 using digital sync	None	AES/EBU in, 2 S/PDIF ins, Toslink	2 XLRs	None	No
Mytek Digital 8X96 DAC	8	96	Out	4 AES/EBU ins; 4 AES/EBU outs	8 XLRs	Pro Tools, SADiE, Prism	No
Prism Sound DA-2/www.prismsound.com	2	96	I/O	5 AES I/Os; 2 SDIF or AES-3id; 2 RCA S/PDIF I/Os; 2 Toslink I/Os	2 XLRs	None	No
Prism Sound ADA-8XR-16DA	16	192	I/O	AES/EBU ins, DSD; Supermac MDSD	16 XLR outs	Pro Tools HD/Mix, FireWire	Yes (opt.)
Sonifex RB DAC1/www.sonifex.co.uk	2	96	None	AES in, S/PDIF in	2 XLR outs; 2 RCA outs	None	No
Troisi Design DC224DAC/www.troisi.com	2	96	None	2 AES/EBU; RCA S/PDIF; Toslink	2 XLRs	None	No
Troisi Design DC8-224DAC8	8	96	None	4 AES/EBU	8 XLRs	None	No
Weiss DAC1/www.weiss.ch	2	96	None	3 separate AES/EBU I/Os, Toslink	2 XLR outs	None	No
Weiss DAC1 MKII	2	192	None	3 separate AES/EBU I/Os, Toslink	2 XLR outs	None	No

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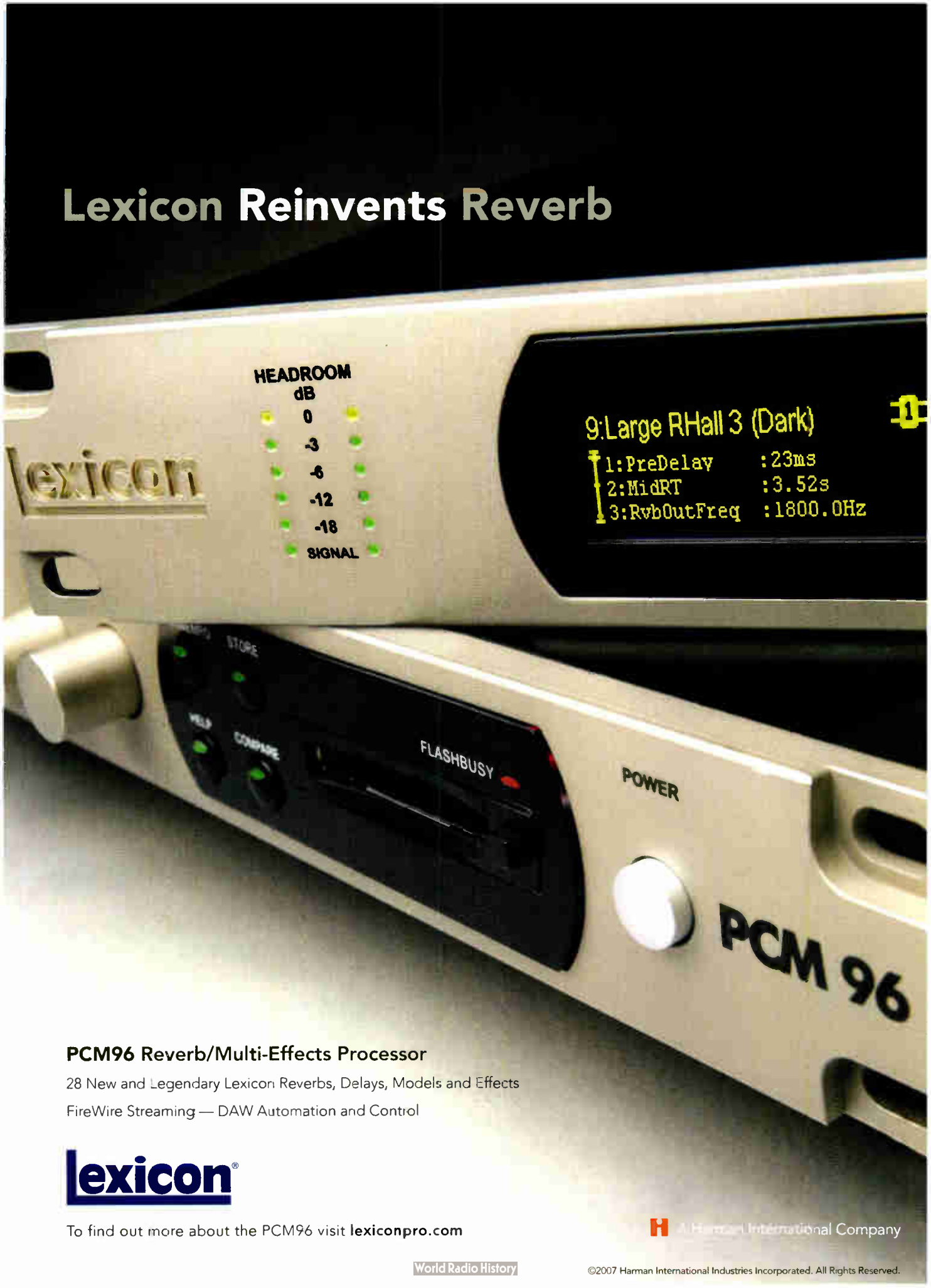

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AD/DA Converters

Manufacturer/Website	Channels	Max SR (kHz)	Word Clock I/O	Digital I/O	Analog I/O	DAW I/O	SRC
Apogee Digital Ensemble/www.apogeedigital.com	8	192	I/O	2 FireWire 400s; 2 S/PDIFs; 8-channel ADAT	4 XLR mic ins; 4 hi-Z ins; 2 inserts; 4 line ins	FireWire, Mac Core Audio	No
Apogee Digital Rosetta 200	2	192	I/O	2 AES I/Os; S/PDIF I/O; 2 Toslinks	2 XLR ins; 2 XLR outs	All DAWs via optional card	Yes
Apogee Digital Rosetta 800	8	192	I/O	DB-25 I/O; 4 Toslinks; SMUX/ADAT	DB-25 in; DB-25 out	All DAWs via optional card	Yes
Benchmark Media System 1000 Rack/www.benchmarkmedia.com	48	96	None (AES ref.)	Configurable depending on ADC-104 and DAC-104 converters	Configurable	None	Yes
Behringer Ultramatch Pro SRC2496/www.behringer.com	2	96	In	AES/EBU in; Toslink in; Toslink out; 2 RCA S/PDIFs	2 XLR ins; 2 XLR outs	None	Yes
Behringer Ultragain Pro-8 Digital ADA8000	8	96	In	ADAT 8-channel	8 XLR outs; 8 XLR ins	None	No
Digital Audio Denmark AX24/www.digitalaudio.dk	8	384 DSD to 128 Fs at 5.644 MHz; 352.8 for DXD	I/O, video in	AES/EBU DB-25; MADI I/O; 2 SDIF-3s; DB-25s; AES-11 in	8 XLR ins; 8 XLR outs	None	Yes
Digidesign HD192/www.digidesign.com	16	192	I/O	8-channel AES/TDIF; Toslink; S/PDIF/AES; additional AES/EBU I/O	16-channel +4/-10 on DB-25s	Pro Tools HD	No
Digidesign 96 I/O	8	96	I/O	8-channel AES/TDIF; Toslink; S/PDIF/AES; additional AES/EBU I/O	8-channel +4/-10 on DB-25s	Pro Tools HD	No
Lavry Engineering LavryBlue LE 4496/www.lavryengineering.com	8	96	I/O	Configurable 2-8 channels	Configurable 2-8 channels	None	No
Lucid 88192/www.lucidaudio.com	8	192	I/O	4 AES ins, 4 AES outs; 4 Toslinks; S-MUX	8 XLR ins; 8 XLR outs	None	Yes
Lynx Studio Technology Aurora 16/www.lynx-studio.com	16	192	I/O	2 DB-25s for 16 channels; Yamaha P/O	2 DB-25s for 16 channels; Tascam P/O	Pro Tools with LT-HD card; FireWire with LT-FW card; ADAT with LT-ADAT; AES/EBU with AES-16	No
Lynx Studio Technology Aurora 8	8	192	I/O	DB-25 for 8 channels; Yamaha P/O	DB-25 for 8 channels; Tascam P/O	Pro Tools with LT-HD card; FireWire with LT-FW card; ADAT with LT-ADAT; AES/EBU with AES-16	No
Merging Technologies Sphynx/www.merging.com	8	96	I/O	4 dual AES outs; 4 Toslink I/Os; AES/EBU in (ref.); 2 S/PDIF I/Os	8 XLR ins	None	No
Merging Technologies Sphynx-2	8	192; 1-bit 64 Fs; DSD 1-bit, 128 Fs; DXD, 352.8, 8 Fs	I/O	4 dual AES outs; MADI I/O BNCs; AES/EBU in (ref); AES/EBU DB-25; 2 SDIF DB-25s; video in	8 XLR ins; 8 XLR outs	None	No
Mytek Digital 8X192/www.mytekdigital.com	8	192, optional DSD firmware: 64x and 128x DSD	In and multiple outs	2 X-Card slots provide choice of FireWire, ADAT, TDIF, Sonic HDSP, DSD, SDIF-3, ST-Optical	8 channels DB-25 I/O; stereo sum outs	Pro Tools via X-Cards	Yes
Prism Sound ADA-8XR/www.prismsound.com	8	192	I/O	FireWire, AES/EBU, DSD, Supermac MDSD	8 XLR outs; 8 XLR ins	Pro Tools HD/Mix; FireWire	Yes (optional)
Prism Sound Orpheus	8	192	I/O	2 AES/S/PDIFs; 8-channel Toslink	2 mic/DI/line ins FireWire; 2 mic/line XLRs; 4 line ins; 8-channel outs	FireWire	Yes
RME Audio ADI-8 QS/www.sythax.com	8	192	I/O	DB-25 AES/EBU; 4 Toslinks; ADAT I/O; optional MADI	2 DB-25s; 16 TRS I/Os	No	No
RME Audio ADI-8 DS	8	96	I/O	DB-25 AES/EBU; 4 Toslinks; ADAT I/O	2 DB-25s; 16 TRS I/Os	No	No
RME Audio ADI-2	2	96	None	AES/EBU; 2 Toslinks; 2 RCA S/PDIFs	2 XLR ins; 2 XLR outs	No	No
Sonifex RB-ADDA/www.sonifex.co.uk	2	96	None	AES/EBU in; AES/EBU out; S/PDIF I/O	2 XLR ins; 2 RCA -10dBv ins; 2 XLR outs	No	No
Sonifex RB-ADDA2	2	192	In	AES/EBU in; AES/EBU out; S/PDIF I/O; Toslink I/O; AES Sync In	2 XLR ins; 2 RCA -10dBv ins; 2 XLR outs	No	No
Solid State Logic Xlogic Alpha-Link Audio I/O MADI SX/www.solid-state-logic.com	64 (MADI) at 48 kHz; 32 channels at 96 kHz	96	I/O	24 AES/EBU; 64 MADI	64-channel AlphaLink	Yes	Yes
Solid State Logic Xlogic Alpha-Link Audio I/O MADI AX ADAT	64 (MADI) at 48 kHz; 32 channels at 96 kHz	48	I/O	24-channel ADAT; 64 MADI	64-channel AlphaLink	Yes	Yes
Solid State Logic Xlogic Alpha-Link Audio I/O AX ADAT	64 (MADI) at 48 kHz, 32 channels at 96 kHz	48	I/O	24-channel ADAT	64-channel AlphaLink	Yes	Yes
Universal Audio 2192 Master Audio Interface/www.uaudio.com	2	192	2 ins; 4 outs	4 AES/EBU I/Os; S/PDIF I/O	2 XLR ins; 2 XLR outs	No	No

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BY DAVID JOHN FARINELLA

Mike McCarthy

From Spoon to Patty Griffin, He Takes It Song-By-Song

Mike McCarthy landed in Austin just as the city's music scene started to blow up. It was 1994, and in short order he worked with indie darlings Spoon, produced demos for a young band by the name of Magneto U.S.A. (who became Fastball before the release of their 1996 debut, *Make Your Mama Proud*) and a handful of other locally lauded acts. It took five years, he says, for him to feel like he could make it in Austin as a producer, but since 1999 he's worked with an eclectic range of acts including Spoon (every album since the 2001 offering *Girls Can Tell*, including the latest, *Ga Ga Ga Ga Ga*), Patty Griffin (*Children Running Through*), ...And You Will Know Us by the Trail of Dead, The Features and The Sun.

Mike McCarthy (foreground) with Spoon's Britt Daniel

What are you working on these days?

Right this very second, I'm working on a Patty Griffin song ["No Bad News"] that the label wants to release for a single. I'm rebuilding the track, because when she records she goes first with the acoustic guitar and vocal, or piano and vocal performance, and then everything is built around that. In lieu of having a band track that's stellar, the concept is that she gets her ultimate performance and then [the band] has to go to her. It's backward, but I think with a singer/songwriter/performer, a lot of times it works best.

How will you change it for radio?

I'm adding some percussion, a little electric guitar and I want to make sure the drum track is in there most of the time.

Who would have thought that Patty Griffin would be getting a radio single?

I don't think that's what we were intending for originally. The label feels like they want to give it a shot, and this is the song they want to do for it. They asked if I wanted to do a remix for it. I said, "Well, I don't know that I would beat it, or anyone else would, but if you let me add some things to it and re-record a couple things, then I bet I have a better shot at making it more like what you want." I don't necessarily believe that radio people play these things that often; they still tend to go with what's on the full-length, but it's worth a shot.

The musical genres you work in range from the folk singer/songwriter vibe of Patty Griffin to Trail of Dead's prog-noise rock to the indie pop of Spoon. Was your record collection like that growing up?

Definitely. I've always been a fan of "the rock" for sure. I just can't get away from the guitars and the attitude, from Iggy to The Beatles. But another side of me has always wanted to go out and find what else is out there. Even when I was a kid, I would listen to Joni Mitchell or Bob Dylan. Maybe that's not that wide, but as a teenager it was. I was exposed by my dad to a lot of country stuff and Appalachian, Carter Family–type of things. I always thought that was weird and corny, but I was fascinated. So I would listen to all of it, and as time went on I got into jazz. Now if I put on anything in my house, it's a Charlie Parker record or whatever '40s or '50s jazz record I can get my hands on.

How does that influence you when you start to work with an artist?

There might be some ideas for instrumentation. I never get weird for genres, and say, "Well, this won't work for what we are doing." I spent some time in Nashville and I got exposed to a lot of instruments that I would have never seen. For instance, I don't even know if this is that special, but lately I've been talking to everyone about the [Fender] Bass VI, and they all look at me like, "Six-string bass? That's crazy. That's like Tool." That's not what I'm talking about. I'm talking about the tick-tack bass, the one The Cure used on *Disintegration*, the bass The Beatles used on the White Album [*The Beatles*]. I brought one in, and they're like, "Oh, okay. We thought you were talking about the heavy-metal bass." Then I incorporate that thing into any kind of music. We used it on Patty's record, and she'd never heard of it before. She'd never even heard of doing tick-tack style, which is what they came up with in Nashville in the '50s. She loved it, and we used it on several songs on the record.

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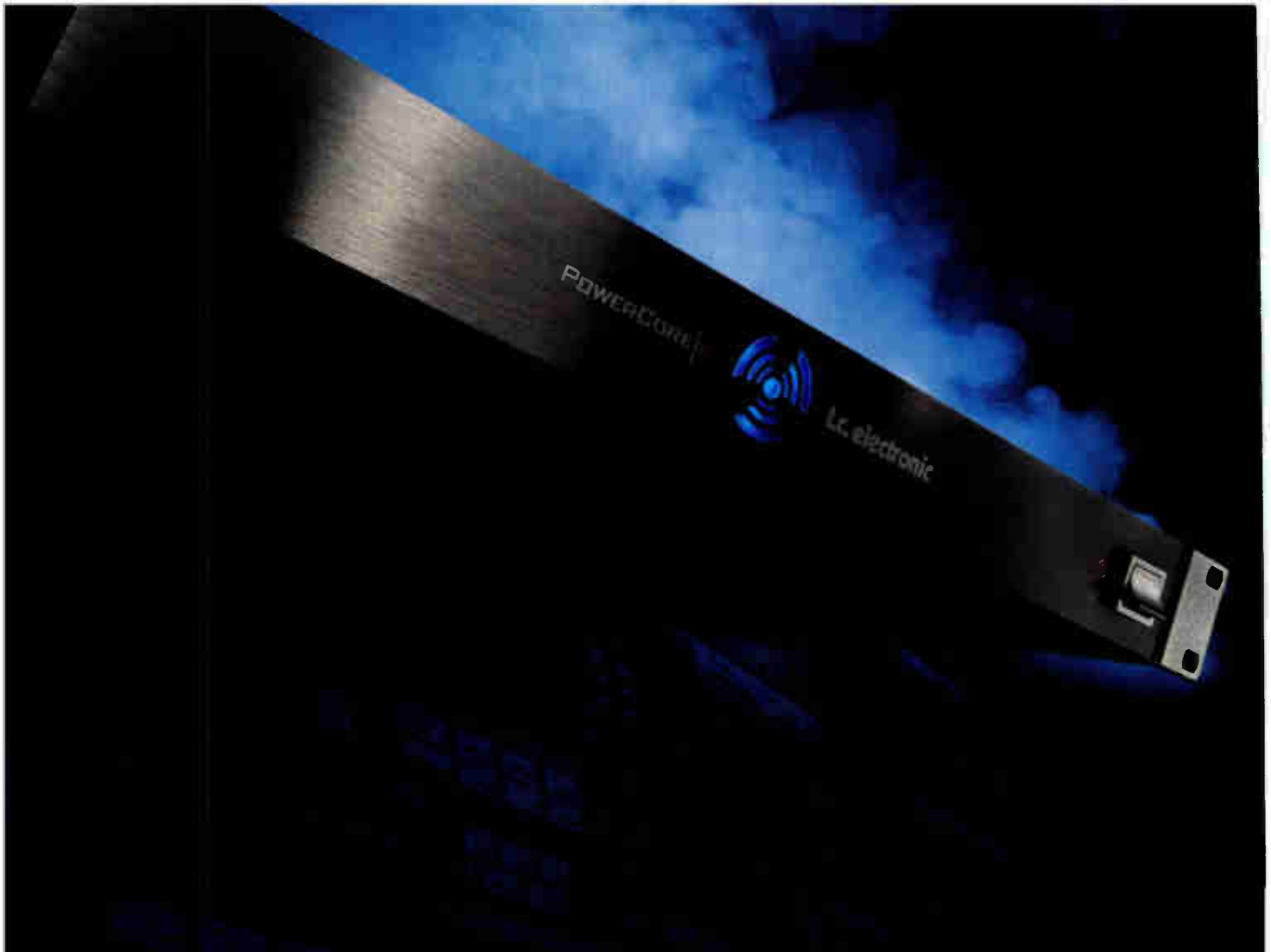

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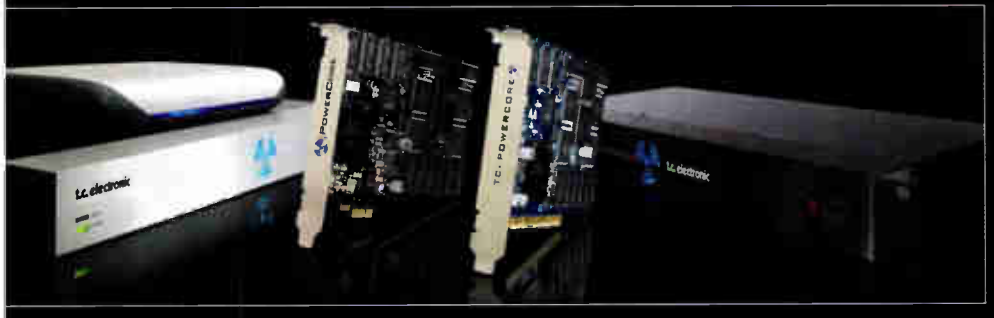

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For the most part, I like having Jim Vollentine, who works with me a lot, do a lot of it. He's an excellent Pro Tools operator. He's also a great engineer. It's always good to have somebody else around for that, but I'm still the main person getting the sounds because I just don't trust anybody or I've got something in my head and I've just got to go do it. It's part of putting the whole thing together.

How diverse are you when mapping out equipment calls?

I'm always going around and finding the right mic for each instrument, but I pretty much know what I want to use for something. In Patty Griffin's case, I had been listening to her records and felt like her voice sounded a little bit thin. I didn't think that was right because I would hear her sing live and thought she was wailing and amazing.

My experience with people that have a dynamic voice and can get up to that upper register with an edge is that a Neumann 49 is best because it handles the quiet-to-loud stuff the best. Britt [Daniel, of Spoon] sounds good on a lot of different microphones, so it makes it cooler in the way that I can pick and choose what mics I want to use for each little part within a song, or for whatever song in general.

Are there any special pieces of gear that you like to bring into a session?

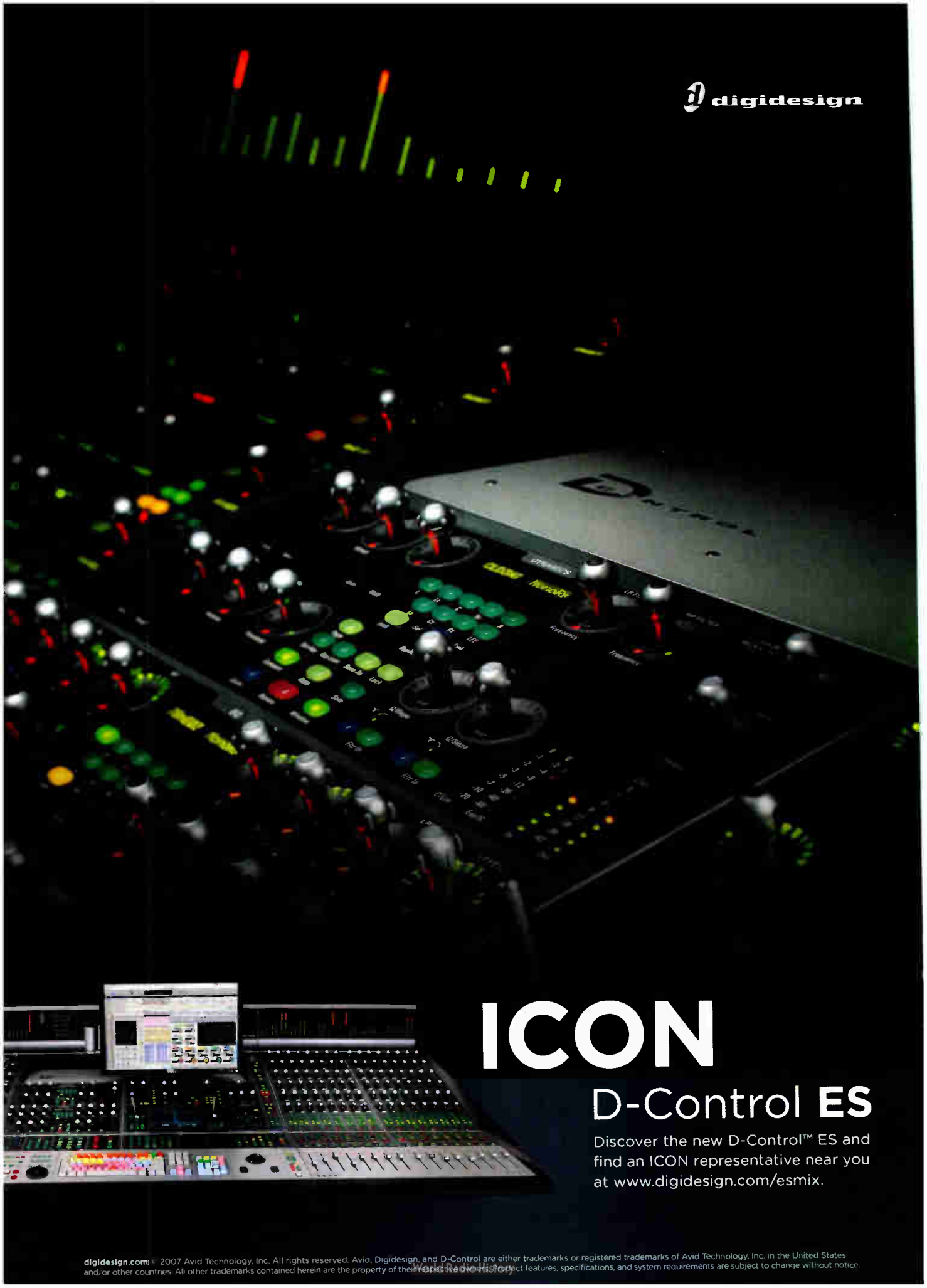
It depends on what it is. On Patty's record, I brought in an autoharp and the tick-tack bass. It wound up seeing little action, but it did bring a little bit of a vibe. We brought in an upright bass, too. For Trail of Dead, we're always bringing in different keyboards and new ways of doing some sequencing. But, generally, it's all the same guitars, amps and drums. For Spoon, I started to bring in a few extra things. Britt got a koto. We had a flamenco guitarist friend of mine play on it a little bit. I usually like to bring in little things like vibes or xylophones. There's always a wild-card thing.

How about in terms of recording gear?

For the most part I have what I need. I have a substantial amount of Neumann tube microphones. I cut on tape and use old tube preamps from Neve, Altec and API. I have two racks taller than me of all that stuff. Every once in a while, we'll do something weird like use a little TEAC 4-track, and I have some special cables made for it to get it back on the 24-track. I have an [Akai] MPC 4000 that I use quite a bit for sequencing. It usually gets incorporated in [the project] somehow.

What about recording philosophies for bands vs. artists? Do you have a different take on how you'll go about those dates?

I don't think there's a set way with any of



them. It's sort of what can be accomplished and what's going to make the best result from song to song. So if Trail of Dead has a song that they can perform live as a group and that's going to get the best energy and the best performance, then we'll do that. If we have to piecemeal it, then we'll start with a sequencer and build the track. Patty, for the most part, is getting her performance and building the stuff around it.

I think you have to go song to song, really. I don't like to go in, cut drum tracks and then make a record. The only difference with a band as opposed to a singular artist is the psychology of dealing with the bandmembers. I mean, a lot of times with a singer/songwriter, or even if it's the leader of the group, you can go to them and stick up for what the final outcome needs to be. With a band, you have to deal with a lot of different personalities. With somebody that's [working with] a main artist, I'll maybe be a little more of a hard-ass and tell them that we've got to make the artist sound best and to stop eating up all the space with what they are playing. Maybe with a band I'd be a little more diplomatic. [Laughs] People know that I'm pretty straight-up.

Is it important to be direct?

I usually don't beat around the bush too much—it winds up being a waste of time. Some people get angry, some people get their feelings hurt, but I try not to make that happen. I try to keep everyone in good spirits, but sometimes it's just inevitable; it's an emotional situation. That part sucks and it's not my favorite part, but it happens.

Do you do your homework by listening to an artist's past catalog before you get into the studio with them?

Oh, sure.

So many producers seem to think that they only have to hear where an artist is right now rather than finding the touchstones in their past and building on it.

Well, you have to do both. Listening to the past records could mess you up. It's tough.

It's like having to produce a band's record when they've already done full-blown demos. People get that demo-itis and they listen to things and think it's not beating the demo.

For instance, for The Sun, I was listening to their album and their demos quite a bit before they came down to record. Their new songs are different and they sound different. They still have their main sound and you want to bring that out, but you want to improve. You want to keep growing and make it more interesting, but you also want to know what that band's sound is, too. It seems like The Beatles' records really changed when they started working with Geoff Emerick. I think at that point, Geoff was really the producer. I mean, all the different sounds on *Rubber Soul* and *Revolver* are quite different from the first stuff. I know he was there listening to the other stuff. He had to have known the other music, because then you can say, "Hey, I hear this, but I think this can go here." I think you have to know all of it somehow.

Many of the music tracks that you work on—and I'm thinking of the song "Stay Don't Go" from Spoon's* Kill the Moonlight—*have a real meticulous underpinning.

On that song, Britt had a loop that he made with his voice through a [Shure] 58 into a 4-track machine. When he does demos, there will be certain things that I keep. I'll dump them onto the 24-track machine and start from there—but not always. He keeps it open to do something better, but if I like it and I think that he got that one, we use it. In that case, we did use that as a building bridge. I took that loop, re-EQ'd it and put it on the 24-track.

But, yeah, we get pretty meticulous about what goes and what doesn't. The whole idea is, "Is this making the thing more interesting? Is it more exciting? Do I like the song better?" If so, then we keep it, and if not, shit goes. We might go through and play the entire song with a sound and wind up using one little four-second blip from it in the song and get rid of the rest. That happens a lot, where we'll put down a lot of different things and that way you have all these little sounds that come and go.

So is there a consistent thing that you do from project to project?

I think that the whole idea goes back to working on a song-to-song basis. Each song has to be dealt with for what it is and made the best that it can be. I don't bounce around from song to song during the sessions much, but I try to get as far as I can and get into a vibe. Certainly, you're going to revisit ideas for this or that song, but it's always a song-to-song basis—making it the best for what that

is. There's not a lot of concern for how this fits in with the record. It's just like, screw it, it's going to because we're working on it at the same time with the same people. If you stick with that idea of treating the song for what it is more so than trying to make it fit, then you leave your options open for creativity and making it something you'd like to listen to. I hear kids around here that are recording say that they did all their drum tracks today. How? How do you know if it's the right tempo? How do you know if each part should be there? You've got to deal with one thing at a time. That's the only way for me to feel like I can get what I want out of it.

So right before Spoon's* Girls Can Tell *was released, Britt was talking about ending his music career if the album didn't work out. Trail of Dead was on shaky ground before deciding to record* So Divided. *Do you have a special touch for these people who are on the edge of walking away from music?

Maybe I feel like I'm in the same boat. I'm not going to go do anything else. I can't. I wish I had a degree and could go to medical school or something, but I don't and I'm going to stay in music. That being said, when people are that talented, I think it's too important. They just have to have somebody there that believes in them to see it through.

Britt said the same thing after *Kill the Moonlight*, too, which was weird because I was extra hard on him throughout the entire process. He wanted to kill me by the end of the record. It was tough love. He didn't get that I was trying to get the best out of him. I knew that "The Way We Get By" would break 'em out, and I fought them for months on how that song was going to be arranged. They finally came around to it, we made the record and that was the one that got them on the map. It wasn't easy. They actually put my name last on the credits because they were so pissed at me. That happens. People think I'm too hard on them, but I'm just trying to get the best out of them.

And they keep coming back.

I think they try to get away sometimes! I don't like it when I have to [say], "You're wrong on this. We have to do this." I don't like having to go there, but when I really feel like it needs to happen, I take the risk. You can't have regrets: "Well, I was nice to them. I let them have their way, everybody hates the record." If you know how it's going to come out and you need to go somewhere with it, you have to take that risk that they might leave you. In the end, though, they might thank you for doing that, too. ■

David John Farinella is a San Francisco–based writer.

BY BARBARA SCHULTZ

Wally Sound

Remixing and Recording With Respect for Old and New

You've heard of the wall of sound? Well, this is the Wally Sound (www.wallysound.com). This project studio is owned and operated by musician/engineer Wally McClellan, who settled his business and his family in Oakland, Calif., 10 years ago. "I actually started my studio as a conduit for a lot of the musicians and bands I was working with in San Francisco," McClellan says. "Studios in San Francisco at the time I started, in the early '90s, were cost-prohibitive for a lot of people because there weren't a lot of project studios. The 4-track revolution had taken off, but that was the only thing people had as far as home studios. I opened my studio with good gear in hopes that I could make product that was as good as the big studios for half the cost."

In those early days, McClellan's studio, in the basement of his San Francisco rental, was consistently booked, catering to bands that were then considered up-and-coming in the San Francisco Bay Area: Spot 1019, Chuck Prophet, members of Camper Van Beethoven and others. When McClellan and his family were evicted from their S.F. home because the landlord wanted to sell the building, they saw it as an opportunity to grab some more livable space for themselves and the studio. "The people who had lived here before us were oil painters, and the whole first floor was a huge painting studio. It had 9-foot ceilings, and it was this big, wide-open space," McClellan describes. "All I had to do was partition it off and build rooms within rooms, and soundproof it. I upgraded my equipment and had the chance to design a new studio."

McClellan says he modeled his studio design after the original Motown Studios' floor plan, but he soon learned that he'd have to rebuild more than the studio. His business changed quite a bit when some of the entrenched urban bands who he'd been working with either broke up or seemed to regard the East Bay—less than 10 miles away—as a distant land. Fortunately, McClellan's music connections led him to other clients.

"Right before I got evicted from San Francisco, I'd been in a band called the Wellsprings of Hope," he says. "I quit that band, and the bass player quit with me. His replacement was Alec Palao, who'd been in The Sneetches, and it turned out that Alec was [producing reissues] for Ace Records. He called me up and asked if I wanted to work on a Zombies box set. I said, 'Of course!' The project became Ace's *The Zombies: Zombie Heaven*.

"It was my first experience doing reissue work and remixing for older-style music," he continues. "He brought some multitracks over, and we started remixing a lot of the outtakes and alternative takes that The Zombies had done. I became completely fascinated with older-style technology and the great music that had been recorded in the late '60s."

PHOTO: MAVIS MCCLELLAN

Wally McClellan enjoys an eclectic mix of music and work.

McClellan has collaborated with Palao on a good number of Ace collections, including releases of The Golliwogs, Rick Nelson, Dan Hicks and a Creedence Clearwater Revival box licensed through Fantasy Records. And he's developed a philosophical as well as a technical approach to this type of work. "A lot of times, when you use plug-ins to 'fix' things on these older releases—de-noise, de-click, de-hum—you can hear the effect of them after you start using them, especially in the high end," he says. "The track sounded so good before, even though it had a hum in it or some kind of high-end distortion, but when you start to clean it up, you lose definition, you lose part of the spirit of the track. Usually, I'll say that if it makes it sound better without making it sound different, I'll do it. But if I start hearing that the sound is degrading and I'm not giving the listener the best possible sound without altering it, I'll go back to the original."

When McClellan began working on Ace projects, his studio was centered around a Soundcraft Series 2 board. Over the years, he has switched out and upgraded a lot of his equipment, including acquiring in 2005 a vintage 32-channel Auditronics 501 console once owned by Wally Heider and later modified by Dean Jensen. He also runs 32 channels of Pro Tools HD, complemented by an assortment of plug-ins, outboard gear, mics and instruments.

In addition to cultivating a relationship with Ace Records, he's also developed a new East Bay client base. Recent projects include albums for Berkeley-based singer/songwriters Bart Davenport and Sean Smith, and the band Yard Sale, a collaboration of Melanie De Giovanni, Denise Funari and Jill Olson of Red Meat.

"I've been getting a lot of country-ish acoustic stuff recently," McClellan says. "One night I'll be doing a garage band, and the next a solo guitar record. I like it because I don't feel that I want to stick with one particular genre. It keeps me on my toes." ■

Barbara Schultz is a Mix *assistant editor.*

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2007 TEC Awards HIGHLIGHTS

PHOTOS: ALAN PERLMAN PHOTOGRAPHY

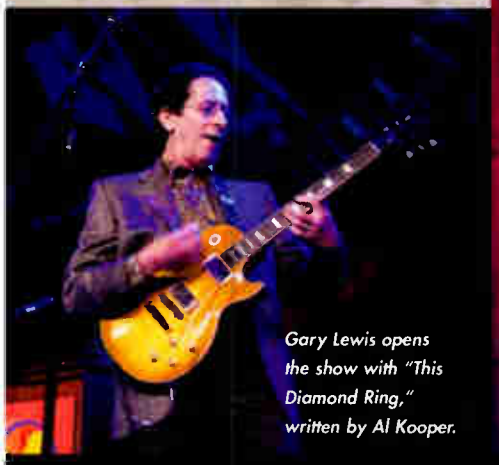
Almost 700 people attended the 23rd Annual Technical Excellence & Creativity Awards, held on Saturday, October 6, at the New York Marriott Marquis. Hosted by *Lote Show With David Lettermon*'s Will Lee, the attendees were treated to high-energy musical entertainment, including Al Kooper and Friends playing "Season of the Witch" and Gary Lewis (of Gary Lewis & The Playboys) singing "This Diamond Ring." But the main event was the awarding of TEC Awards in 25 categories of Technical and Creative Achievement to their worthy recipients.

Highlights of the evening included the producers and engineers of John Mayer's *Continuum* tour and album, and of the single "Waiting for the World to Change," trooping to the stage three times; a TEC Award for Outstanding Television Sound for *The Sopronos*; and the award for Studio Design Project to Los Angeles' Record Plant Studios. This year's awards show also saw three double-winners: Solid State Logic (Mic Preamp Technology, XLogic Alpha Channel; and Large Format Console, Duality), Apogee Electronics (Ancillary Equipment, Symphony; and Digital Converter Technology, Ensemble) and Digidesign (Workstation Technology, 003; and Sound Reinforcement Console Technology, D-Show Profile).

Funds from the TEC Awards and other activities of the Mix Foundation for Excellence in Audio support hearing-conservation programs of the House Ear Institute and H.E.A.R., as well as scholarship programs for students of the audio arts and sciences.

To view the TEC Awards online, go to www.broadjam.com/2007TEC/. To see more photos, visit www.mixfoundation.org.

Kirk Imamura (left), president of Avatar Studios, presents Karen Dunn, executive director of the TEC Awards, and Hillel Resner, president of the Mix Foundation, with a check for $1,500.



Gary Lewis opens the show with "This Diamond Ring," written by Al Kooper.

Phil Ramone (left) and Will Lee get cheek-to-cheek onstage.

From left: Al Kooper, Jimmy Vivino and Will Lee (with Anton Fig on drums) perform a rousing rendition of "Season of the Witch."

Dolby's Jim Hilson (left) and Gary Epstein (right) with Hall of Fame inductee Ed Greene

Presenters Chuck Ainlay (left) and Felicia Collins (of Late Show With David Letterman) and JBL's David Scheirman with the award for Sound Reinforcement Loudspeaker Technology for the JBL Professional VP Series.

The TEC Award for Record Production/Album went to John Mayer's Continuum, from left: Dave O'Donnell, Manny Marroquin, Chad Franscaviak, Frank Filipetti, Jeff Greenberg from The Village (kneeling), and Kirk Imamura and Tino Passante from Avatar Studios.

Presenters Vernon Reid (left) and Chad Franscoviak (right) with Neumann's Wolfgang Fraissinet and Stephan Peus, winners of the Microphone Technology/ Sound Reinforcement for the Neumann KMS 104.

Actor Peter Riegert (left) with Les Paul (center) and Les Paul Award recipient Al Kooper

An all-star line-up, from left: George Massenburg, Chuck Ainlay, Phil Ramone, Les Paul, Frank Filipetti and Nathaniel Kunkel

Intel's Denise Latscha (left) and Zane Ball (right) with SSL's Fadi Hayek and SSL's award for its XLogic Alpha Channel in the category of Mic Preamplifier Technology

2007 TEC Awards HIGHLIGHTS

Michelle Moog-Koussa, daughter of the late Bob Moog, accepts the award in the category of Musical Instrument Technology for the Moog Little Phatty.

Presenters Paul Sandweiss (left, winner for Remote Production/Recording or Broadcast) and Troy Germano (right) with Focusrite's (from left) Chris Gooddie, Phil Dudderidge and Rob Jenkins, winners in the category of Signal Processing Technology/Hardware for the Liquid Mix.

Record Plant's Rick Stevens and Rose Mann-Cherney accept the TEC Award for Studio Design Project for Record Plant/SSL 1.

Universal Audio's Mike Barnes (above, left) and Erika McDaniel accept the TEC for the Universal Audio Neve Classic Console Bundle in the Signal Processing Technology/Software category.

John Oram (left) holds his TEC Award for Small Format Console Technology for the Trident Series 8T-8.

John Jennings accepts the award for the Royer R-122V in the category of Microphone Technology/Recording.

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THE WoW FACTOR

Crafting an Immersive Sonic Universe For "World of Warcraft"

By Michel Henein

World of Warcraft, simply known as *WoW* in the game industry, is more than just a game; it's an international phenomenon. *WoW* is an MMORPG (massively multiplayer online role-playing game) released in 2004 by the gaming masterminds at Blizzard Entertainment, a subsidiary of Vivendi Games that created such successful franchises as *StarCraft* and *Diablo*, and, of course, the *Warcraft* series on which *WoW* is based. *WoW* is a cross-platform game with an online subscription base of more than 9 million worldwide to date, and more players projected to flock to the game, making it the most successful MMORPG yet.

An online game of this magnitude presents unique challenges for building an interactive soundscape, and the adventurous audio team at Blizzard is certainly up to the task, creating an immersive and epic experience that enhances game play and captures players' imaginations.

Role-playing games have been around for quite some time; games involving rolling dice and acting out characters' actions have been replaced by computerized 3-D role-playing games. But *WoW* possesses its own unique mixture of interactive game play, high-quality production and a dedicated online community that contributes to its domination of this genre.

Players subscribe for a monthly fee of $15 and then log on to a PC or Mac to create a character and join a worldwide server that launches the player into an immense, interactive virtual world. Players move up in level by earning experience points and accumulating "loot," such as cool weapons. Depending on the character, players can gain the ability to cast powerful spells. Cooperation is a hallmark of MMOs, so players can join the fight against other factions, form guilds, embark on group quests, "farm" raw materials and even trade items and materials using in-game auction houses scattered around the world. There are literally thousands of players on each server (or "world"), with hundreds of servers handling massive amounts of information, such as player actions, stats, state of the environment and other types of game data—all in real time.

IN-HOUSE AUDIO—A LONG BLIZZARD TRADITION

Blizzard formed its audio department in 1993, when audio for videogames was very limited. Today, that's all changed: The Blizzard audio team has grown to include several pro studios with a talented team led by audio director and lead composer Russell Brower. (For a full crew list, see "Sound Masterminds" sidebar on page 56.) For more than 25 years, Brower has worked in film, television, theme parks and videogames. "Over those [14] years, game audio technol-

Life is just a fantasy: Blizzard Entertainment's World of Warcraft *MMORPG owes its success to fully immersive game play.*

ogy has advanced from primitive 'bleeps' and 'bloops' to low-resolution digitized sound, to General MIDI music, then higher-fidelity sound, synthesizer [sample-based] scores and finally to environmental surround sound and live orchestral scores."

Blizzard's audio team has always produced music and sound design in-house, and enjoys a reputation for creating incredibly rich game sounds. With Blizzard's recent expansion-pack release of *World of Warcraft: The Burning Crusade*, the company spared no expense to capture the game's epic score. "I went to Seattle to record my latest score with a 96-piece orchestra and a 30-voice choir in a chapel with a 47-foot ceiling," Brower says. "The sound of an entire orchestra playing together in a large-volume space is something that cannot be duplicated inside our computers." The team overdubbed ethnic instruments, such as a ney flute, using up to three microphones on each instrument.

"Besides a typical large-diaphragm Neumann or the like, we'll also use my vintage RCA 77DX ribbon and our Sennheiser MKH-800, which captures up to 50 kHz," Brower says. The team particularly liked the MKH-800's extended frequency response because pitch manipulation revealed upper harmonics and other subtle sonic "goodies" that they could later mix in with the score or layer with the ambient tracks. "The RCA, on the other hand, is very warm and musical," Brower adds. "We recorded a lot of solo cello for *World of Warcraft: The Burning Crusade*, and the ribbon seems to bring you inside the instrument."

The *WoW* environment teems with beautiful mountains, rolling hills, forests and cities, but there are also exotic lands that invoke magic, mystery and danger. When it comes to sound design and environmental audio, the Blizzard team is very keen on field recording. "We are active listeners who will often be found savoring the tiniest and most subtle nuances of everyday noises," Brower says.

To capture these sounds, the Blizzard team uses a variety of cutting-edge portable gear. "We are also on a perpetual hunt for the ideal field recording rig since the most interesting and complex sounds occur in the real world outside of our studios," Brower explains. The department's field recording devices include the Sound Devices 744T recorder; the Zoom H4, which the team uses to capture pleasant surprises; and, more recently, the Korg MR-1, which "captures audio in amazing detail and satisfies my desire for low-profile stealth recording," says Brower.

The Blizzard team values convenient microphone setups for field recording. Brower's favorite mics are the Sonic Studios Dimensional Stereo capsules, which can be worn in front of the ears as "they capture a realistic and robust stereo image that has served me well in both games and traditional media for years," he says.

The audio team supplements the custom field recordings they've gathered (or "farmed" in *WoW* speak, referring to the process of gathering valuable raw materials during the game) with commercial sound effects libraries. However, the team rejects any sound that seems "canned." "Since everyone in the business owns the same CDs," says Brower, "it's important to know when to reach outside of those libraries and record new sounds."

Dialog is also recorded in-house. For years, the Blizzard team has enjoyed a reputation for bringing high production values to dialog, going back to a time when recording game dialog meant calling your uncle Bill to capture a few lines. Blizzard has several vocal booths at its facility to record the bulk of game dialog and hires A-list voice-over artists to create a variety of game characters. Translations, or localizations, are usually farmed out to studios that specialize in the needed languages. In addition, Brower says, "Dialog receives special attention, as an international localization team must not only record each line of voice-over in several languages, but also replicate any special processing we apply to the tracks. It is therefore important that our documentation make sense to people outside of our own department."

As with any large audio project, careful planning and execution are vital. "Whatever the recording technique, it all comes down to final editing and mixing in the Pro Tools environment, although a couple of the team members prefer Sony's Vegas for preparing perfectly looping background ambiences," Brower says. "Everyone is welcome to work on the platform in which they feel most at home until the final mixing stage, where it is important to share audio assets quickly between each other and any outside production teams [often related to dialog localization] with a minimum of compatibility issues."

LOADING AUDIO ELEMENTS

Brower explains that because *World of Warcraft* runs on a computer—as opposed to a game console like the Sony PlayStation 3, Microsoft Xbox 360 or Nintendo Wii—sound loading is handled a bit differently. "The sounds reside on the 'client,' or a player's computer; only certain triggering signals flow through the data connection from the game server," Browser says. "This is an ideal situation in terms of delivering audio to the player in a timely fashion; the only real bottleneck has to do with fetching sounds from the player's hard drive. Of course, this varies from system to system. However, the typical symptom is a slight delay the first time a given sound is played. After that, the sound plays from RAM, unless it gets purged to make room for a new crop of higher-priority sounds."

Brower on field recording: "We will often be found savoring the most subtle nuances of everyday noises."

A VIRTUAL THEME PARK

To create an immersive soundscape for *World of Warcraft*, Brower draws upon his experience working in theme parks, which gives him a unique perspective on interactive sound mixing. "Like in a theme park, the sound mix at any given instant is determined by where your character is standing," he says. "Sounds are localized around you in all of the compass directions, and increase or decrease in volume over distance via a system that mimics an idealized version of real-world physics.

"To keep important sounds audible, even while your character stands close to a noisy waterfall, requires some careful setting of levels and trimming of the 'fall-off,' or distance over which a sound ceases to be audible. I was pleased to find that most of [my theme park] experience carried over nicely to the virtual world. In fact, I can now do things I only dreamed of at theme parks: Virtual speakers are invisible and therefore can go anywhere! Some speakers even 'follow' your character around, providing the opportunity to ensure certain sounds and music are always heard as intended."

CUSTOM TOOLS—KEY TO SOUND IMPLEMENTATION

A game of this size and complexity requires usable, powerful tools to manage audio implementation. Blizzard's audio team works with the company's software tool developers to integrate audio.

"Like so many other parts of the development process—art, quest design, event scripting, world layout—the audio is implemented via a [proprietary] tool called the World Editor," Brower explains. "This project-wide application contains some sound-specific tools, which we helped to design. These tools provide the means [for us] to assign background ambience and music to physical locales and zones in the game. They also facilitate attaching component sound effects and voice-overs to characters, monsters, animations, props and other objects, or 'doodads,' as they are called."

With tens of thousands of sound files in *World of Warcraft*, the importance of a mutually agreed-upon file-naming system is crucial to ensuring that all sound elements are smoothly implemented. "One of the most important steps in our pipeline," Brower explains, "is the comprehensive tracking and naming of all audio assets. Without a standardized convention [for] file names and containing folder structures, chaos would ensue." A team of production coordinators works with the audio team to ensure that the status of each sound is easily and accurately tracked to guarantee smooth sound integration.

QUALITY CONTROL

Making sure that the *World of Warcraft* audio experience is consistent across many

Sound Masterminds

THE *WOW* AUDIO TEAM

Russell Brower: lead composer/director of audio/video
Brian Farr: lead sound designer
Jonas Laster: sound designer
Derek Duke: senior composer
Matt Uelmen: senior composer
Keith Landes: audio producer

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computer configurations is a monumental task, and the audio department aggressively tests the game through various audio setups. "As PCs and sound systems vary wildly in the world, we treat the game metaphorically, like a commercially released audio CD," says Brower. "We do a 'mastering' pass on the overall soundscape while monitoring over a variety of speakers and headphones on both Windows and Macintosh platforms. Outside of my music studio, I do not own any fancy speakers, so I hear the game's soundscape under some fairly harsh conditions, from my tiny laptop speakers to the competition of the air conditioning and other 'sounds of home.' I listen closely while playing to make sure I can hear everything that conveys the game play and story content. This is not to say we compress the dynamic range in the way of radio music; more accurately, we search for excess volume, frequencies or implementation clutter that obfuscates an otherwise clear presentation."

Blizzard's quality-assurance department communicates with the audio department regularly to find specific issues relating to hardware incompatibility. Simply put, the audio team takes the time to test the game's audio as much as time allows, even at home. "The best way we personally review our work is to simply play the game at home. Even if you do not have a killer sound system, the game should be as immersive and communicative as possible," Brower says. "If important aural clues are missing from the presentation, I find my character spends a lot more time running from the graveyard to recover its corpse!"

PASSION FOR GAMES MEETS HIGH-TECH AUDIO

Of course, creating audio for a huge title such as *WoW* is a tremendously rewarding experience. "Maybe most importantly, we strive to create the kind of game that we want to play, including an audio experience that compels us to turn up the sound, turn down the lights and enjoy the suspension of disbelief," Brower says.

When it comes to the future of MMOs, Blizzard is leading the pack in terms of the way audio is produced, implemented and presented, as well as with the introduction of new sound features that are designed to make the experience more enjoyable for players. "Newest among those lsound

Pay to Play

THE BUSINESS EMPIRE THAT IS *WOW*

Let's do the math: 9 million subscribers (worldwide) paying an average of $15 per month? Folks, that's $135 million a month, which adds up to $1.62 billion per year—you read that right. And that doesn't include the $40 to $50 users shell out to buy the game. How many movies generate that kind of money? Not very many, but the big picture here is that *WoW* is the first MMO to really be considered headed toward the mainstream. Mainstream equals big bucks: MMOs are being played by moms, kids, the elderly—every kind of demographic you can think of.

The subscription model is definitely a great opportunity to generate revenue, but the players paying for the service are key. There are several competing MMOs out there; some are doing rather well but are not generating the dollars that *WoW* does. It's all about creating a game that people want to play and are willing to pay $15 for. More than half of the *WoW* subscription base resides in Asia, as MMOs are extremely popular there. —*Michel Henein*

features] are voice-chat systems, which are essential for some facets of cooperative game play in MMOs," he continues. "Rather than simply being an add-on, as it was with the first *WoW* release, chat systems will become increasingly integrated so that the player does not have to turn off the game sound to effectively communicate with others. I am proud to note that *WoW*'s forthcoming integrated voice-chat feature addresses this issue via a system that allows the player to selectively adjust their personal soundscape independently for in-chat moments versus out-of-chat situations."

According to Brower, the voice-chat system is based on channels and introduces push-to-talk and voice-activated features that can be set to a player's preference.

More MMOs are striving to reach the status achieved by *World of Warcraft* as the dominant game in the genre, and with the latest *Burning Crusade* expansion, Blizzard once again raises the bar. "One reason I enjoy *World of Warcraft* is that the line between game play and story exposition is as blurred as it has ever been," Brower says. "As someone who desires adventuring to go along with his gaming, I see MMOs as the best vehicle for realizing this potential. It can be difficult to implement effective volume mixes of the myriad sound sources in an MMO today. However, I see this as an area where much effort will be concentrated in the future. Much of the design and audio perceptual expertise we enjoy in linear media today can finally be applied to nonlinear game applications now that computers are powerful enough to host better tools and systems for prioritizing, culling and occluding sound assets in a real-time, persistent MMO environment."

Recently, Blizzard announced a second expansion pack to *WoW* called *Wrath of the Lich King*. The release date has not yet been announced. For additional information on *WoW*, visit its expansive online gaming community at www.worldofwarcraft.com. ■

Michel Henein felt it was important to mention that he was "forced" to play hours upon hours of WoW *for this article.*

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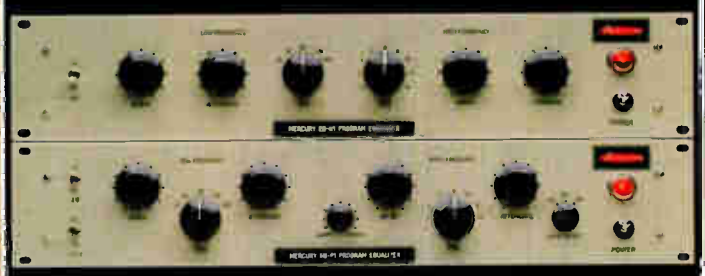

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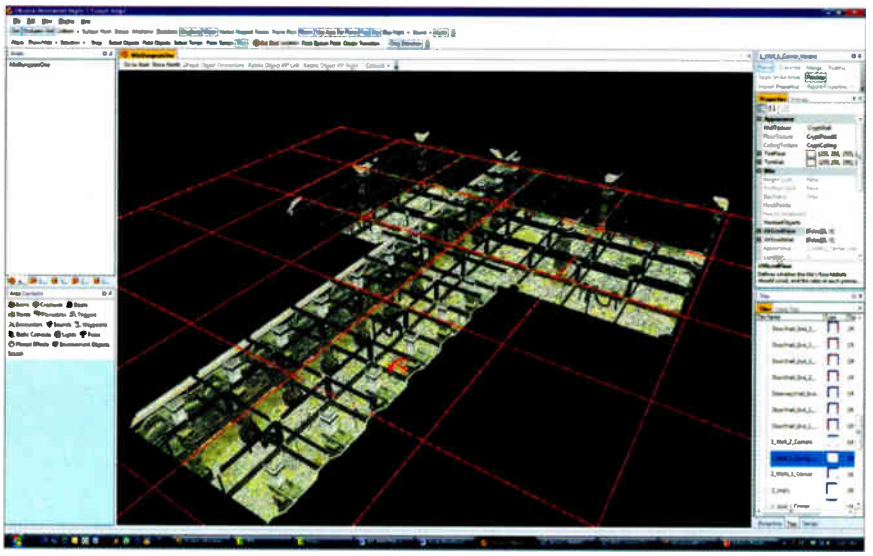
BY ALEXANDER BRANDON

Roll Your Own Level

A Quick Sound Tutorial to Create Your First Videogame Sound

A lot of audio issues have been covered in this space lately, from facility design to education programs. But for many of you, the actual process of integrating audio into a game may still be shrouded in mystery. The main tools—middleware applications—have been covered pretty extensively in this column, as well as in tech reviews and features. We're all familiar with Wwise, FMOD and Miles, the audio middleware used extensively by many top game publishers. But there's more to it than just knowing what the tools are. One can do a lot with middleware tools to create audio objects, properties and scripted events, but the key to integration is the level editor itself, the place where all assets merge to form the game.



In this grid, each tile represents a physical space—hallway, rooms, doors—in your videogame.

This month, I'll break down how audio is integrated into a game level, step by step, in the form of an application-specific tutorial that you can easily replicate. For the purposes of this tutorial, our level editor will be Bioware's *Neverwinter Nights 2* Toolset (NWN2 for short), provided for free when you buy a copy of this multiperson role-playing game that lets players design their own universes. That's right, folks—for a mere $40, you can begin your audio integration training.

Because *Neverwinter Nights 2* is a fantasy role-playing game, this example will be designed for that genre, but most of the terms used here apply to all types of games.

STEP 1: IDENTIFY WHAT YOU NEED

For linear media such as film and television, this part is relatively simple. What is onscreen (and what the writers/production team/director wants) is what dictates the sound, music and voice-over requirements. The assets are recorded, edited, mixed and slapped into the picture.

However, your needs can change in working with videogames. The most common mistake a production team can make is requesting assets before the content is finalized. This is mostly due to the fact that there is no post-production process in games. When art and design assets are done, sound has to be complete, miraculously, at the same time. This paradigm is shifting slightly toward a post-production mentality, but many studios still expect audio assets to be integrated quickly once other assets are locked down.

For this example, we'll assume content is locked and you'll start simple—with a dungeon interior, a dragon (my son loves dragons; where would we be without them?) and a few skeletons for good measure. The fun part is that you get to create a level and put sounds in it, and the *NWN2* Toolset makes the process less complex so you can wrap your brain around it easily.

STEP 2: CREATE A SIMPLE LEVEL

Once you have installed *NWN2*, find the Toolset icon in the folder where you have installed the game and move it to your desktop. Double-click it and begin the build process.

Go to the File menu, hit "New" and from the drop-down menu select Area. Another dialog will appear that requests Area Tag and Area Type (Interior and Exterior). For Tag, name it whatever you want; for Area Type, because we're making a dungeon select Interior.

You should now see a grid. This grid represents tiles. Creating a dungeon is as easy as laying square tiles on this grid that represent hallways, large rooms and doors. Select the tiles by clicking on the Tiles tab at the bottom-right-hand part of the screen. It should be set by default at blueprints. In the picture above, you'll notice I've used the Crypt tile set. Select a tile, and when your cursor goes onto the grid you'll see the tile you've picked to appear. Press the left mouse button to place the tile you picked. When you want to use only your cursor to select items for deletion, press the Escape key to clear out your selection.

To navigate, hold the control key while using the left mouse button to move. Hold the Control key and the right mouse button to rotate. Use the Control and Shift

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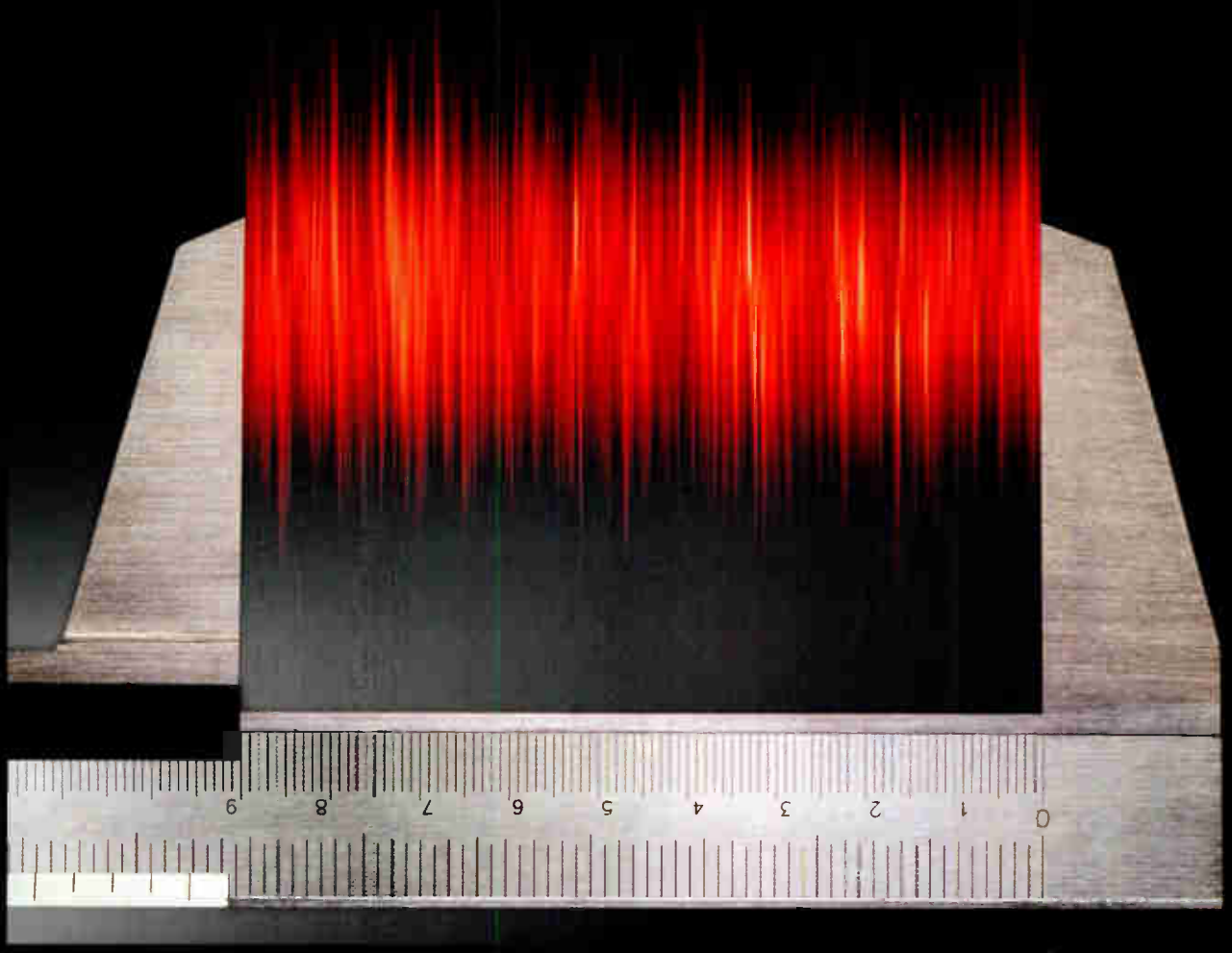

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keys with the left mouse button to move up and down. We'll get to blueprints after we build a small area, which can be anything you want—hallway, room or both.

Now that you have created a dungeon, let's put something in it—a few skeletons and a dragon, for example. Let's go back to that Blueprint tab. "Blueprints" is another word for template. Essentially, these are things that you choose to put (or not put) in your world, and are as simple as their descriptions and as complex as their properties (such as color and hit points, but don't worry about those). Skeletons are listed under Undead; Dragons are under Dragons. Click on one, and in the same way with tiles, when your mouse returns to the main screen you will see a creature attached to it. Cleverly, the toolset will make the creatures stick to the ground.

The same applies for objects. Select Placeables in the Blueprint tab and select a table, a fireplace—anything you wish. For our purposes here, a fireplace is an easy ambient sound to place.

STEP 3: UNDERSTAND THE TYPES

Now that your physical manifestations are represented visually, what do they *sound* like? Your fireplace will require an ambient sound, which normally should apply to the fireplace the moment you set it down. But in this case, you'll need to select the Sounds blueprint and pick the Environmental type. From there, you choose Fire, scroll down and click on Fireplace. When your cursor moves out to the dungeon, you will see a blue nozzle/funnel shape that you can place on the floor. This is your ambient sound. When you place it, press Escape, then click on it and a green box will appear. At the right top part of the screen you will see a Properties pane indicating all of the little details that are parts of this particular sound. The most important aspect is the radius, displayed by a purple sphere of dots surrounding the sound. You'll notice the default is 25. Change it to 6 or so and you'll see that sphere. This is the maximum range of your sound.

You can now right-click on the area name and go to Properties to assign a looping piece of music for day and night. (Obviously, both will be the same file if you are in a dungeon.)

Ready to play? Just click on File and go to Run Module. It will recommend that you bake the level, so do this. Then your level will play! You have just created your first level with sounds. But you've only scratched the surface. In future columns I'll discuss sound sets, sound object properties, platform differentiation (Microsoft Xbox 360 vs. Sony PlayStation 3 vs. PC) and much more. But if you can't wait, check out the following site: http://nwvault.ign.com/View.php?view=GlobalSearch#Sounds. Have fun! ■

Using Neverwinter Nights 2 Toolset's Blueprint tab, you can easily add dragons, for example, into your videogame world.

Alex Brandon is the audio director at Obsidian Entertainment.

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The Golden Compass

Sound Design for New Realms of Fantasy

By Blair Jackson

These are great times for fantasy films. CG technology has gotten to the point where almost anything can be realistically depicted onscreen, so the floodgates have opened and one popular fantasy book after another is finding its way to the big screen. Hot on the heels of the already immensely successful *The Lord of the Rings* and *Harry Potter* series have come *The Chronicles of Narnia* (*The Lion, the Witch and the Wardrobe* was a surprise smash; the second film is on the way) and now New Line's *The Golden Compass*, adapted from the first book in Philip Pullman's popular *His Dark Materials* trilogy.

The plot is much too complex to recount here, but it involves a magical compass device that has the power to reveal the truth, a young girl's search for friends who have been kidnapped by mysterious beings known as Gobblers, a snowy world with giant talking polar bears and a mysterious substance known as Dust. The film—directed by Chris Weitz (*About a Boy*, *American Dreamz*), and starring Nicole Kidman, Daniel Craig, Sam Elliott and Dakota Blue Richards—proved to be a tremendously challenging undertaking for everyone involved, including the superb British film audio team spearheaded by sound designer and supervising sound editor Glenn Freemantle.

When we spoke at the beginning of November, just a month before the $150 million film's worldwide release, Freemantle and the rest of the audio post crew were in the last throes of final mixing at De Lane Lea Studios in London. Mike Prestwood Smith was handling the dialog and music mixing and Mark Taylor the effects; their previous work together includes *Harry Potter and the Order of the Phoenix* and *Casino Royale*. The score is by French composer Alexandre Desplat.

"We've been in three theaters really," Freemantle offers during a break in the final. "We premixed the dialog down at Peter Gabriel's studio, Real World—Mike [Prestwood Smith] turned it into a film mixing suite; it was all mixed inside Pro Tools. Then we were up at Pinewood [Studios] doing the effects premixing. We basically hard-premixed six or seven of the atmospheres [ambiences] there and also hard-premixed the hard-cut effects, like doors and things that would not move [in the mix]. Now we've been here at De Lane Lea quite a while, adding things and finishing up.

"All the design on the ships and the battles and the bears and everything we kept live in Pro Tools so we could change them," he continues. "That's been very handy, too, because when the music comes in and you see what frequencies are in there, sometimes you have to adjust [the FX] if you want to keep the same level of detail. So we have a plethora of Pro Tools 7.3 in the back running all these sessions—five or six effects machines running live, plus the dialog and the music machines. It looks like NASA rather than a mixing stage right now, but it's all running smoothly." Both the mix room at De Lane Lea and the one at Pinewood are equipped with Neve DFC Gemini consoles.

Freemantle grew up in a film tech world: His father, Brian Freemantle, was an editor on numerous British TV series and programs. Glenn Freemantle decided to go the sound route and got his start in the early '80s, first working as an assistant dubbing editor under Jim Shields on *Yentl*. By the late '80s, he'd branched into FX editing and Foley, and by 1991 he was supervising while also occasionally still working as a dubbing editor, sound designer or in other capacities. Among the many films he's supervised in the past decade are *Spice World*, *Wing Commander*, *Mansfield Park*, *Bridget Jones' Diary* (and the sequel), *28 Days Later* (and its sequel), *Love Actually*, *Nanny McPhee*, *Sunshine* and *V for Vendetta* (for which he was also lead sound designer).

Freemantle has been working on *The Golden Compass* on and off for nearly two years: "We were in on the proof-of-concept the Christmas before last to get the film green-lit," he continues. "We saw all the ideas

The Golden Compass' sound design and mix crew at De Lane Lea Studios, from left: Mike Prestwood Smith, Glenn Freemantle, Hugo Adams, Niv Adiri, Tom Sayers and Mark Taylor

PHOTOS © 2007 LAURIE SPARHAM/NEW LINE CINEMA

Above: The sound of Iorik the bear had to be "beefed up." Left: Dakota Blue Richards as Lyra, who is given the alethiometer.

and the graphics of what it was going to be like and I had a book of all the concept art, which showed what all these things were going to look like—the airship and the bears, everything. They were all quite fantastic, and so already we were talking about sound and how we could re-create these worlds." Freemantle also read Pullman's book "to see what his original approach was and perhaps incorporate some of them with the filmmaker's ideas. But I think in general you get a lot more out of it if you go into a film with an open mind rather than having too many preconceived ideas, because that limits your field of thought processes."

Because of the heavy reliance on CG backgrounds and visual FX, much of *The Golden Compass* was shot on soundstages at Pinewood in front of green screens, so the sound crew had to base much of their work on detailed renderings of places and creatures, fine-tuning as CG shots became available. "You start with nothing and you have to create a world," Freemantle says. "The visuals are so great nowadays, the sound has to match the quality of the images so you can really sell the reality of the scene." Production dialog was captured by Tony Dawe, but as anticipated, much of that was redone in post because of so much noise from wind machines and such. Lee Herrick was ADR supervisor, while Gillian Dodders was the primary dialog editor.

Lee Herrick and Gillian Dodders (foreground)

Stiff challenges for the sound crew emerged with the very first scene. "The story starts at this Oxford-type of place that looks like it's in the past a bit," Freemantle explains. "It's very regal, very grand, with rich, beautiful colors, so you have to treat it like a classic to get that richness of the picture in the sound. Then all of a sudden these airships and this car are in this world, so you have a really big contrast of these grand, old buildings and this sky ferry that looks like a zeppelin but has 'anabaric' power, and it's sort of futuristic—all gold and red. The [sky ferries] have these things inside them that are like gyroscopes that spin, spin, spin, and to create that whirling gyroscopic sound we shot lots of blades and metal and dopplered them at different speeds. Inside of [the gyroscopes] is their power source, which is blue and moves 'round in a weird way, and for that we combined lots of water samples through various doppler speeds at all different times, with some electric [sounds] so you get this big swishing that's part electrical but it's made from water, and there's lots of variance." Then, to give the sound of the airships themselves more weight, Freemantle says they used a lot of slowed-down sounds, bass and exaggerated air movements, "so that when this thing comes by your house, it just sounds massive."

Another magical marvel in the film that required considerable sonic creativity was the alethiometer, or Golden Compass, which possesses both a watch-like mechanical physicality and a more abstract psychological/spiritual dimension. The power of the alethiometer and the struggle to both possess it and learn its secrets are central to the story. To capture the Compass' enigmatic quality, Freemantle and his team used the high, singing tones of Tibetan prayer bowls as a base sound. "We shot loads of Tibetan bowls and also glass bowls—we had all these different high and low pitches," he says. "The alethiom-

eter sort of sings to [Lyra, the young female protagonist] when she holds it. We put the bowls on different metal surfaces so they'd resonate and give these weird sounds, so when something bad would be [revealed] in the compass, you'd start off with this pure humming and then it would change and distort so it would sound more dangerous. The idea was these sounds would resonate in and then sort of take you *into* the compass. Also, Alexandre's music would tune the alethiometer into the music so we got crossover.

"From those tones, you then go *into* the alethiometer and you find the Dust so there's all this movement of Dust particles," Freemantle continues. "We used all sorts of organic sounds inside there, like rainsticks, wind, water, fire, breath; even NASA sonifications we got hold of, which are literally sounds from space, from out in the universe. Then we used granular synthesis [plug-ins], which takes the different elements and makes sort of sound clouds out of it—it takes each one of these sounds and splits them up into little pieces of [sound]; they become tiny, different frequencies. Then we panned them around the screen in 5.1. So it all starts with all these beautiful tonal sounds that resonate, and then you fly through it and you have all these organic sounds that then turn into these tiny little particles, as it were. It flows and it swirls and goes around the surrounds. It's quite effective."

If you've seen previews and commercials for *The Golden Compass*, no doubt you've seen the gargantuan bears, Iorick and Ragnar by name. "Iorick's voice is Ian McKellan and obviously that had to be beefed up to fit the size of the bear," Freemantle says. What—messing with the performance of the great Sir Ian? "Well, beefed up but keeping the integrity of his voice—that was paramount," he clarifies. "It had to sound big, but we didn't want it to sound like a monster, and we also didn't want it to sound like it was overprocessed or overtreated. So basically what we did with Iorick is put it through an Eventide [Harmonizer] and pitched it slightly and added bass to it. We were able to give him a bigger chest and a resonance, and then, of course, we also added various bear noises to that. The idea, which we worked on very hard, was to get his voice and the bear noises very close in register so it could come out growling and breathing and then have it go into his voice and you didn't feel they were two different sources."

As for the bear sounds, "We got some from natural history sources and other places. We also cheated with some walruses and other things," Freemantle says. "But we needed heavy breathing and a gurgling growl that would go into a [spoken] line if he was getting cross. Tom Sayers, who is one of the sound designers who works with me—for 13 years now—spent a lot of time feathering these sounds in to make it all work; it's stunning." Freemantle also cites his longtime associate Niv Adiri for his invaluable contribution to the sound design and sound editing on the film, and the work of effects editors Ben Barker and Andy Kennedy.

"Then we had to create all the movements of the bear, too. We wanted the bear to have presence so you really *felt* it. So that meant trying to get as much detail as we could both in the movements and the lip-smacking and teeth-gnashing. What I love is the fine detail—if you can get those, the little sounds will sell it, not just the big sounds."

This isn't to say Freemantle was ever hesitant to "go big" with his sounds. When we first meet Iorick, he lets out a deafening roar, "and we blast it right across every speaker—left, right, left-surround, right-surround, sub—and it makes the whole room rumble," he says with a laugh. "He stands up and he falls down, and as he lands the whole theater just *rocks*. From that moment

you know this boy means business; he's got power, he's got weight."

Still, Freemantle says that he tries to avoid overusing the sub channel. "You have to choose your moments because otherwise it can sound sort of woolen; it gets muddy. Like today we've been working on a battle scene, and it's very important that we keep a certain clarity in the sound, even though obviously there's a lot going on in the scene. Otherwise, what you get is a confusing mess."

Foley for the film was shot at a fourth facility—the studios of Paris Post Production in Joinville-le-Pont—using Freemantle's favorite Foley artist, Nicolas Becker. The Foley was recorded by Philipe Amouroux and edited by Hugo Adams. "It was a fairly complicated Foley job," Freemantle says. "We shot a lot of the armor out there for the bear fight, which we then brought back and manipulated [in England] There are three distinct types—Ragnar's armor, Iorick's armor and the bear army's armor. We stacked up [the sounds] like a sandwich with different types of metal and terra-cotta tiles to get the denseness of stone."

Becker also brought a recording rig into the French Alps to capture snow recordings that could be used in scenes depicting the wintry place where the kidnapped children are kept, Bolvangar. "It really made a difference having proper snow stuff," Freemantle notes. "He shot all different depths and then sweetened them with Foley [back at PPP]. He always does such good work."

The examples above barely scratch the surface of the sound challenges *The Golden Compass* presented. In fact, when I initially asked Freemantle about the most challenging scene from his perspective, he immediately deadpanned, "All of them!" There's nothing simple about painting sonic pictures of places and things that practically defy imagination, while at the same time hitting all the right notes with the conventional demands of sound for film. It requires tremendous imagination, discipline and the concerted efforts of many, many craftspeople.

"When you work on any film," Freemantle stresses, "it's never one person; it's always a team effort and I'm a firm believer in my team. You need *everybody* to do a great sound job, and in this case they really did. I can't say enough about them. This one has really been a lot of work—and it's not over *yet*," he chuckles, "but it's coming out really well. Again, because of the team." ■

Blair Jackson is the senior editor of Mix.

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Nicole Kidman stars as Mrs. Coulter, a scientist and world traveler.

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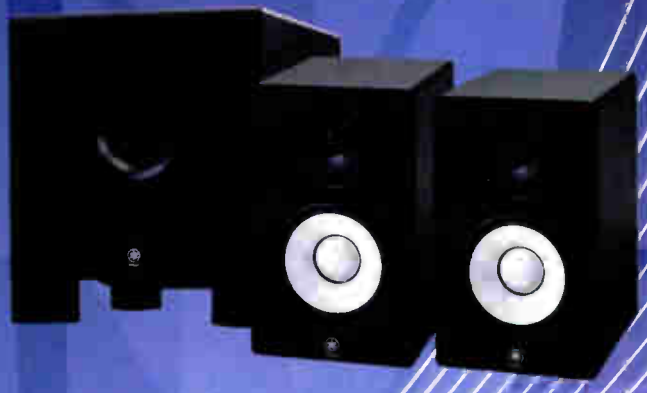

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PHOTOS: STEVE JENNINGS

On the Road

Thievery Corporation

Mix caught up with Thievery Corporation's front-of-house engineer John "Wedge" Branon when the band stopped at the San Francisco Treasure Island Festival.

How much gear are you carrying?

For the past year, we have been doing nothing but fly dates—headlining a lot of festivals and doing a few of our own shows. As soon as I get production contacts for the shows, I'm on the phone with the sound company.

As far as the P.A., I request a line array system with doubled the amount of sub. The d&b J Series rig sounds amazing, as does the Nexo rig and [Meyer Sound] MILO system. As for consoles, I love the Midas XL4 or Heritage 3000. I prefer analog over digital consoles when mixing Thievery. I want to see everything right in front of me, plus I just love the sound of them. For this show, I'm mixing on a Yamaha PM4000 supplied by Sound on Stage.

Do you have a specific mixing style?

Thievery is a very sub-low dub band. There are a few songs where it's nothing but 20 to 60 Hz, and we want everyone at the show to feel it, so I insist on adding more subs to the rig. I also insist on a minimum of four front-fills so everyone right in the front can hear everything clearly. It's a very loud sonic show!

We have an average of 17 bandmembers. We have Eric and Rob, who are Thievery Corporation, who handle beats, samples and keys, then we have two large percussion setups, a bass player, a sitar/guitar player, two horn players, a violinist, a cellist and then eight singers. Every song in the set is different, as well. I have lots of delays going on for the reggae numbers and more lush sound effects for the lounge chill songs.

For the past 20-plus years, I have mixed nothing but metal bands so coming into the Thievery camp was a complete 180 from what I'm used to. I really enjoy mixing Thievery; it's a challenge that I have never had before.

Now Playing

Apocalyptica

FOH Engineer/Board: Michael Bauer/DiGiCo D5
Monitor Engineer/Board: DiGiCo D1
P.A./Amps: L-Acoustics dV-DOSC and local
Outboard Gear: Dolby Lake processing, D-TuBe preamps
Microphones: Sennheiser 901, 905, 904, 914; Schertler Basik (cellos)
Additional Crew: audio tech Stefan Matthias

PHOTO: LILY LANKEN

Afuso Takako

FOH Engineer/Board: house/Midas Siena 320; Venice 240 sub-console
P.A./Amps: Electro-Voice XLE181s, SbA760s/TG7s, CP4000S
Monitors: Electro-Voice PX1152Ms, PM1122Ms
Outboard Gear: Klark Teknik SQ-1D, DN9848E, DN9349E, DN9344E
Microphones: Electro-Voice RE510, N/D767a, RE27N/D, RE20, RE200, Cardinal, Raven, N/D868, N/D478, ND/468

PHOTO: DARAGH MCDONAGH

Serj Tankian

Sound Company: Delicate Productions (Camarillo, Calif.)
FOH Engineer/Board: Ray Amico/venue-provided
Monitor Engineer/Board: Johnny B/Yamaha M7CL
P.A./Amps: venue-provided
Monitors: Shure PSM 700 personal monitor systems, Shure wireless Workbench software
Outboard Gear: BSS 404 comps, Drawmer gates, Distressor (vocal), DEQ 2496 RTA
Microphones: Shure Beta 91, Beta 52, Beta 57, Beta 52, Beta 58, SM57, KSM 9, SM81

Kaufman Center Gets Audio Face Lift

New York City's Kaufman Center will unveil its new look on January 8, 2008. The facility's Merkin Concert Hall, a 449-seat performance space, received an updated audio system, thanks to JaffeHolden Acoustics (www.jaffeholden.com).

According to Ben Bausher, JaffeHolden project manager, "There's a control booth on the balcony level, but it's used as an amplifier room because it is too small for people and equipment. There is a small recording control room in the basement. The house mix position is exposed on the orchestra level. Previously, the sound system was cobbled together from various rental equipment and an assortment of semi-installed things that the house staff had put together, so this is a major step forward for them to have something that is completely engineered and integrated with the building.

"Andrew Schmidt, the acoustician on this project, was mandated by the center to not change anything about the hall, as they like the acoustic they had, so from his standpoint this was an 'acoustic preservation' project."

The P.A. system comprises models from EAW with Lab.Gruppen amps and Symetrix DSP; onstage are Clair Bros. wedges and monitor amps. A new console may be purchased, but that decision had not been made at press time.

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- Easy air filter maintenance

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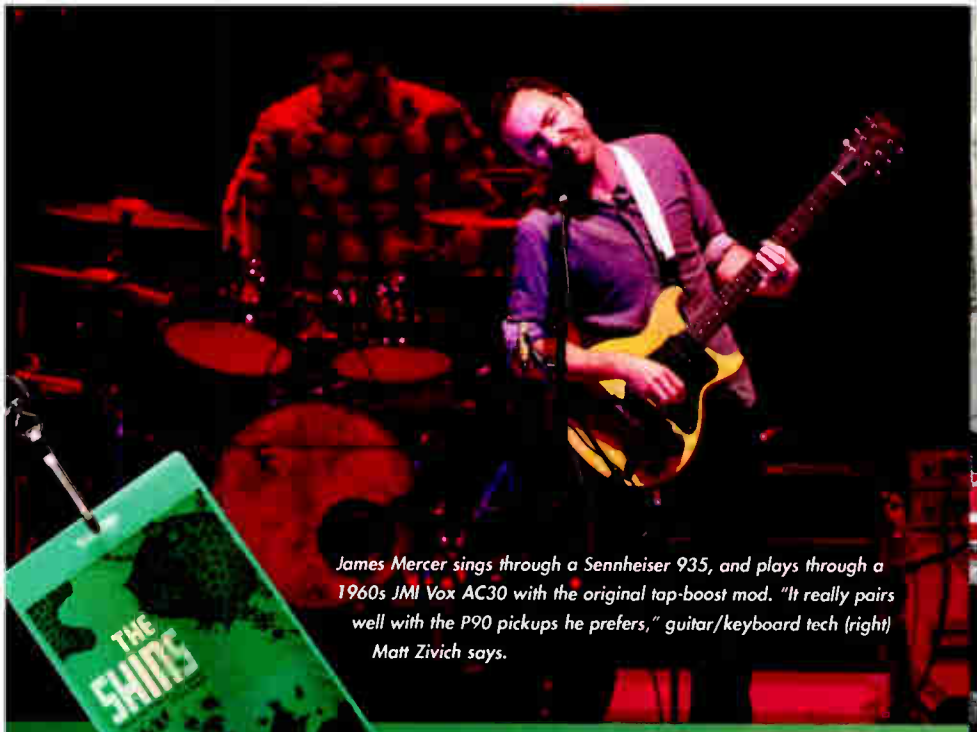
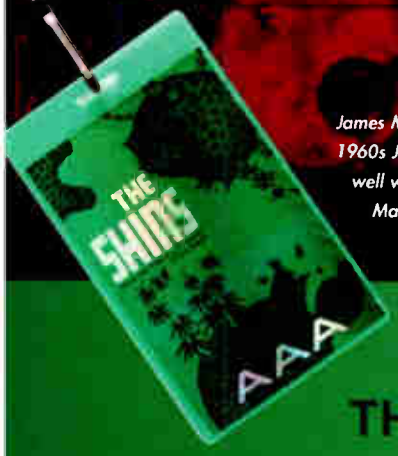


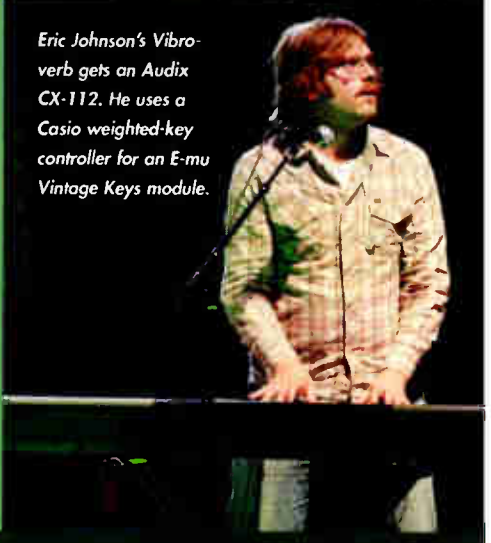
James Mercer sings through a Sennheiser 935, and plays through a 1960s JMI Vox AC30 with the original tap-boost mod. "It really pairs well with the P90 pickups he prefers," guitar/keyboard tech (right) Matt Zivich says.



Photos & Text by Steve Jennings

THE SHINS

The Shins are currently out in support of their latest release, *Wincing the Night Away* (see "Recording Notes," May 2007), an album that debuted at *Billboard*'s Number 2 slot. Playing to capacity crowds in mid-sized venues, The Shins (James Mercer, vocals/guitar; Marty Crandall, keyboards; Dave Hernandez, bass; Eric Johnson, keys/guitar/lap steel/backing vocals; and Jesse Sandoval, drums) are pleasing the crowd with such hits as "Australia" and "Phantom Limb." *Mix* caught up with the tour in early October at Berkeley, Calif.'s Greek Theatre; Rat Sound is providing SR gear, minus the P.A.



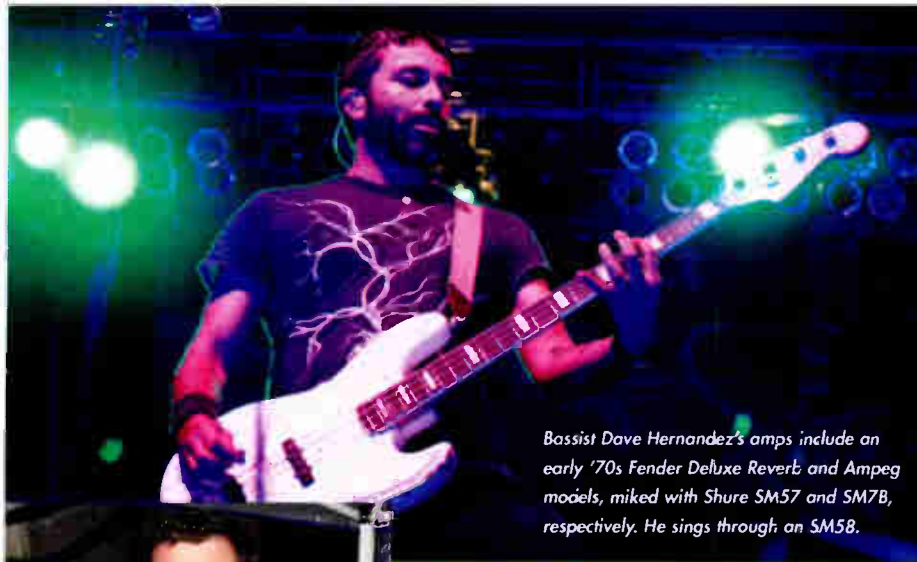
Eric Johnson's Vibro-verb gets an Audix CX-112. He uses a Casio weighted-key controller for an E-mu Vintage Keys module.

FRONT-OF-HOUSE ENGINEER ZACK REINIG

Front-of-house engineer Zack Reinig (left) is manning a Digidesign VENUE system with the D-Show console, opting to use few onboard effects, though he says he'd like to pick up the Sonnox Oxford package, Waves' SuperTap delay and the Phoenix analog tape emulator. Instead, Reinig brings his studio engineering background to The Shins' live shows, plugging in such outboard gear as the Chandler Limited TG 2, an Empirical Labs Distressor on the vocal chain and a TC Electronic M4000. "The M4000 is a spectacular box, and I'm really happy to have at least one of the M6000's four engines to help re-create the heavy 'verbed sound of The Shins' records," Reinig says.

"I'm surprised at how much the D-Show has helped us," he continues. "I'd always felt that I was able to do most of what needed to happen during the concert—in terms of effects, changes of EQ, fader moves, et cetera—but rarely was I able to go the extra distance and give the shows the detail I wanted. Instead of spending large amounts of mixing time putting out sonic fires, I'm able to focus on featuring the subtle beauty in The Shins' music.

"At this point, my favorite P.A.s tend to be [L-Acoustics'] V-DOSC," Reinig adds. "They are able to achieve great coverage while pulling off a defined, yet lush, tonal quality."



Bassist Dave Hernandez's amps include an early '70s Fender Deluxe Reverb and Ampeg models, miked with Shure SM57 and SM7B, respectively. He sings through an SM58.

Keyboardist Marty Crandall plays the original model Korg CX-3 organ and a Korg Micro-Korg. According to guitar/keyboard tech Zivich, both boards go through Boss delays and are summed into a simplified Behringer mixer. Crandall sings through a Beta 58 as it picks up a lower level of some of his hand percussion.

MONITOR ENGINEER JASON WARD

According to monitor engineer Jason Ward, "We decided that we wanted to carry as much production as we could fit in a large trailer as one bus. At a festival we did, a guy came in with a tiny Yamaha LS9 and I was sort of blown away by the incredibly compact size and the whole Centralogic situation, where eight channels at a time come up in the center of the console with dedicated knobs for EQ, et cetera, for the selected channel and touchscreen selection of many other parameters. I brought up how fascinating that was with Jim Monson of Rat while we were sorting out Zack [Ewing's] Digidesign system, and he told me he'd just had a tour out with production in a trailer with the [Yamaha] M7CL. Once I looked over the setup of it, I realized it was the best compromise between performance, weight and price. The ability to set up user quick keys that solo the mix and bring up a fader for every input allows me to quickly make changes to numerous mixes. We have three people switching instruments several times during the set, as well as a number of guide instruments that Jesse [Sandoval, drummer] needs louder during different songs, so it's a pretty active monitor mixing job."

Ward uses the M7CL's built-in dynamics for his mixes. As the band is on in-ears (Shure PSM700 wireless for all bandmembers except Sandoval, who wears a wired PSM600; all use Ultimate Ears UE-7s), Ward uses a 4-band parametric EQ and "a little of the Rev-X plate reverb on acoustic guitars and keys, which sound quite amazing."

According to drum tech Davey Brozowski (above, left), drummer Jesse Sandoval's (left) kit is miked with Shure Beta 91 (kick) and 57 (snare top), beyerdynamic M88 (kick) and Opus 88 (rack toms), and Sennheiser 604 (snare bottom, floor tom). "I like Audix mics on the brass because you can heavily filter them and still retain some body—and the natural dip at 8k is also really nice," Brozowski says. "We're using the SCX-25s on the overheads. They are very sensitive mics, and if Jesse was a basher, I doubt I'd be able to use them. We use the M1245 under the bell of the ride cymbal and a Shure KSM model mic for the hi-hat."

Dave Matthews Band

PERENNIALLY TOURING ENSEMBLE CONTINUES QUEST FOR SUPREME SOUND

By Heather Johnson

For more than a dozen years, the Dave Matthews Band has consistently ranked as one of the top-grossing touring acts in the U.S. *Mix* caught up with the band's successful 2007 tour at the Shoreline Amphitheater (Mountain View, Calif.) in late September. During this particular cross-country jaunt, Matthews and bandmates Stefan Lessard (bass), Boyd Tinsley (electric violin), Carter Beauford (drums) and LeRoi Moore (sax), as well as touring regulars Butch Taylor (keyboards) and Rashawn Ross (trumpet) played consistently lengthy sets, including more than 70 songs culled from the band's vast catalog of original material and unconventional covers.

At front of house, from left: FOH engineer Jeff Thomas, stage-left P.A. tech Jeff Child, FOH system tech Tom Lyon and delay system tech Greg Botimer

PHOTOS: STEVE JENNINGS

PRE-SHOW PREP

The band's longtime touring company, Pro Media/UltraSound (Hercules, Calif.), arrived late in the afternoon, but everything appeared in prime working order when opening act Stephen Marley took the stage and most of the 22,000 fans had found their seats. In addition to the bevy of tapers, which Matthews allows, recording engineer Joe Lawlor positioned himself in monitor world to man the rack of Tascam MX-2424 hard drive recorders that comprise Matthews' mobile recording rig. As with every DMB show, Lawlor would record the entire set for archival purposes and possible future use.

"The recording setup gets a transformer-isolated split from the stage and runs through 48 channels' worth of API 212L preamps to the Tascams," explains Jeff Thomas,

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ON THE MAP

From coast to coast, Remote Recording has made a name for itself with involvement in big names and even bigger shows. Sporting dual DM2000's with 24-bit 96kHz performance and 96 inputs, this truck is really going places. Key features include a complete surround sound panning and monitoring package, a full mixdown automation system and advanced DAW integration. Newly added VCM effects such as recreations of compression and EQ units from the 70's, and a variety of vintage stomp boxes provide endless options in the world of recording.

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Matthews' front-of-house engineer. "The hard drives get sent to the band's archivist in Charlottesville [Va., the band's hometown], where the individual tracks get bounced to multiple CD-Rs and are then stored in a climate-controlled vault." Some of these songs wind up on the band's *Live Trax* CD Series, the tenth volume of which came out in May 2007.

To power the band's jazz-influenced, jam-heavy pop/rock hybrid, Thomas chose a line array system based on the Meyer Sound MILO self-powered loudspeakers—an upgrade from the Meyer MSL-10–based system they had used through 2004. Pro Media/UltraSound supplied the Shoreline show with twin arrays of 11 MILO 90 loudspeakers and one MILO 120 per side. Two stacks of eight Meyer Sound 700-HP subwoofers per side covered the low end, while three MSL-4s per side were used for sidefill offstage of the mains. Three CQ-2 loudspeakers handled front-fill coverage under the mains, and two UPJ-1P loudspeakers covered the center area in front of Matthews, who doesn't stray far from the middle of the stage.

Thomas switched from the M3D-Sub cardioid subs to the 700-HP units last year, a change that better suits the band's performance. "The band missed that sub feel and energy onstage," says FOH system engineer Tom Lyon, of Pro Media/UltraSound. "Fortunately, we had another system out with Phil Lesh that had our 700-HPs, and they were having the opposite problem: too much sub energy onstage! So the two tours switched their subwoofer complements while they were both in the Boston area the same day."

Coincidentally, the installation division of the Bay Area sound company recently installed a new JBL VerTec 4888 system for Shoreline's lawn delays, programmed and tuned by Lyon. "Knowing that system had already been configured and optimized 'the Ultra way,' it was one less thing to worry about during a hectic, late load-in," he says.

Additional Audio Crew

FOH Tech: Greg Botimer
Monitor System Tech: Tony Norris
P.A. Tech: Jeff Child

For a full list of the band's gear, visit http://road.davematthewsband.com/bandgear.html.

THE BAND TAKES THE STAGE

At the main FOH position, Thomas works on a Digidesign VENUE D-Show digital mixing console; their previous console, a Gamble EX-56 modified by Pro Media/UltraSound chief engineer Geoff Peters and rental/touring director Derek Featherstone, resides next to the VENUE and is reserved for opening act Marley. Thomas uses about 40 inputs divided into eight subgroups. The VENUE system handles most of the onboard processing; beyond that, he uses a Bomb Factory BF76 compressor plug-in for vocal subgroup and subgroup bus compression. He enlists a Joe Meek SC2 compressor plug-in for dynamics and Digidesign's ReVibe and Reverb One plug-ins for effects. For vocals, he uses the Serato compressor plug-in for de-essing and "de-pinging."

Though Thomas handles dynamic control and EQ at FOH, several of the musicians provide additional effects from the stage. Eventide DSP-4000s and TC Electronic M-5000s are used for the bass, violin and saxophone players, all handled by either the musicians or their techs.

Thomas uses a fairly straightforward miking scheme for the highly skilled ensemble. He equips drummer Beauford's kit with DPA 4021s for the toms, Sennheisers for the kick and snare, a Neumann KM 184 for the hi-hat, a Shure VP88 for the overheads, and AKG C 414s and a Shure KSM 137 for chimes, toys and other percussion. Electric guitar gets miked with a Shure SM7B, sax gets an AKG C 4000 B on the top and bottom, and flute and trumpet are miked with Shure Beta 98 models. Violin, acoustic guitar, bass and keyboards run direct. As for Matthews' distinct vocals, the mic of choice these days is a Neumann KMS 140. "We use it for its neutral coloration and built-in highpass filter," says Thomas.

Another unique component of the DMB audio arsenal, Thomas uses the BSS Audio SoundWeb system with EAW SmaartLive Version 5.4 software to adjust EQ and tune the P.A. in multiple zones. Thomas uses SoundWeb primarily as an analysis microphone switcher for the Smaart software. "Along with the SoundWeb working as a switcher, we use UltraSound-modified Sennheiser RF transmitters and receivers to make our four analysis microphones wireless," Thomas adds. "They then can be easily placed in the discrete P.A. array zones and utilized during the show. I also have Smaart Version 6 fed from my cue bus on the console so I can cue selected channels and see their individual spectrum, or the master bus and see the overall tonal spectrum."

MANNING THE ONSTAGE SOUND

Just as Thomas and crew continually work to improve the sound quality at FOH, monitor engineer Ian Kuhn looks for new ways to strengthen their wireless system. He recently incorporated Professional Wireless' IAS software into his regime, which allows his team to coordinate all of the RF gear used on the tour, as well as improve RF transmission. Matthews began using Sensaphonics 2X IEMs in 1997; now, the entire band wears them. Kuhn uses both Sennheiser and Shure wireless systems to cater to the musicians' individual sonic preferences. While the band wears in-ear monitors exclusively, they also carry a few Meyer Sound USM-1 wedges, powered by Crest 7001 amplifiers, to accommodate the opening act, as well as any guest musicians who might join in.

Kuhn mixes primarily on a Yamaha PM1D, while audio crew chief Lonnie Quinn mixes violinist Tinsley on a Yamaha DM2000. Aside from the Yamahas' onboard processing and effects, Kuhn uses Aphex 1788 mic pre's for some of the key inputs. As for monitor mix requirements, bandmembers keep their preferences reasonably simple. "As with most musicians, each of

At monitor world, foreground: monitor engineer Ian Kuhn (left) and stage-right P.A. tech Tony Norris. Background, from left: recording engineer Joe Lawlor and monitor tech/UltraSound crew chief Lonnie Quinn.

the guys has a specific preferred mix that we strive to meet," says Kuhn. "Dave leans toward a full band mix, with his vocal and guitar peeking out over the top."

Trumpeter Ross, who joined the lineup this year, adds a new challenge to Kuhn's regular duties: a mini horn section. "It's been quite enjoyable mixing the new 'horn section,' finding ways to layer into the mix the new parts they're coming up with nightly," he says.

WHAT WILL THEY PLAY NEXT?

Matthews' continually rotating set list also keeps Kuhn and the rest of the crew on their toes. "We use the 'Songs and Cues' portion of the [Production Consultants Guild] Mas-

Pro Media/UltraSound provided the Shoreline venue with a Meyer Sound MILO system.

ter Tour Database software to track our cues for all the songs the band has ever played," says Kuhn. "Designed to replace a stack of note cards with hand-written cues, it places the song records in order of the evening's set list and allows for easy navigation and recalling between songs." The software also keeps track of every set list the band has ever done—information that avid Matthews fans love to study.

With more than a decade of experience under most of their belts, the longtime audio team continues to stay challenged by this group of musicians. "After 12-plus years of mixing monitors for these guys, it is still very fresh," says Kuhn. "The band is incredibly spontaneous in their performances, and I'm honored to be a part of it." ■

Heather Johnson is a Mix *contributing editor.*

BY SARAH BENZULY

XL5 Productions

Climbing the Corporate Production Ladder

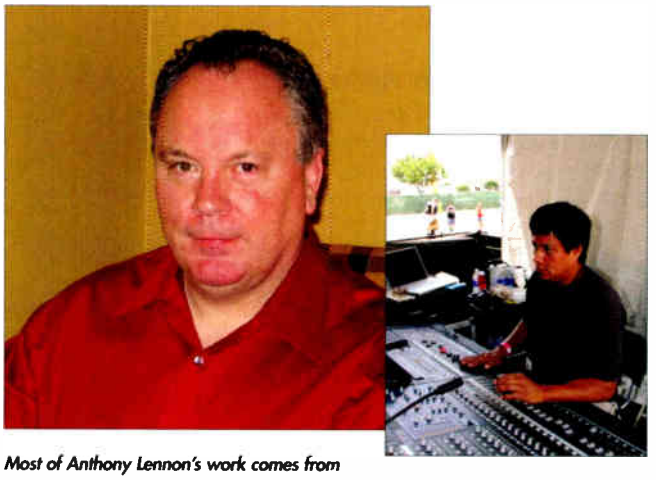
In this space, regional sound companies get a chance to shine, talking about recent contracted gigs, latest installs, providing a one-stop shop, etc. But for numerous production companies, a highly successful revenue-generating stream is found in corporate work, where XL5 Productions (Santa Clarita, Calif.; www.xl5productions.com) has shot straight to the top of its market.

Since its founding in 2004, XL5 has handled anything from small concert and festival work to the larger corporate shows. Indeed, the company's list of corporate clients reads like a who's who from the Fortune 500: Godiva, Garnier, *Entertainment Weekly*, Microsoft, Nike, Sprint, Yahoo!, Adobe Systems. In addition, the company has been working the Tony Awards in New York, the Emmys, the Oscars, Independent Spirit Awards, the Golden Globes—the list goes on. For the past three years, XL5 has been contracted to handle ESPN's X-Games, providing SR at the Home Depot Center (Carson, Calif.) and the Staples Center (L.A.). "Last week I was in London advancing the sound reinforcement and lighting for the European X-Games, which is going to happen next September," founder/director Anthony Lennon says. "We're currently working with ESPN X-Games to see if we can provide sound reinforcement for the Winter Games in Aspen."

For the X-Games' live and broadcast audio production, XL5 brought out its Yamaha PM5D and a Nexo GEO D line array with CD-18 subs at the Home Depot Center; five PM5Ds, and LS9 and M7CL digital consoles (both handling TV control) were taken to the Staples Center. Also on-hand were Shure mics and iTech/Crown/Crest amps.

Lennon prefers to stock digital boards, citing their small footprint and recall capabilities as big pluses. "On these larger shows," he says, "we may have eight, nine or 10 bands a day, and we have the ability to recall that previously programmed input list, so it makes for time savings and less stress on our engineering staff." That staff comprises 12 full-time audio engineers and a list of audio techs that can be called upon as needed.

For many of these corporate gigs, XL5 draws upon its long-standing working relationship with Larry Abel from Larry Abel Designs, a leading event designer in Los Angeles. Through this arrangement, XL5 provides not only sound reinforcement for corporate clients, but also sole production services. "And then on the other side, we do many of the local festivals in the L.A. area, [such as] the local festival for Sunset Junction, which happens every year—that's three stages," Lennon lists. "[We] work with the city of Oxnard Merchant Association for their Salsa Festival. We work with the city of Santa Clarita. We've been a longtime supplier for the city of Beverly Hills for all of their concert events—from a small jazz environment to their concert series in the summer.



Most of Anthony Lennon's work comes from the corporate world. Inset: front-of-house engineer Dave Elvania at the recent X Games.

"Another company that we have worked with during the past couple of years, ProMax & BDA, is an international organization for the electronic media that services the television and film industries," Lennon adds. "We've just completed their annual June Conference, which was in New York City, with guest speakers such as former President Clinton and Kenneth Cole. We had another event for ProMax & BDA back in May of this year that was called MI6, a conference that targets the gaming industry, with participants that included Apple and Microsoft. Next week, I'm traveling to Mexico City to advance the Latin American Conference for ProMax & BDA, which is coming up in November."

Fortunately for XL5, the corporate work doesn't seem to be drying up any time soon, and while competition is stiff in Southern California, Lennon sees a number of opportunities knocking on XL5's door. "Particularly in the last few years, there seems to be an abundance of work," Lennon recalls. "A few years ago after 9/11, our industry slowed tremendously. In the past few years, we seem to be getting back on our feet.

"We don't try to be everything to everybody. We have a certain clientele that we try to cater to." But will the company expand its boundaries to attract new gigs? "We unconsciously took a couple of steps forward this year," he replies. "It creeps up on you, and before you know it you're doing five or six different things that you didn't do the year before. If we can stabilize where we are now and keep that level for another year or so, we'll be more than happy with that." ■

Sarah Benzuly is the group managing editor of Mix, Electronic Musician *and* Remix *magazines.*

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- Configurable digital snakes with high quality, remote y controlled mic preamps on stage
- Cat5e distribution that is light weight, low cost and without the high frequency losses inherent in analog snakes
- A 48-channel M-400 Mixing Console with 16 buses, channel and bus DSP, 4 stereo FX processors, 4 graphic EQs, built-in stereo recording and playback, and built in multi-channel split port
- Up to 40 channels of limitless digital splits over Cat5e for monitor/broadcast positions and/or PC recording without any audio interfaces
- Up to 16 returns to stage over Cat5e cable

Easy to Use and Easy to Learn

The V-Mixer is designed to be fast and intuitive to use for the beginner or the experienced professional. It features dedicated knobs and buttons for access to console functions, 24 touch-sensitive moving faders, onboard Help, large bright TFT LCD display and Cat5e connectivity for low cost installation and truly portable systems.

Outstanding Sound Quality

The M-400 is a complete digital solution maintaining 24-bit audio from the stage to the splits and back to the stage. Preamps on stage provide the highest possible sound quality and intelligibility. Cat5e snake eliminates the high frequency losses inherent in analog snakes. Onboard digital processing, channel DSP and routing eliminate any chance for buzzes from extra cabling and analog to digital conversion losses. Built-in 24-bit recording provides lossless capture of live events. The Digital Split allows lossless transmission to monitoring, recording or broadcast positions. Bus and Main LR return over Cat5e enables a complete digital signal path back to the stage.

Powerful Digital Benefits

Instantly change from event to event with 300 Scenes for total recall of all mixer, effect and routing parameters. Password level access provides only the relevant controls for any particular type of user. PC software allows loading/saving setups as well as real-time control. Libraries provide the ability to for storing custom channel, patchbay and effect settings. Direct to PC recording over Cat5e enables up to 40 channels of direct digital recording.

Roland
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Get More information Online
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800.380.2580

RSS by Roland

New Sound Reinforcement Products

MACKIE TT SYSTEM32

Slated for Q4 2007 release, the TT System32 ($12,999) digital live mixing system from Mackie (www.mackie.com) comprises the TT24 digital console, DS3232 digital snake and the U100 networking card, offering a complete plug-and-play digital live mixing solution—just add stacks and racks. TT System32 provides stage-to-console connectivity via the DS3232 with 32x32 analog I/O, 32 mic preamps and complete remote recall/control of all preamp settings (gain, pad, phantom power)—all through a single, lightweight Cat-5 cable.

CHORDSAVERS CLUBSAVERS, CONCERTSAVERS

Chordsavers (www.chordsavers.com) expands its product line of cable-management systems with its new ClubSaver and ConcertSaver products for commercial audio use. Designed to prevent tripping hazards or cable damage when audio lines are run along floors, these products are made of high-impact vinyl, with black bases and yellow safety caps for visibility. The ClubSaver is 5⅜ inches wide and can contain a single 1-inch snake cable and numerous other lines. The 6⅜-inch-wide ConcertSaver has the capacity for two 1-inch snakes and other lines.

YAMAHA PM5DV2

Version 2 of Yamaha's (www.yamahaca.com) PM5D digital mixer, the PM5DV2 features Virtual Soundcheck, with easy switching between live inputs and outputs from a multitrack recorder for band-less rehearsals. Also in V. 2 is an expanded effects library with de-esser, VCM (Virtual Circuitry Modeling), analog-modeled compressors and EQs, and OpenDeck tape simulation. Other enhancements include Load Lock to prevent internal data from being overwritten.

JBL VRX932LAP POWERED LINE ARRAY

Using the DrivePack® DPC-2 amplification system, the VRX932LAP two-way, 12-inch line array and the VRX918SP 18-inch subwoofer from JBL (www.jblpro.com) are fully self-contained powered systems. The two models retain all of the features of the original VRX932LA and VRX918S, while self-powered performance has been optimized through integrated DSP. Designed for use in arrays of up to five units, the VRX932LAP is suitable when line array performance is needed but the venue size does not require large, long-throw line arrays. The VRX932LAPs are flyable, and can be used on a tripod or pole-mounted over a sub.

ALLEN & HEATH ILIVE-80

Allen & Heath's (www.allen-heath.com) iLive-80 is the smallest of the four control surfaces for its iLive digital mixing console system. Designed for smaller applications such as live theater, houses of worship and touring bands, the unit has 20 faders, each with four banks that provide access to up to 80 channels, with a multicolor, backlit LCD above each fader for labeling and color-coding channel data. A color LCD touchscreen provides access to dynamics/EQ/effects/automation and setup screens.

RENKUS-HEINZ VERSYS VL3

The first line array system with the fully integrated RHAON (Renkus-Heinz Audio Operations Network) package, the Renkus-Heinz (www.renkus-heinz.com) VERSYS VL3 has a truck pack–friendly design. It includes the RHAON in-cabinet PM3R Class-D tri-amplifier, full digital dynamics and networked audio over CobraNet, as well as loudspeaker monitoring and remote control—all delivered over a single Cat-5 cable to each loudspeaker. The three-way VL3 system incorporates dual 12-inch neodymium woofers and dual custom-designed CDT-1.5V CoEntrant MF/HF devices with 6.5-inch cone mids and 1.5-inch exit/3-inch diaphragm HF units. The CoEntrant MF/HF device is mounted on a compound phase plug attached to an Isophasic Plane Wave Generator offering 60/90/120-degree horizontal dispersion. ■

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Real Gear. Real People.

BY EDDIE CILETTI

Bring Back the Good Ol' Days

Is Craftsmanship a Magic Illusion or a Lost Art?

Craftsmanship typically comes to mind when describing the work involved with creating a physical object—such as how a luthier fashions a fine musical instrument. By extension, craftsmanship also applies to the work *we* do—the arts *and* the sciences. Modern technology may not survive the centuries like a Stradivarius, but it is remarkable in the short term.

When I think about how our industry simultaneously embraces vacuum tubes and microprocessors, I can't help but admire the ancients and their first crude tools. Step by step, humans have evolved and progressed, using each simple tool to make a better one. We like to imagine people like Georg Neumann or Bill Putnam sitting at their humble lab benches using mostly their ears and crude tools (by modern standards) to breathe life into their most enduring works of art.

Despite the capabilities of *our* most sophisticated tools, we currently lack the ability to fully analyze a "simple" signal transformer—a key component to classic gear. The same is true for the analytical tests used to evaluate audio gear. Two products can measure in much the same way as each other, yet one sounds better than the other. But I'm getting ahead of my list of things to explore in 2008.

THE "F" WORD

Just like a great song begins with a flash of inspiration, that—plus countless hours of hard work—went into every remarkable piece of equipment we use. Chris Jenrick, aka "CJ" of www.prodigy-pro.com, interviewed Rein Narma a few years ago. Narma's name may not be familiar to you, although he was inducted into the Mix Foundation's TECnology Hall of Fame during this year's AES show. He designed what was to become one of the most popular compressor/limiters—in his basement—before bringing the prototype to Fairchild.

At the time, Narma (who is now 86) felt there were no signal processors that did justice to music. "Most were like using a hammer and chisel when they should have been using a scalpel," said the inventor of the Fairchild 660. He designed the front panel, wrote the instruction manual and assembled the first 10 units. It's kinda funny when you think about how signal processing is currently used/abused—so much of pop music is being smashed within an inch of its life. (It's not a new problem.)

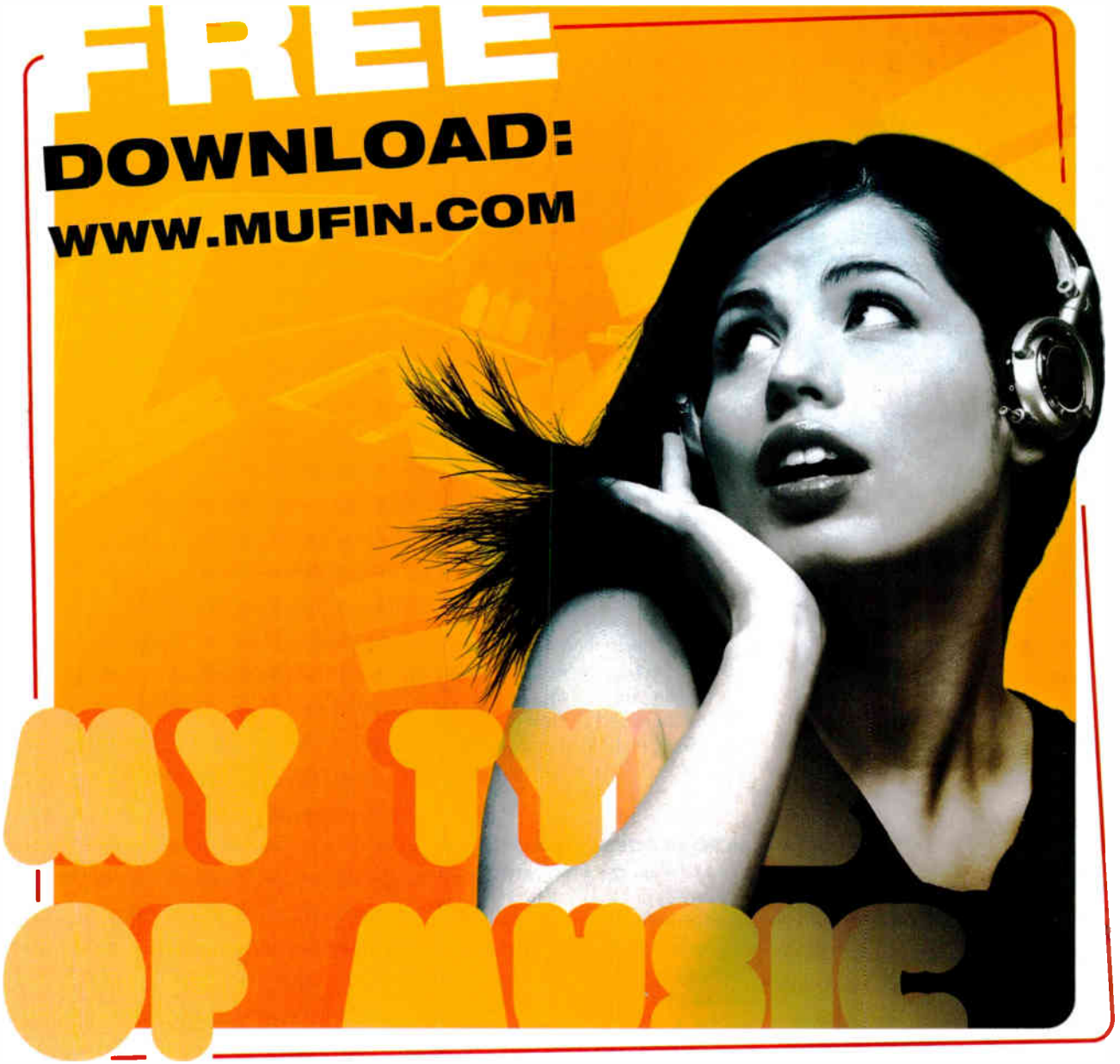
If imitation is the highest form of flattery, then the R&D of Neumann, Putnam, Narma and countless others is still paying off, although not necessarily for the creators. That production of their classics was dropped in favor of "progress" eventually made "us," as an industry, appreciate what was missing. Certainly, the response to fill that void has been overwhelming, with a surprising increase of vintage/boutique/niche equipment specialists and manufacturers existing in the void created by the Harvard Business School mindset.

FLIP OF THE COIN

By contrast, I know a handful of tenacious geeks—modern masters—who embody the philosophy of that old phrase: "The quality goes in before the name goes on." I had the recent pleasure of interviewing a few of them; their work, knowledge and opinions ring true for me and their customers. I've distilled the essence of those conversations into this column. The full interviews will be included with the online version of this column at www.mixonline.com.

I recently visited David Hill's Crane Song facilities in Superior, Wis. His lab, machine shop, offices and Inland Sea Recording Studio are located in the century-old main building. Gear production is in a nearby building. Hill lives within walking distance of his shop—keep in mind that winters can be cold in the land of the Edmund Fitzgerald. He does sessions four days a week to evaluate his works-in-progress, occasionally stopping the session to make tweaks.

Hill is a man of many disciplines, and while he's not alone in this category his integrated facility is remarkable in many ways. He designed his studio and control room, including a 5.1 monitor system, its crossovers and the monitor controller. With the exception



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of a few Neve channels and his modified Spectrasonics console, all of the preamps and signal processing in the control room are Crane Song products. Hill built a computer-controlled interface for his milling machine. (It makes front panels and other needed hardware.) Crane Song products are made almost entirely in-house, one of the rare boutique manufacturers with its own pick-and-place, surface-mount fabrication machine.

THE BIG MUDDY

Closer to home is Dan Kennedy's Great River Electronics lab and production facility here in Minnesota. I love being able to say Kennedy is my "neighbor"—his home and his shop are 15 minutes from mine.

Like Crane Song, Great River products are crafted entirely in-house with the exception of the chassis and front panel. The company's most recent hit is its NV Series (vintage Neve) preamp in a double-wide API 500 Series module. Kennedy has built quite a few microphones, tests his gear at a nearby studio in which he is a partner and has an impressive vinyl collection. With his business partner and programmer, Dennis Pfab, the company also does industrial control and communications products.

MICRO-ACOUSTIC ENGINEERS

About 10 years ago, I was handed a pristine (unopened, unused) Telefunken U47 with a bad capsule. I spoke at length with the late Stephen Paul, who was the authority on microphones and capsule tweaks. Paul was an extremely chatty guy, very helpful—he wrote a brilliant article (reprinted at www.mixguides.com) about how the U47 grille contributed to its signature frequency response. I wanted him to re-skin the capsule, but when he would only do the entire job I got up the courage to ask kindergarten-level questions to people like David Josephson (at Josephson Engineering) and Russ Hamm (then of G-Prime and formerly of Gotham Audio). Hamm wrote the famous "Tubes vs. Transistors" treatise back in the early '70s.

Josephson's response to a question I asked about microphone design is applicable to, and in concert with, what all of these hardworking engineers have in common. He said, "Don't focus too hard on what you can see on the outside of a microphone. The details you can see may—or may not—be more important than the details you can't"—a philosophy worth being tattooed on a body part. Josephson Engineering manufactures microphones and capsules from the brass up.

Speaking of what you can't see, Klaus Heyne's intimate knowledge of the history and production variations that contribute to a microphone's sound is impressive and absorbing. Perhaps most well-known for his Mic Lab at www.prosoundweb.com, this first-rate resource—about what makes classic mics tick—is reason enough why he is booked months in advance. Doing business as German Masterworks, Heyne (pronounced "Hyna") goes beyond "simple" mic restoration and into the realm of customization, optimizing a microphone to complement its owner.

MESSAGE BOARDS

So many people are clamoring for "precise" information about what constitutes the best version of a product, or what parts might be required to make an exact clone (and other plans of world domination). Richard Hess, who primarily does tape restoration (and all related things) moderates a Sony/MCI mail list that I subscribe to. I often find myself on message boards moderated by Heyne and Oliver Archut. What I like about all of these guys is the positive, patient and authoritative (but not arrogant) way they answer questions.

COMMON GROUND

All of these gentle geeks have several things in common, the most obvious of which is being very generous with their time and knowledge. Hess and Josephson are on AES standards committees for their respective interests. Hill commented to me that he'd like to see a word clock termination standard. Heyne lives in Oregon and enjoys the outdoors, playing music and repairing his son's toys. Kennedy lives on a houseboat year-round on the Mississippi. He has been known to take his house (and friends) on tours of "the great river."

Even though this article focused on vintage-inspired technology—which is often simpler—the products are designed, repaired and restored with a Renaissance artisan's approach. As end-users, we can make a similar claim. When the studio or live sound customer walks away happy and we can make it look effortless, it's because somewhere in the timeline of experience, the dues were paid and the skill set investment was made. The result gives the illusion of magic—in a word, craftsmanship—and it's both art and science. ■

Eddie spent recent months introducing his two boys, Luca and Justin, to Harry Potter.

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MIX BOOKS

Tools of the Trade

M-AUDIO IE-40 EARPHONES

Good things come in threes when it comes to in-ear listening devices from M-Audio (www.m-audio.com). The company's IE-40 ($499.95) high-definition professional reference earphones feature Ultimate Ears™ triple-driver technology and an audio crossover-network, routing-specific bandwidth to the appropriate high, mid- or low-frequency drivers. The earphones provide 26 dB of sound isolation and include a universal-fit kit featuring an assortment of foam and silicone tips, letting users customize the fit to ensure optimal isolation and comfort. Also included is a replaceable 46-inch cable, shapeable over-ear loops to help prevent cable snags, a ¼-inch adapter, protective metal carrying case, flexible attenuator/limiter, cleaning tool and user guide.

API MODEL 1608 CONSOLE

Building on the reputation of the 1604 console, API (www.apiaudio.com) has released the Model 1608, which uses the legacy 2520 circuitry and boasts the same standards as the API Vision and Legacy consoles. The desk has 16 548B inputs with 312 mic pre/line inputs and direct output; it also includes 12 550A 3-band equalizers and four 560 10-band graphic EQ modules.

The center section offers 5.1 monitoring and has space for up to eight additional 500 Series modules. Other features include comprehensive VU metering, rear-connector patching, eight additional inputs designated as effects returns and moving-fader automation as a future option. A fully fitted 16-channel console starts at $49,900, with a 16-channel expander option for $39,900.

GENELEC SE DSP MONITORING

If you have a small room with acoustic problems, then you'll want to check out Genelec's (www.genelec.com) SE™ (Small Environment) DSP Monitoring System ($TBA). This group of products offers a 24-bit/192kHz digital audio interface, and combines the SE7261A 10-inch DSP subwoofer with 8130A digital input active monitors (5-inch bass drivers and ¾-inch tweeters) for easy configuration as a sub-assisted stereo or multichannel reference system. Software control is achieved with the SE7261A DSP subwoofer providing all necessary network connections to the host computer and supplying extensive DSP resources through its highpass AES digital outputs to the 8130As. Also included is the AutoCal GLM SE software, providing a graphic interface to help speed users through system setup and complete acoustic calibration. The sub features 8-channel AES/EBU bass management, four notch filters, bass roll-off applied to sub channels and AutoPhase sub integration.

ANAMOD ANALOG PLUG-IN CARDS

AnaMod Audio's (www.anamodaudio.com) ATS-1 ($2,995)—the box that's a great pretender when it comes to analog tape emulation—now offers two new user-installable cards that imitate the Ampex 351 tape machine and Scotch 111 tape. The ATS-1 now offers four cards total and controls for simulating various hardware tape–type functions such as record, machine type, tape formulation, speed (7.5, 15, 30 ips), bias, LF record, HF repro and hiss.

LACHAPELL AUDIO 583S PREAMP

The Model 583s ($1,249) tube input stage from LaChapell (www.lachapellaudio.com) is offered in the "lunchbox" format and is based on its 992EG platform in single-ended form, coupled with high-quality Burr-Brown and THAT Corporation output drivers. The unit delivers >70 dB of gain with a typical non-weighted EIN

of -120 dB referencing a 150-ohm load. Equipped with a 12AX7/ECC83 tube and having a frequency response of 12-70k Hz, the 583s uses the Cinemag CMMI-10 or the optional Jensen JT-115k input transformer, and has a max output of >26 dBu. The well-laid-out, anodized front panel offers controls for input and output gain, phantom power, -20dB pad, polarity and hi-Z/lo-Z input.

MOTU MACHFIVE VERSION 2

MOTU's (www.motu.com) MachFive universal sampler instrument gets a major upgrade with new features such as 32 GB of included sounds, unlimited parts per instance, a new graphics engine, full-screen editing and programming, a new modular synthesis architecture, keygroup layering with rule-based switching, sample time-stretching, unlimited multi-point envelopes, stand-alone operation and more. MachFive 2 opens and reads all major sampler library and audio file formats directly, with no conversion necessary. The LoopLab groove slice engine lets users edit REX, ACID, UFS and Apple Loops, or create their own by simply dropping the loop into the Lab for instant slicing and tempo find/set. The new graphic mixer features faders, effects slots, metering and unlimited channels. For bending and shaping, there are 47 real-time effects, from multiband graphic EQ and convolution reverb to tape delays to amp simulators to exciters to vinyl effects. MachFive Version 2 is $495 new or available as a $195 upgrade from V. 1.

URS MOTORCITY/ VINTAGE CINEMA EQUALIZERS

These two EQ plug-ins from URS (www.ursplugins.com) re-create the legendary 7-band passive equalizers used by Motown staff engineers during the '60s and '70s and the 6-band passive EQs used for film and professional cinema in the 1930s. The MotorCity EQ offers proportional Q, a feature where small boost/cuts will have a very broad Q and greater boost/cuts will have a narrower Q, while the Vintage Cinema Equalizer offers six bands at 80/200/500/1.25k/3.2k/8k Hz. Expanding on the original design, the Cinema EQ also offers a seventh band at 16 kHz. When both plug-ins are used together, the frequencies overlap for a total of 14 bands. The $499.99 TDM license includes TDM/RTAS for Power PC and Intel Mac OS X, with Audio Units, VST, Windows XP and Vista support coming soon.

RME OCTAMIC II PREAMP

Boasting a new electronic design upgraded from the OctaMic and OctaMic D preamps, the RME (www.rme-audio.com) OctaMic II ($1,799) offers eight channels of mic and line preamplification, eight TRS balanced line outs, eight AES/EBU digital outs operating up to 24-bit/192kHz on D-Sub, two ADAT outputs (S/MUX, up to 96 kHz) and an AES-S/PDIF sync input. Other features include balanced combo XLR/TRS inputs, switchable phantom power on each channel and a low-cut filter. Additionally, the unit offers improved heat dissipation due to its larger housing with improved convection, as well as a choice of sync sources, including internal clock, AES-S/PDIF (via 25-pin D-sub) or word clock.

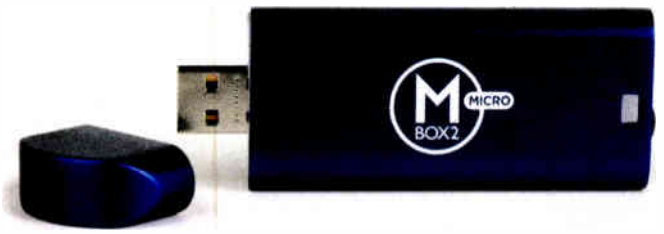
EVENTIDE E-CONTROL

Eventide's (www.eventide.com) E-Control provides real-time control of the company's H8000 Series, H7600 and Eclipse hardware multi-effects processors. The plug-in gives new legs to great-sounding outboard gear users may have sitting in their racks by providing multiple parameter control automation and program change capability within Pro Tools. It is available new for $199 or free if a H8000FW, H7600 or Eclipse hardware processor was purchased after September 1, 2007.

PRESONUS ADL 700

The ADL 700 from PreSonus (www.presonus.com) is a single-channel, Class-A

tube preamp/compressor/EQ developed in partnership with Anthony DeMaria and manufactured by PreSonus. This all-discrete, high-voltage, Class-A channel strip is based on the ADL 600 2-channel tube preamp. It features instrument, line and microphone inputs with selectable input impedance, high gain and highpass filter. The compressor stage is a discrete, FET-based VCA compressor with variable threshold, ratio, attack, release and make-up gain, while the EQ is a discrete, Class-A, 4-band parametric EQ with switchable high/low Q.



DIGIDESIGN MBOX 2 MICRO

Perfect for Pro Toolers on the go, the Mbox 2 Micro ($279) from Digidesign (www.digidesign.com) is a pocket-sized Pro Tools LE system no bigger than a typical USB Flash drive. Compatible with sessions produced in Pro Tools HD, Pro Tools LE or Pro Tools M-Powered systems, the Mbox 2 Micro features a rugged, compact, anodized aluminum case; ⅛-inch stereo output jack supporting up to 24-bit/48kHz audio playback; and a volume wheel. It comes bundled with Pro Tools LE software, a collection of more than 45 Bomb Factory and DigiRack effects plug-ins, and Digidesign's Xpand! sample playback/synthesis workstation.

CEDAR CAMBRIDGE SERVER

Aimed at high-end users and post-production houses wanting control over their audio archives and libraries, the CEDAR (dist. by Independent Audio, www.independentaudio.com) Cambridge Server ($9,420) is a combination of four elements: the Cambridge Server Pack software, Cambridge V. 5 software core, Cambridge "Q" quad-core server-grade host PC and any combination of CEDAR Cambridge audio processes the user desires. The Server Pack offers print server–style batch processing, locally and across a network, and background processing using multiple instances of CEDAR simultaneously. The Cambridge V. 5 software core adds an audio recorder with BEXT metadata handling and editing to every CEDAR Cambridge system.

FOCUSRITE LIQUID4PRE

This 4-channel mic preamp from Focusrite (www.focusrite.com) marries an analog front end with dynamic convolution DSP, outputting the sounds of 40 vintage and classic preamps across all four channels. Digitally controlled and remotely controllable over Ethernet via dedicated Liquid4Control software, Liquid4Pre ($3,499.99) offers 99 setup memory slots and total recall of every parameter. A Pro Tools TDM/RTAS plug-in allows integrated remote control via Pro Tools and ICON/VENUE systems. A harmonic-distortion circuit accounts for variance in the vintage originals, while Session Saver—an AGC circuit—intelligently reduces the input level to help avoid critical overs. Every channel has independent controls for highpass filter, phantom power and polarity reverse. Also on the front are four screens displaying VU meters and other information. AES and ADAT optical digital I/Os are provided as is an optional EtherSound 8-channel card.

DACS HEADLITE 2 HEADPHONE AMP

Digital Audio and Computer Systems' (DACS, www.dacs-audio.com) HeadLite 2 ($TBA) headphone amp is a 4-in/4-out unit with input selection for each amplifier and the ability to drive any impedance headphone to its maximum output level without distortion. Input sensitivity is variable; other features include conductive plastic pots and a balanced input option using the THAT InGenius IC. Outputs for each channel appear on the front and rear, and it can drive long lines to headphone outlets in remote rooms. Users can select from the four inputs (A, B, C and D) to hear A and B, or C and D as stereo and A, B, C or D as mono.

VOVOX DIGITAL CABLES

New to the digital cable arena, Switzerland's Vovox (www.vovox.com) has released a hat trick of digital connectivity in the unbalanced Vovox Link Protect AD (75 ohms), the balanced Vovox Link Direct SD (110 ohms) and the 8-channel cable Vovox Mucolink Direct SD (110 ohms; prices TBA). The cables are available in lengths ranging from 3 to 33 feet, and offer either gold-plated RCA, BNC or XLR Neutrik connectors. Like all other Vovox multichannel cables, Mucolink direct SD is assembled according to the customer's requirements. ■

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BY JIM AIKIN

Propellerhead Software Reason 4

Improved Music Workstation With Arpeggiator, 'Polysonic' Synth

If you'd rather record all-electronic instrumentals than eat or sleep, then the release of Reason 4 ($499, $129 upgrade) will make your life complete. Propellerhead's flagship workstation has been beefed up with an amazing new synthesizer, a redesigned and much-improved sequencer, a multichannel groove engine and other enhancements.

I've used Reason often in the past, both as a ReWire client and for complete pieces of music. The new version is destined to become a mainstay in my software arsenal. Yet Reason 4 remains maddeningly insular. It still has no audio inputs, lacks audio tracks and won't host third-party plug-in synths or effects. A ReWire host DAW can add the audio tracks and plug-ins, but when you ReWire Reason to a DAW, your projects will be stored in two separate files, which means a bit of extra housekeeping.

IN A NUTSHELL

Reason provides an open-ended rack of synths and effects, which are tightly integrated with a MIDI sequencer. The synths include an old-school analog type; an unusual, exotic-sounding granular instrument; a full-featured multi-sampler; a REX file player; a 10-channel drum sample player; and now Thor, which is semimodular and provides several types of synthesis. Reason's effects are fairly standard: A highly programmable reverb, a versatile distortion processor, a suite of mastering effects and a vocoder head the list. Also on tap are a step sequencer and a new arpeggiator. Groups of devices can be tucked away in a shell called a Combinator, which makes it easy to store and recall complex signal chains.

Reason's devices can be patched to one another using "rear panel patch cords." This turns the rack into a fully modular sound design environment, allowing me to create complex effects. For example, Reason lacks a stereo delay line, so I'll tuck two or three DDL-1 delay modules in a Combinator with a line mixer, and perhaps add a Scream distortion unit or PEQ-2 parametric equalizer patched into a delay feedback loop to focus the echoes in one frequency range.

The program's user interface is elegant, and the included sound library is versatile. Reason is strongest in dance and other pop music styles, but including tempo and time-signature changes in Version 4 is sure to grab film composers' attention.

MEET THOR

To get my session running, I easily installed Reason from my DVD drive using only a serial-number entry. Within minutes, I had created a Thor "polysonic" synthesizer and was drooling over its hundreds of factory presets. Most of the sounds I loaded were inspiring.

Thor boasts multiple oscillator and filter types, a deep modulation matrix and a step sequencer. The main sequencer is visible in the lower pane.

But there's more to life than factory presets. Thor has three oscillator and three filter slots able to hold six oscillator modules and four filter modules, plus four envelopes, two LFOs, its own delay and chorus effects, and a basic 16-step sequencer. Missing from Thor's tool chest are multisegment envelopes. Propellerhead's strong preference for putting all functions on the front panel limits envelopes to ADSR, or at, most, the DAHDSR (Delay, Attack, Hold, Decay, Sustain, Release) provided as Thor's global envelope. However, adding multisegment loops using automation is easy.

For each oscillator, you can choose analog, wavetable, phase modulation (inspired by the Casio CZ Series synths), an FM carrier/modulator pair, a Multi Osc—in which several waves are detuned from one another by a controllable amount—or a noise generator. I was soon developing my own patches. (To hear a patch I created using band-limited noise and AM, go to www.mixonline.com and download HauntedHalls.mp3 from Mix Media.)

The formant filter sounds great and is very playable thanks to a mousable X/Y pad and a gender knob. Positioned between the filters is a waveshaper, and the routing of signals from oscillators through filters and shapers is quite flexible. For one patch, I routed a pair of sawtooth waves (rich in overtones) through a formant filter whose X and Y axes were being modulated by separate envelopes. I waveshaped the result using the soft-clip setting to add some filth and then dialed back the highs by sending the waveshaper's output through a lowpass filter. I just about couldn't stop programming sounds long enough to finish writing this review!

Adding to Thor's power is a modulation matrix. The possible matrix inputs include not only the expected envelopes and LFOs, but also MIDI controllers and audio rate signals. With the latter, you can do FM between one oscillator and another. I tried sweeping a self-oscillating lowpass filter for that classic Minimoog side-bands effect. By using any of the four audio inputs on the

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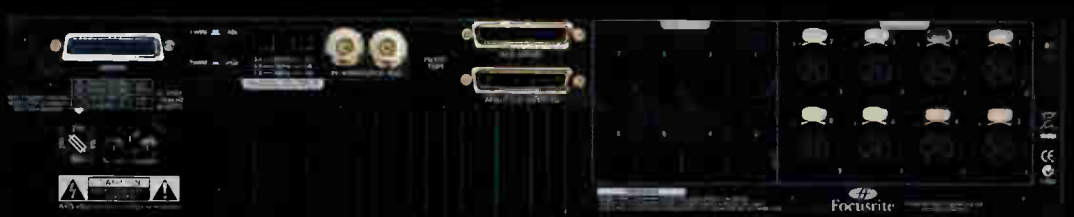

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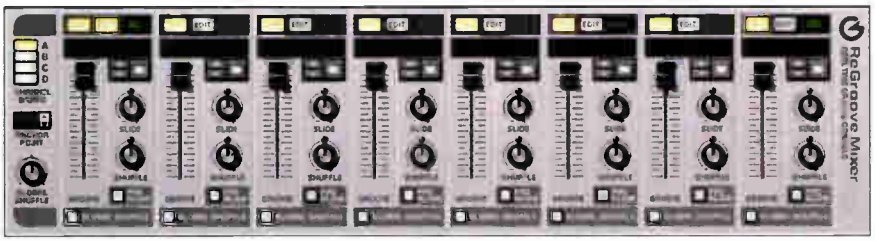
back panel, you can route an external signal from another Reason module through Thor's filters or use the signal to FM an oscillator. To test this, I routed a Dr. REX beat to two oscillators to produce a grinding percussion groove, which I processed through a pair of formant filters. The possibilities are limitless.

Thor's rear panel control I/O goes further than any other Reason device. Four general-purpose CV I/Os are provided, as are ins and outs from Thor's internal step sequencer. I used these to create a complex step-sequence pattern using the step sequencers in two Thors to drive a single oscillator's pitch.

SEQUENCER HAPPY

Judging from the user forums, some existing Reason users don't care for the new sequencer. My advice: Read the manual. Many things have changed, but the sequencer is better.



Groove depth, slide and shuffle are all instantly available on Reason's ReGroove mixer. Each of the 32 groove channels can be assigned its own groove template.

Data is now recorded into clips, and a new razorblade tool can be used for slicing clips apart. Parameter automation is now vector-based and edited by dragging the breakpoints on standard multisegment envelopes. The default value of automated parameters is now adjustable, a detail that longtime Reason users will appreciate.

Each Reason device is now limited to a single sequencer track, but a single track can have as many "lanes" as you like. Lanes can be separately muted and unmuted, and given their own names, as can individual clips. This offers some convenient ways of overdubbing.

Tempo and time-signature changes can be inserted in a dedicated transport track. Reason has no hit points for aligning meter time with SMPTE time, but because you'd need a host DAW to view video, this may not be a real issue. Pattern-based devices such as Redrum and Matrix start over at the top of their current pattern when a time signature event is encountered so you can reinsert 4/4 at any point to keep patterns lined up after an odd-length phrase.

A floating Tools palette provides quick access to edit processes, including quantization, transpose, velocity and note-length processing, and legato overlap. And when an event is selected, its data values can be edited in an Inspector strip that runs along the top of the window.

GET INTO THE GROOVE

ReGroove takes the idea of groove templates to a whole new level. Reason gives you 32 channels of groove and a bunch of groove presets with which to work. Naturally, you can also create and save your

own grooves. Each lane in each note track can be routed through any of the 32 groove channels.

Each groove channel has a master slider with which you control how gently or mercilessly the template is applied to incoming notes. Knobs for shuffle and time offset are also found in each channel. In the Tools palette, you can separately adjust the amount of effect on timing, velocity, note length and random timing in each channel. The master slider in the channel area attenuates these four controls. And because the track data is not being altered, groove changes are undoable.

I tried out some of the grooves by recording a few bars of straight 16th-note hi-hat. Subtle amounts of ReGroove added a lifelike quality, while larger amounts sounded jerky or bizarre. I doubt I'll use ReGroove much unless I'm adding shuffle to individual lanes, but hip hop producers may find it indispensable for that off-center vibe. Listening to the grooves is the only way to find out what's in them: The data can't be inspected and the manual gives few details beyond noting that some of them were created by analyzing the feel of the Akai MPC60 or the rhythms on classic hit records from the days of vinyl.

THE UPGRADES CONTINUE

The Combinator programmer has been enhanced with a transposition parameter and filters for MIDI controllers, both of which assist in setting up playable layered instruments. All of the synth-type modules now have CV inputs for the mod wheel and pitch bender, which makes it easier for the new RPG-8 arpeggiator to throughput these types of data.

The arpeggiator has a few modes that go beyond up/down, as played and random. Its note output can be rendered to a track for editing. A row of buttons can be activated to produce rests in a pattern up to 16 steps long—and these buttons can be automated, which adds considerably to the arpeggiator's power as an ostinato generator. The arpeggiator is also handy as a MIDI-to-CV converter, as its mod wheel, pitch-bend, after-touch, expression (CC 11) and breath controller (CC 2) output jacks can be patched to any CV input in Reason. Even so, I'm disappointed that it's monophonic. Arpeggiators that can be programmed with chord steps are common these days and Propellerhead missed a beat here. Sometimes, *not* changing the software is just as important. I loaded a song I had recorded last year using Cubase SX 3 and Reason 3 (via ReWire) into Cubase 4 and Reason 4. It sounded exactly the same.

THE VOICE OF REASON

Thor moves easily into my Top Five list of favorite soft synths, and the improved sequencer and new arpeggiator make Reason 4 a winner. However, the sequencer's user interface could be refined further. For instance, using the horizontal zoom-in button zooms in on the center of the displayed area, which can cause the playback point to slide out of view. And the click output is either on or off; there's still no "click only during record" option. And I miss some of Cubase's amenities, such as hearing a note when I click and drag on it in the track.

All that said, the old Reason sequencer was sorely in need of retooling, and Propellerhead has done a good job in updating it. For almost anyone who makes electronic music, from the serious student to the uptown studio pro, Reason 4 is too good to miss.

Propellerhead Software, dist. by Line 6, 818/575-3600, www.propellerheads.se. ■

Jim Aikin is a regular Mix *contributor.*

BY BOBBY FRASIER

Audient Black Series Vertical Rack Processor

Silky-Sounding Modular Unit With EQs, Preamps, Comps or ADC

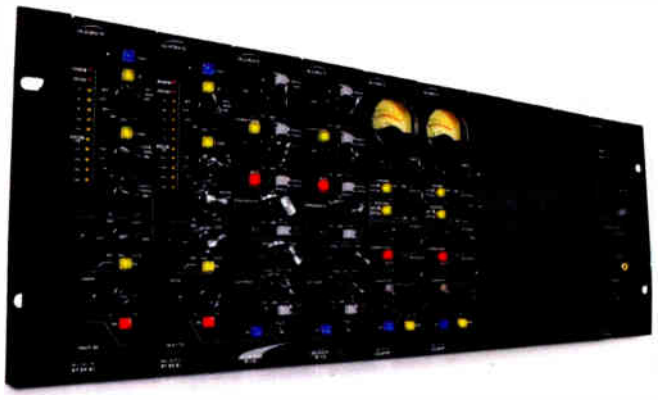
For those of you who are unfamiliar with the Audient name, it originated with the founding partners of the DDA console line—David Dearden and Gareth Davies. Carrying this legacy of analog mixers, Audient was formed in 1997, and currently produces the ASP8024 and ACS8024 recording consoles, and additional outboard gear, as well as the new Black Series modular processors.

The Black Series units offer the recording and mix engineer some interesting new possibilities for tone shaping at the point of capture and during mixdown using discrete, Class-A, transformer-coupled circuitry.

CONFIGURE TO YOUR LIKING

Much like the vertical rack systems from API, Tonelux and A-Designs, Audient's Black Series components can be configured for specific applications. My test unit comprised the Black Rack BR-10, which can house up to 10 modules; two Black Pre mic preamplifiers; two Black Comp compressors; two Black EQ 4-band equalizers; one Black ADC A/D converter; and the PSU, a very hefty, 2U rackmount external power supply. A master word clock generator is also available. The 4U system is physically larger than the API form factor; the modules are wider and taller. This extra real estate gives Audient more room to drop in a few more features.

The BR-10's mechanical design element is quite clever. Each "bay" has two XLR inputs and an XLR output on the back for whichever module is inserted in that bay, regardless of the given module's I/O configuration. A diagram at the bottom of the rack illustrates how these connectors relate to a given module. The rack also allows the internal distribution of word clock, if you happen to use more than one ADC module. (A total of 10 ADC modules can be installed.) If you use more than one compressor, simply mount them side-by-side, and the internal wiring takes care of running them as a linked stereo pair, LCRS, 5.1, 6.1 or even as a 7.1 multichannel configuration. Slots 1 through 8 provide this linking, while slots 9 and 10 use a separate bus. You also get two 25-pin D-sub connectors for wiring inputs and outputs to the first eight modules.



FADE TO BLACK

I ran all four modules through their paces on several different tracking sessions. Starting with the Black Pre, you'll find all the usual features, plus some interesting additions: 48-volt phantom power, phase, mic gain (in 10dB steps), line gain (in 5dB steps), gain trim (which can be fine-tuned by 10 dB via a variable pot), variable highpass filter (30 to 225 Hz), DI input and a really nice 12-segment LED that measures analog output level relative to 0 dBFS (+18 dBu).

The HMX control is something you don't see every day. It's described by Audient as "another solid-state triode gain stage configured to enhance low-order harmonics." I used the HMX control on male voice, saxophone, percussion and guitar, and found that its performance depends on the source material. It sounded great on the sax, producing a rich, thick quality that separated it from the other instruments. On the other hand, this particular male vocal sounded a bit muddy with the HMX in the circuit.

Using the Black Pre was a joy. It has precise controls and an accurate meter, and offers plenty of gain, even with a ribbon mic. This preamp sounded exceptional when paired with a Shure SM7, AKG C 451B and a beyerdynamic M160N—clean, with no apparent added noise floor. I also used it with two Blue Microphones Bottle mics employed as drum overheads. Its realism, punch and transparency were remarkable.

IT'S CRUNCH TIME

The Black Comp works a little differently from most conventional compressors. There is an input attenuation and output gain control that, when used together, provide your threshold settings; there is no conventional threshold control. Audient states that the Comp has a fixed threshold of -20 dBu; with a higher input attenuation, you effectively have a higher effective threshold. This seems to work just fine, but I had to get used to it. A VU meter shows output level or gain reduction, and it worked just as it should. The Black Comp's controls perform as you'd expect and were easy to use with attack, release and ratio, each offering six variations.

The Black Comp sounded exceptional on the Blue Bottle overheads. I squished the signal *way* down and then brought it up against the rest of the kit, and it produced cannons in the room—huge. Then I pulled all of the drum kit mics out of the mix and just listened to the overheads, using a much more conservative setting on the Comp, and it sounded as if that's all that was necessary.

The Overcomp button applies a preset compressor to the signal before the main compressor. This sounded best when crunching down high-gain guitars and on the Blue Bottles, but it wasn't so subtle on the sax or acoustic guitars. The Smooth button uses average and peak detection simultaneously. This worked well on acoustic guitars, taking the edge off the pick attacks (you know how those coated strings can get) while keeping the body forward in the mix.

TONE SCULPTING

I found the Black EQ to be very musical and its preset buttons—Air, Overtone and Glo—to be quite usable. To start off, the high shelf has a selectable shelving point of 8 kHz or Air, ±15 dB. The Air setting gave a high-frequency sheen to vocals, cymbals, saxophones and acoustic guitars. I found that I was using it quite sparingly and usually switched over to the 8kHz setting, with just a touch of boost to add a little sparkle or cut to alleviate string noise. The low-frequency shelf has ±15 dB of gain at selectable shelf points of 100 Hz and 50 Hz. The Overtone preset adds "har-

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monic enhancement" to the low-frequency band, and it's proportional to the amount of LF cut/boost. This added just enough body to a baritone sax, but it was too much for acoustic guitar. Glo boosts and then compresses just the low end. This added percussion to an otherwise snappy kick drum. When I applied Glo, the drum sounded as if it were moving more air. Glo was not the right choice for the male vocalist, however. That's the beauty of this EQ: It's flexible and offers lots of choices for many different sources.

The Presence control is a fixed-bell curve, with center points at 1.5 or 3 kHz. Gain range is ±15 dB. The Presence Shape allows you to have either a broadband boost and narrow cut (the out position) or cut/boost over the same bandwidth (the in position). I found the Presence controls to be effective in popping out vocals and acoustic guitars, and dipping out some annoying high-gain guitars.

CONVERT ME

The ADC module is a great idea that is well executed. This is the piece of the puzzle that makes this rack system a great front end for your DAW, whether you have a portable or studio rig. Using an AKM 24-bit/192kHz chipset, you get the option of internal clocking, clocking off the optional master clock module or external clocking via the BNC input on the back. A 12-segment LED ladder on the front panel shows metering, along with an LED indicator for your selected sample rate. A Lock indicator rounds out your light show.

The ADC's back panel has L/R XLR inputs, along with an AES XLR output. There are additional optical, co-ax and AES/EBU outputs on the front. These converters sounded very natural during several recordings of female and male vocals, and acoustic guitar (mostly at 88.2 kHz) using a Neumann KMS 105 and an Apex 460 through the Black Series' signal chain into Pro Tools. There were no spikes or resonances at any given frequency, and no apparent "edge" in the spectrum's upper range. If anything, the ADC projects a feeling of warmth and power, particularly in the acoustic guitar's bass frequencies.

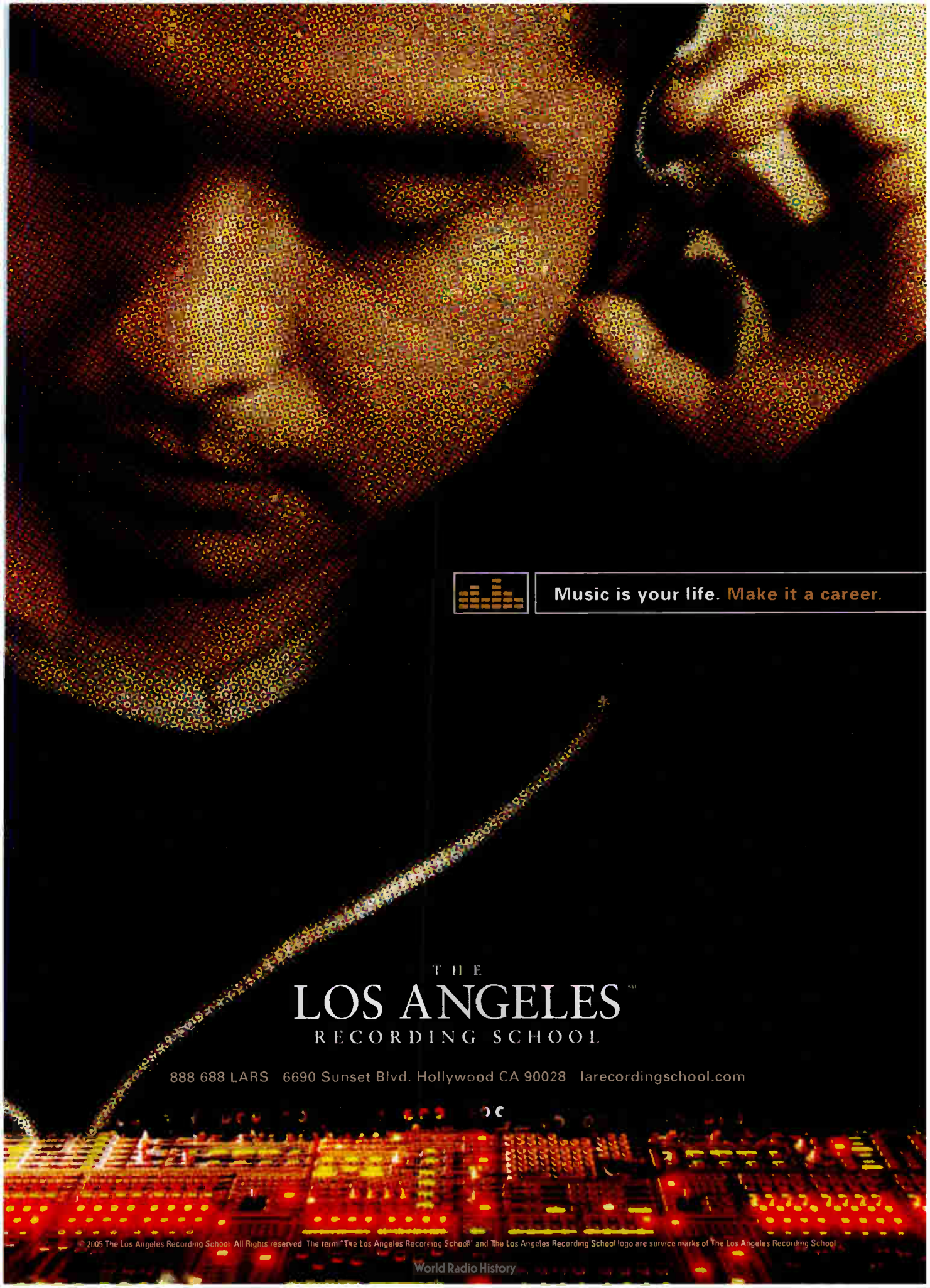
IN MY DREAMS

I'm dreaming of having three Black Series racks: one loaded with eight mic pre's, another with eight EQs and two ADCs, and another with eight compressors and two ADCs. This would provide six channels of 5.1 surround sound tracking with two extra preamps for spot mics and eight digital outputs. Each Black Series rack unit measures six rackspaces (including the two-rackspace PSU), which would make for a bit of a load-in on a remote project, but the effort would be well worth it. For an easy load-in, I would probably put this "dream rig" into three separate 6U racks.

I would recommend any individual Black Series component by itself, but as a system it's fantastic as the front end of a DAW. The mic pre's are natural, the EQ is quite musical, the compressor is variable from transparent to "squish" settings, and the ADC sounds smooth. This is a quality kit with lots of flexibility and a great sound. Prices: BR-10, $950; Black Pre/EQ/Comp/ADC, $700 each.

Audient, dist. by CW Sales & Marketing, 909/948-0997, www.cwsalesandmarketing.com, www.audient.co.uk. ■

Bobby Frasier is an engineer and audio consultant.



BY ANDREW MENDELSON

Dangerous Music Master

Precision Unit Features M/S Mix Processing, Pristine Signal Path

Dangerous Music changed the very concept of mixing "in the box" by introducing the Dangerous 2-Bus, the first stand-alone, line-level summing mixer. Dangerous designer Chris Muth, prior to partnering with company co-founder Bob Muller, was known for designing custom mastering consoles for Sterling Sound and other mastering facilities. He has now put his experience toward Dangerous Music's first dedicated mastering tool, the Dangerous Master, a device offering functions that were only available to mastering facilities that could afford a custom console.

YES, MASTER

The Dangerous Master has a two-rackspace chassis, with two power transformers located inside an external power supply. The extruded aluminum faceplate is anodized purple, with heavy-duty, LED-lit push-button switches and aluminum knobs.

The knobs turn multideck rotary switches made by Janco, an aerospace supplier. The Dangerous Master's circuit boards are a combination of thru-hole and surface-mount construction, and make use of modern THAT Corp. and Burr-Brown ICs instead of discrete transistors. The back is covered in XLRs and does not require custom multipin cabling.

The unit provides source selection, gain staging, stereo width adjustment and hard bypass of three processors, as well as a clever way to compare processed audio to unprocessed audio with level compensation. There are two stereo inputs with a switch on the front for switching between them, providing an easy way to compare two different versions of a mix; you can also compare two different D/A converters. The input switcher feeds a dual-mono level control for correcting a tilted stereo image and for adding or removing gain before processing. There are three stereo inserts in a fixed order, each switchable on the front panel, allowing for adding or removing external processing. It would have been useful to have more insert points available to allow for more processors without having to use a patchbay.

DISCIPLINED APPROACH

The unit's S&M feature is a mid-side matrix with width control that is implemented well. The S&M Width knob widens or narrows the stereo image in a more transparent and useful way than any other device I've used.

In mastering, mid-side widening devices tend to do more harm than good, but I could see this one being useful once in a while. When S&M is engaged, the second insert is matrixed for mid-side processing, allowing for EQ or compression of the center of the image separately from the sides of the image. Material common to both the left and right channels—such as vocals, kick, snare and bass—can be processed separately from the material that is panned out to the sides. This can be useful for saving a mix where the vocal was printed too low or for taming bright cymbals without darkening the vocal. Finally, after the inserts is a stereo output gain control. Each gain control is tuned in half-decibel steps. I'd like to see a greater range of gain both up and down, but the rotary switches have only so many steps.

IN THE MIX

I first tested the Dangerous Master for linearity and found it to be ruler-flat, according to the meters. Each position of every knob was accurate to hundredths of a decibel at all frequencies, allowing the unit to track a stereo image perfectly as gain levels are changed. However, listening tests revealed a barely perceptible sonic footprint that went from input to output, although the unit is much more transparent than most mastering processors. This coloration remained consistent as the various functions were switched in and out.

I first plugged in the unit by connecting it between a Pacific Microsonics AD/DA converter and my custom console's monitor section, effectively bypassing the rest of the board. I connected an Ampex tape machine to the alternate input, and was able to compare digital and analog versions of the same mix quickly, both through the same processing path. My Requisite limiter and Sontec EQ were connected to insert points 1 and 3, with an SPL equalizer patched into the second insert. By using the S&M feature, I was able to add more focus to some hard-panned guitars in a mix without upsetting the relationship between the vocal and bass guitar.

I also used the output knob to hit the A/D converter at precisely the right level. The pair of stereo outputs made it easy to print our processing to a pair of A/D converters running at 44.1 and 48 kHz, which would save a lot of time when mastering a DVD project that includes an audio CD. I also set up the Dangerous Master in an atypical way: installing it as part of my console's processing chain and using it as an ancillary gain stage with good results.

THE RIGHT STUFF

Dangerous Music really got it right with the Dangerous Master. By focusing on the processing path, the Dangerous Master doesn't tie you down to a specific monitor controller. The unit is built without compromise, and its design quality is evident. Its sonic quality is in a league with custom-built proprietary mastering consoles, and its ingenious ergonomics make purchasing the Dangerous Master a no-brainer.

Combined with a good monitor preamp or monitor controller, the Dangerous Master would make an excellent console for a mastering engineer who uses a only a few pieces of analog outboard gear or who doesn't mind re-patching using a patchbay or having unused gear in the signal path. Price: $6,299.

Dangerous Music, 607/965-8011, www.dangerousmusic.com. ■

Andrew Mendelson is the owner and chief mastering engineer of Georgetown Masters in Nashville. He would like to thank John Baldwin for his help in this review.

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BY JASON SCOTT ALEXANDER

M-Audio NRV10 FireWire Mixer, Interface

Compact 8x2 Analog Unit With Integral 10x10 DAW/VST Routing

Not every musician has made the leap into the world of mixing in the box. Many of us still have keyboards, sound modules and outboard processors that need to be mixed with our virtual tracks. We also occasionally need to take our gear on the road and merge it into a laptop-based performance setup. The M-Audio NRV10 ($899.95) seems to have been built with just this dual-purpose, studio-to-stage transition in mind.

Intended to operate as a true front and back end to any computer recording setup, the NRV10 combines an 8x2 analog mixer with a 10x10 FireWire S 400 audio interface that supports up to 24-bit/96kHz audio. Unlike many other devices that have treaded similar paths recently, the NRV10 has plenty of signal routing muscle. Not only can its mic pre's and EQs be included on a signal's way in or out of the computer, but you can also monitor your MIDI-sequenced outboard synths with effects applied by your favorite VST plug-ins (without first having to record them as audio tracks). Plus, an onboard digital effects system provides latency-free direct monitoring for live P.A./DJ mixing or studio tracking scenarios.

I, O AND COMPACT Q

Packed into an 11x14-inch footprint (WxD) are four phantom-powered XLR/TRS mic/line channels with inserts (inputs 1 through 4), two stereo channels (5/6 and 7/8) and a virtual stereo FireWire 9/10 channel, which is quite special to the NRV10's overall flexibility. As a bonus, input 5 of the stereo channels sports a fifth XLR and mic preamp, minus the insert jack.

Each physical input channel has a 3-band EQ with frequency centers at 80 Hz, 2.5 kHz and 12 kHz, delivering ±15 dB of boost per band. Together with the beefy channel gain, you'll have no problem contouring even problematic signals with these clean, powerful and full-sounding EQs. The NRV10's channel mutes, located just below the faders, double as cue bus assigns. I appreciated having the red peak-warning and yellow mute-status indicator LEDs beneath each pan/balance knob, but the lack of channel solo function disappointed me.

Surprisingly flexible despite its simplicity, the master section features individual faders for 'phones, control room and main mix levels. Headphones can be sources from the main mix, the cue bus or the aux 1 monitor mix. Aux 1 is used primarily to set up a monitor mix in headphones, and aux 2 (DFX) automatically gets routed to the internal digital effects. Plug in stereo return cables, though, and either auxiliary will convert to the physical mono send jacks, letting you use outboard processors in the conventional way. Master section indicators include a 13-step stereo LED meter with clip, a global phantom-power indicator and—emblazoned by a large, yellow silk-screened FireWire logo—an LED that illuminates bright blue whenever FireWire streaming is activated.

Rear panel connectivity is as it should be on a compact mixer: tidy with only main mix outputs (balanced and unbalanced XLR and ¼-inch), control room outputs (¼-inch), TRS inserts across the mains and a pair of FireWire jacks for daisy-chaining. Not FireWire bus–powered, the line-lump power supply is appreciated, but I hate universal adapter–style jacks on live equipment as they're eternally prone to becoming loose and being yanked free in the middle of a set.

MORE 'VERB IN THE CANS

The NRV's built-in digital effects processor functions in either stand-alone or FireWire mode, including signals returning from the computer over the digital bus. Sporting several algorithms but capable of only one effect at a time, the DSP is strictly preset-based and is not editable. You have a choice of 16 different programs, including short and regular room, small and large hall, cathedral, short plate and vocal plate, mono and stereo echo, medium and deep chorus, and flange, as well as three combination algorithms. Each program then has up to 16 variation settings, offering different reverb and delay times, flange or chorus depths, etc.

Although the effects are decent sounding, they are obviously intended for use in live situations where a utility vocal plate or synth-fattening chorus can become convenient in a pinch. In the studio, while I don't think anyone would choose these over their favorite plug-ins or outboard for a critical mix, using them in the musician's headphones during tracking makes complete sense, especially with the zero latency and impact to the CPU of direct monitoring.

STREAM TEAM

Running the included Pro Tools M-Powered 7.3.1 (you can use any compatible DAW or music software) on an Intel Core Duo 2.2GHz MacBook Pro, I tested the NRV10 in two distinct scenarios, as a studio mixer in an urban pre-production setting and as a tool kit for a multimedia performance event. From the installer disc, I first loaded M-Audio's streamlined Control Panel application. This offers only the basic necessities of an audio driver, such as I/O metering, sample rate and buffer-size selection; mixing and routing are left up to your DAW. A second utility called NRV10 interFX, created by M-Audio and Audiffex, is a small-footprint, submixer-type application intended to host VST plug-ins in a live setting. It provides gain, dynamics/gate control and up to two VST insert slots per analog input channel coming over FireWire from the NRV10.

Adorning the top of each of the mixer's six channel strips is a button labeled CH/FW, which toggles the input between the NRV10's physical jacks and the corre-

"These are my 'go to' plugs"

Sam Spiegel (Squeak E. Clean)
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PRO TOOLS [illegible] 7 SOFTWARE

sponding FireWire path from the computer. This allowed me to monitor and record my keyboards, Akai MPC4000, turntable and microphones, and then switch any of the NRV10's input paths to accept recorded tracks returning from the DAW. The mixer's physical inputs are always streamed to the computer, regardless of the CH/FW setting.

In this combined workflow, I was able to fly about, listening to playback and punching in new parts, all the while mixing both live and recorded inputs side-by-side using the NRV10's faders and EQ. What's more, with the record buffer set low enough, I could even monitor some or all live inputs using Pro Tools' plug-in effects, which essentially function as inserts on the NRV10's physical channels. If you prefer to keep your DAW tracks mixed entirely in the box, the handy FW 9/10 bus acts as a third stereo input to the NRV10 (without consuming any physical inputs), allowing you to blend this mix with the headphone and control room outputs for flexible monitoring control. Conversely, the FW 9/10 return to the computer allows you to record the whole shebang (NRV10's main mix) to a stereo file in your DAW when you're done.

For the multimedia performance, I had to combine three elaborate stereo studio stems with live input from my small keyboard rig, a video-to-audio conceptual artist, a Continuum Fingerboard artist and one acoustic instrumentalist. The latter two began the set solo, so I fed them each a guide track to their ear buds. Using the multichannel output of the M-Audio driver, I was able to route a click on FW 9/10 along with the prerecorded Pro Tools tracks or groups back to the NRV10 on discrete channels for CPU-free monitoring and live mixing. This allowed me to adjust levels and EQ, and to add onboard effects at the mixer alongside the microphones and all my physical input hardware gear—a great feature if you play many different venues, as it allows you to tweak your setup on the fly without altering your original session file each time.

We finished our set with an impromptu jam, so I bailed out of Pro Tools and ran only the interFX software. This allowed me to take the same plug-in effects I'd been using in the studio straight to the stage, complete with manual snapshot recall. The real-time streaming, back and forth across the multiple channel buses, is lightning-fast and presented no perceivable latency to my ears.

A HAPPY MARRIAGE

The NRV10 is a concept that's been a long time coming, and one that I'm personally thrilled to see working this well. As an analog mixer, the NRV10 sounds large and impeccably clean, although it's not entirely decked out to the extent of some standard compacts in its price range. Throw in its digital side, however, and you have an unprecedented level of FireWire integration and functionality that seamlessly moves you from studio to stage.

For any computer-based recording setup, an NRV10 blurs the line between writing and pre-production, through to recording, overdubbing and mixing. For laptop musicians, however, being able to manageably tote five quality preamps, a dutiful and tactile mixing surface, and 20 channels of digital audio under one arm is pure luxury.

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Jason Scott Alexander is a producer/mixer/remixer in Ottawa, Canada.

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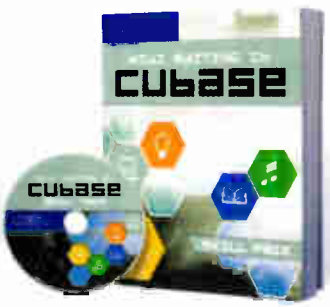

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BY JOE HANNIGAN

Groove Tubes SuPRE Tube Preamp

A Vintage-Looking Unit Provides Full-Sounding Results

From the mind of "tube guru" Aspen Pittman comes the Groove Tubes SuPRE ($1,999), a 2-channel stereo tube mic preamp that puts a lot of features into a hefty, three-rackspace package. Taking its core DNA from the company's ViPRE, the SuPRE features rear panel mic and line inputs for each channel, with an overriding (and handy!) instrument/line input on the front. A three-position attenuator (0/15/30 dB) allows for quick initial setups, along with two retro-looking, large, black Bakelite front panel knobs for continuously variable gain on each channel.

A total of 15 bat-style flip switches control a variety of necessary and standard functions. A timed power-on switch in the center of the front panel lets you clearly see the unit's status: flashing for power up and a solid cool-blue for ready/on status. Each channel has 48VDC phantom power, polarity reverse and 75Hz highpass filter switches. Easy-to-read analog VU meters, which are independently adjustable for accurately lining up 0 VU, complete SuPRE's "vintage" look and feel.

Similar to the ViPRE, the SuPRE offers variable (300/600/1,200-ohm) impedance switching. Four high-quality, nickel-core I/O transformers balance out the buffered package, with a hefty 72 dB of gain per channel. For this kind of gain, Groove Tubes uses a total of four of its own specially selected vacuum tubes. Each channel boasts a pair of dual-triode GT6922 and pentode/triode GT6GH8 tubes, all in shielded casings.

CLASSY CHASSIS

I always like to peek under the hood to see what makes the unit tick. Not surprisingly, the SuPRE is laid out well and is solidly built, with lots of attention to detail. Robust construction techniques include additional grounded metal shielding on the power supply connections to/from the front panel switch and rear panel fuse socket, along with cleanly grouped, tied wiring bundles.

With no ventilation fan, the unit runs warm to the touch but not overly hot, even after hours of continuous use. There's enough space in the unit to let some of the warmer components play nicely together. On powering down, you can hear the internal relays clicking off in sequence—another nice touch to keep spikes down and nasty transients out of the audio path.

SUPRE FRIEND

Several things were appealing and helpful during my initial setup and use of the SuPRE. In my first session, there wasn't a lot of time to fuss with settings beforehand. With talent waiting, it was time to "grab it and go." The SuPRE sounded great even when the settings weren't ideal (input too hot, peaking VUs, etc.). Although I wasn't looking for it at the time, I immediately liked the warm, overdriven sound that I accidentally got on the first vocal track that I attempted with singer/songwriter Keith Rounds. Once the proper settings were dialed in, I was struck by the unit's noise-free, no-compromise sound. With vocal on one track and acoustic guitar on the other, I had two ultraquiet, yet warm sources to start my session.

Male and female voice-over sessions showed SuPRE to be a lovely, warm and full-sounding preamp. Various large-diaphragm mics (Audio-Technica AT4050 and AT4040s, MXL M3, etc.) really sparkled with lots of full low end, full midrange and crisp top end, all without sounding hyped or overdone.

Although one wouldn't normally take something like this out on a live remote session (more on that later), I had to hear what it would sound like handling instruments as diverse as solo bassoon and grand piano. On one of my classical dates with the Chamber Orchestra of Philadelphia, the SuPRE was—not surprisingly—quiet, detailed and solid. This was a first for me (and the SuPRE?): a chance to record an all-too rare bassoon performance by classical bassoonist Michelle Rosen, coupled with a vintage Neumann KMi-84.

Back in the studio, the SuPRE was used to warm up some rather unexciting and sterile drum and bass tracks from an old digital tape session; in this case, for remixing. With the best of both worlds—digital remixing and automation—dialing in SuPRE's warm and overdriven tube character added just the right presence for some punchy, bouncy and round sounds from the rhythm section.

FINAL THOUGHTS

The SuPRE is one warm, fun and friendly preamp. Its retro looks, coupled with its uncompromising electronics, make this unit hard to resist. Setup and alignment were fast and user-friendly; careful tweaking during setup always helps, but right out of the box this is a very forgiving unit.

One very minor quibble: I wish there was more support for the two large channel cards. I'd feel safer seeing some kind of anchor or brace in the middle of these substantial circuit boards, which seem to beg for extra support near or under the tube socket areas. As such, I wouldn't recommend the SuPRE for touring racks; for general studio use, it should be quite safe and more than adequate.

Over a wide range of sessions, I never got the impression that the SuPRE was ever straining or harsh; the sound seemed limitless, distorting only when asked to. For full-sounding and robust new tracks—or warming up colder, older digital material—take the SuPRE for a test drive. But be warned: You may not want to give it back.

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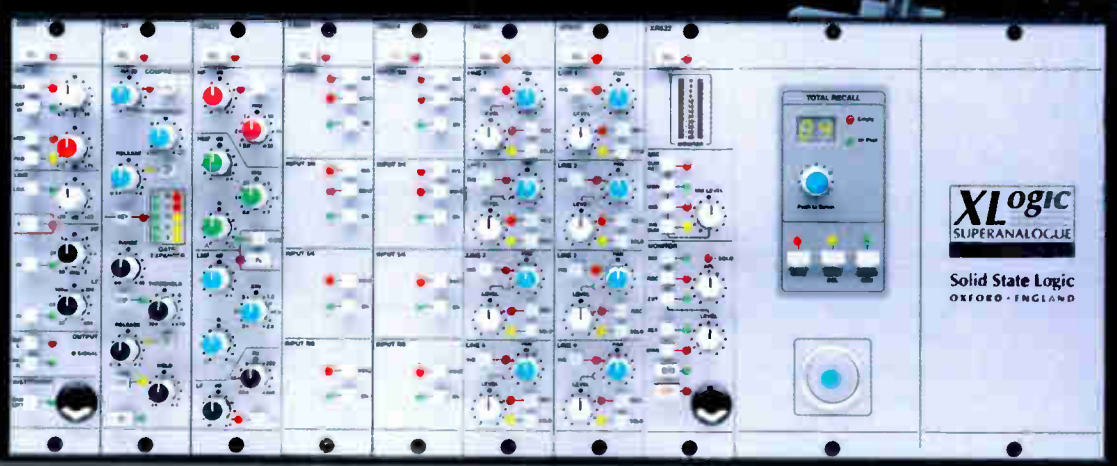

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BY GEORGE PETERSEN

Apple Soundtrack Pro 2 Software

The Sound-for-Picture DAW Is Ready for the Audio World

Apple's Soundtrack Pro 2 (SP2) workstation software for audio-for-video production has morphed into an entirely new program with each release. What began as a music-creation/looping tool later took on full DAW capabilities in its second version. Now in its third generation, SP2 has become an intensive application for serious sound-for-picture production. Previously only available as part of the $1,299 Final Cut Studio suite (which also includes Final Cut Pro 6 video editing, Motion 3 graphics/animation, color-picture correction, Compressor 3 release formatting and DVD Studio Pro 4 authoring), SP2 is now also offered as part of Apple's new $499 Logic Studio bundle, making it available to a much larger audience of audio pros.

SP2 provides new multitrack editing and recording functions that speed the audio post process. In addition to a streamlined, single-window GUI, the revision's additions include a versatile spotting display for aligning effects and dialog with picture, take-management tools for comping sections of several takes into a seamless performance, an auto-conform application for matching picture changes to audio, stereo and surround mixing (or both simultaneously), more included signal processing plug-ins—stereo and 5.1—and more. Also in the package are some 5,000 pro-quality Foley and sound effects, and music tracks—1,000 of which are in surround format. There are so many new features in SP2 (including a podcast producer) that space precludes detailing them all, but here are some highlights.

Clicking on a track's surround pan icon brings up a surround panning puck with easy access to parameters.

HORSEPOWER, PLEASE

Running SP2 (solo or with the Final Cut Studio) requires a decent Mac; minimum requirements include a 1.25GHz or faster G4, G5, Intel Core Duo or Intel Xeon processor with 1 GB of RAM, and Mac OS 10.4.9 or later. Obviously, the more RAM and processor speed, the better, especially when rendering long-form audio or HD video files in Final Cut Pro.

But the system *did* function on a dual 1.25GHz G4 with 1GB RAM. However, such cases may require the patience of a Zen master while waiting for most offline DSP actions (normalizing, time shifting, etc.). Performance was greatly improved on an Intel-driven MacBook Pro 17-inch laptop (2.4GHz/4GB RAM) and even better on a Mac Pro desktop with two 3GHz quad-core Intel Xeon 5300 Series CPUs and 8 GB of RAM. The cool part about the latter is its four 750GB internal drive bays for up to 3 TB of storage on quick-change drive caddies.

UPGRADE, UPGRADE

About a week after I got my Final Cut Studio/Soundtrack Pro 2 software, Apple released Version 6.0.1, with 175 MB of update files available at www.apple.com. These were mostly minor tweaks and bug fixes, but it's a lot of downloading, not matter what your system. Fortunately, these are already implemented in the latest version. One of the updates was support for AVCHD-format HD cameras on Intel Macs. I first experienced crashes while doing this, but the problem was eventually traced to a conflict with the Perian QuickTime component. Once I deleted that file, HD transfers from my Panasonic HDC-SD1 worked fine. Hooray!

DIVE RIGHT IN

After I got the Final Cut Pro bundle, I was doing a video edit on a clip for *Remix* TV featuring an interview with the Chemical Brothers. Piece of cake, I figured. Edit 20 minutes down to about eight minutes, add titles and in/out bumpers, and I'm done. The band was great. The (offscreen) interviewer was great at asking questions, but wasn't much of a videographer. Essentially, it was a static single-camera shoot (thankfully on a tripod) and the picture on the DV tape was black and white—probably from being in the wrong mode setting.

The audio was recorded about 30 dB down using an on-camera mic and the room was boomy with plenty of camera noise and the occasional sound of someone's foot kicking the tripod. Importing the track from Final Cut Pro into SP2 is easy (one of the program's great strengths), and once there I beheld this DAW's new single-screen interface—clean and straightforward, all from one window without going through the confusion of having to open the track in a second window to make edits or DSP changes.

From here, I boosted the gain, which, along with the dialog, also brought up hiss and camera noise. I then addressed the tripod kicks—which showed up clearly in the new Spectrum view display of frequency vs. time, where amplitude is indicated via color intensity for unobtrusive edits. Next up was the camera motor noise, which yielded easily to the program's Noise Print intelligent noise reduction, followed by some EQ—a high shelf to knock the hiss down and then some parametric to cut some of the room boom, adding intelligibility.

The tracks were imported back into Final

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Cut Pro, and the single-window interface is a nice touch, although it really needs a decent-sized monitor, which is hardly an issue these days. I was using two 23-inch Apple Cinema displays, which makes for a great package. Speaking of displays, one minor quibble I've had with both Final Cut Pro and Soundtrack Pro is the incredibly small (¼-inch tall) window that displays the locator times. With all the available real estate of large LCD or dual-panel monitoring, surely Apple could provide a preference option for a larger time display, like a big, red LED readout that's visible from several feet away. My wish list also includes a large transport control window.

SLICK LITTLE TWEAKS

One of the coolest new features is a Multitake Editor, which lets you arrange multiple takes from an ADR or voice-over session, and use the solo buttons to audition each and highlight the preferred part. Individual parts can be edited and dragged/slipped for timing or sync tweaks and then highlighted, with crossfades applied to each to create a seamless composite.

I also liked using the Multipoint Spotting display, which lets you bring up three audio frames—like blowups from a timeline—to match audio placement points. Even in mundane situations, like dropping in car engine noise with a door-slam effect as a passenger enters, having the exact frame where the action start/occur/stops is a definite time-saver. In more complex scenes, this is a real plus.

SURROUND'S THE THING

The real highlight is the surround mixing capabilities, which were essentially nil and emerged as a pro environment. One update is the metadata-driven search tab, which provides quick access to the effects and music beds collection. The titles are marked to indicate whether they are stereo or surround. You can audition them with a mouse click and drag selections directly into the project.

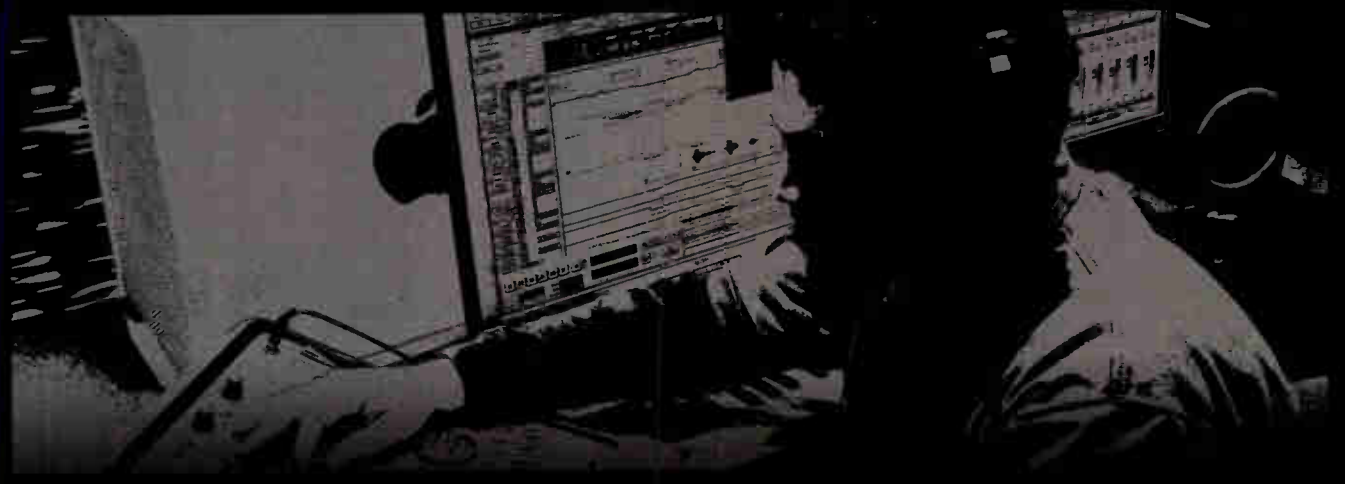
Also included is the popular Space Designer plug-in taken from Logic Studio, which offers true surround processing. This real-time, 5.1 impulse-response convolution reverb is loaded with presets for emulating acoustical environments—real or imagined. Tweaking custom sounds was no sweat, and Space Designer's reverberation effects—especially the sound of the smooth decay of reverb tails in surround—are first-rate. And this is just one of 55 stereo and surround plug-ins in the package.

The coolest part of surround mixing in SP2 is the surround panning puck that looks like an iPod (wonder where they got that idea?) and comes up with a double-click on the puck on any track in the main window. This provides a visual representation of the surround field, and offers 5-channel panning, surround metering display and control of image parameters: rotation, width, collapse, center bias and LFE. The best part here is how any adjustment of each slider dynamically alters the visual representation at the top of the puck.

AND IN THE END

With the release of SP2, Apple has addressed many of the audio community's concerns and issues about bringing this program up to the standard that Final Cut Pro has achieved in the video world. As part of the Final Cut Studio bundle, SP2's impact in the audio-only world was limited, but with Logic Studio should open some new eyes and ears to this now-serious contender.

Apple, 480/996-1010, www.apple.com/finalcutstudio/soundtrackpro. ■



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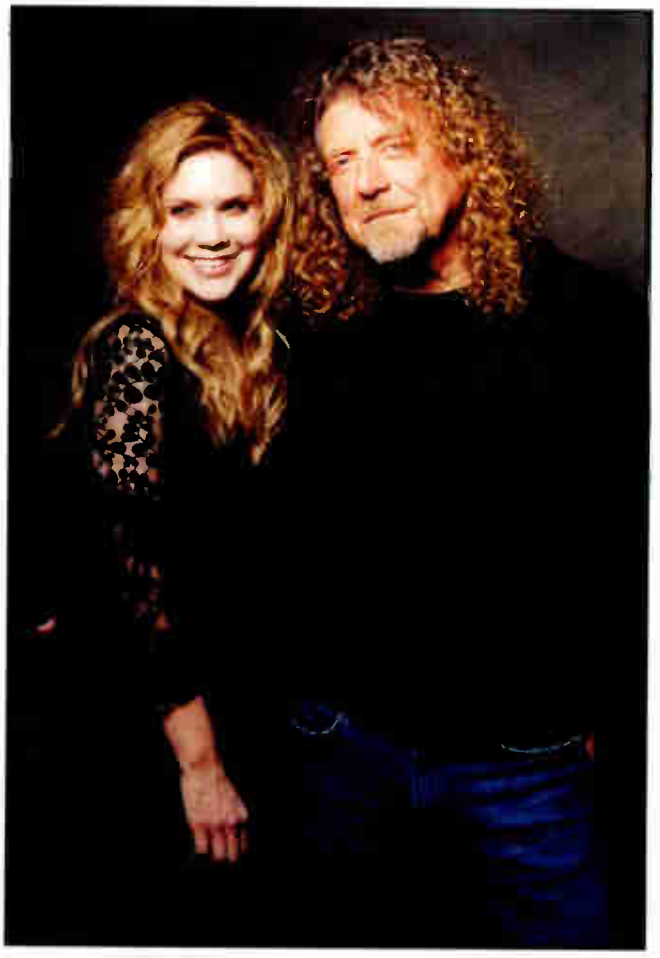


By Blair Jackson

That whipping sound you all heard a few months ago was a million heads doing a fast double-take at the announcement that former Led Zeppelin belter Robert Plant and bluegrass queen Alison Krauss were teaming up to make a CD together. Say *what?* Actually, if you think about it, it does make sense. Plant has had folk and country influences in his music dating back to early Zep, and has flirted here and there with rockabilly shadings in his solo work; and Krauss—well, she can play *anything* and is a natural collaborator, so it's no surprise she found common ground with the versatile Englishman. Even so, I don't suspect many would have predicted they would make an album quite like *Raising Sand*, which is surely one of the year's most pleasant musical surprises.

PHOTO: CALLIE KHOURI

The crawd at Sound Emporium (L-R): drummer Jay Bellerase, banja player Riley Baugus, Alisan Krauss, guitarist Narman Blake, Rabert Plant, guitarist Marc Ribat; producer T Bone Burnett, engineer Mike Piersante and bassist Dennis Crouch

Produced by T Bone Burnett (and recorded and mixed by his usual engineer, Mike Piersante), this eclectic and refreshingly low-key album serves up a wonderful collection of mostly obscure cover tunes by a great cross-section of songwriters, including Gene Clark, Tom Waits, Townes Van Zandt, Sam Phillips (the singer/songwriter, not the Memphis producer), Roly Salley, the Everly Brothers and others. The singers are ably backed by Burnett's most recent core band—himself and Marc Ribot on guitars, acoustic bassist Dennis Crouch and drummer Jay Bellerose—augmented on a few tracks by stellar players Greg Leisz on steel guitar, Patrick Warren on keys, Norman Blake on acoustic guitar, Riley Baugus on banjo, Mike Seeger on autoharp and, on two tunes, Krauss on fiddle. There's nothing flashy going on here, vocally or instrumentally—just a fresh, spontaneous and imaginative ensemble playing behind a pair of pros whose voices seem to meld effortlessly.

As with so many of Burnett's productions, there's a haunting retro feel to both the arrangements and the sonics; modern songs aside, this album sounds like it could have been made in 1959, and that's a *good* thing. Guitars float in seas of tremolo and reverb, drums whisper the beat, the standup bass thwacks with swinging authority and the vocals gracefully in-

—CONTINUED ON PAGE 117

ZAP MAMA

"AFROPEAN" MUSIC IN THE MAINSTREAM

By Chris J. Walker

One of the most successful African pop bands in Europe (and, increasingly, America), Zap Mama is largely the alter-ego of its founder and lead vocalist Marie Daulne, who has led an ensemble of talented singers and dancers since conceiving the group in 1990. Daulne's roots are still firmly planted in her native Africa: She was born in the Congo (what is today Zaire), and her white Belgian father was killed during the 1960 revolution for independence there while her African mother was pregnant with her. After taking refuge with a tribe of Pygmies in the forest, the survivors fled to Belgium, where Daulne was raised and Zap Mama formed.

When Daulne was growing up, her mother filled their home with music from the Congo. Daulne also listened to European and American pop, R&B, folk and jazz. After high school, Daulne traveled to Zaire and immersed herself in the music there, even studying Pygmy vocal techniques. Upon returning to Europe, she was consumed with a mission to meld the earthy characteristics of

the Congo with appealing contemporary European music in what she dubbed "Afropean music," and she enlisted four other like-minded vocalists to work in a completely a capella setting.

Several years later, the group was signed to David Byrne's Luaka Bop label, releasing *Adventures in Afropea 1*, the company's all-time, top-selling non-compilation CD (and a former Number One on *Billboard*'s World Music chart). Zap Mama's second recording, *Sabsylma*, garnered a Grammy nomination in the same category and a strong legion of fans. In the late '90s, Daulne's group was transformed from a cappella to one with instrumentalists, and the group's albums since have reflected this move toward a more mainstream sound. Their latest, *Supermoon* (on the Heads Up label), is perhaps their most commercial-sounding effort to date.

It is also Daulne's most collaborative disc. "I'm always in my world," she states from her home in Brussels, Belgium, "and I decided to follow somebody and be more in their world. I've never experienced that before, and I always bring the melody, the harmony and everything. I'm talking about [co-producer] Chris McHale—he brought in musicians he knew real well and had me find different ways to harmonize with myself." Distinctive players such as drummer Tony Allen, bassists Me'Shell Ndegéocello and Will Lee, guitarists David Gilmour and Michael Franti (also a singer), and many other musicians were asked to bring their energy and creativity to the sessions. Daulne has worked with McHale on commercials, film scores and CD tracks for a decade, so there was already a high level of trust in their working relationship.

"They're all daring musician/artists, and I was amazed at how beautiful the harmonies were and the type of chords that could be put behind African vocals," Daulne comments. "It was perfect and exactly what the tracks needed."

Daulne started working on the songs for this album three years ago. She normally finds her inspiration on the road, and she reveals that some of the songs on *Supermoon* were conceived in Adelaide, Singapore, the Coachella music festival, Austin, Tokyo, New Orleans and numerous other parts of the world. The singer/producer laid the groundwork for the tracks during the course of a year at her home facility, Studio Dada, which is equipped with a Pro Tools HD system, Audio-Technica microphones, Avalon preamps and a variety of samplers, keyboards and other instruments. Sometimes during these early stages, she also brought in the other singers—Celine 'T Hooft, Sabine Kabongo, Cecilia Kandonda and Sylvie Nawasadio, who have been recording and touring with her for 11 years.

Daulne likes working at home because it affords her more time with her two children and she can choose her own work hours. "I'm slow," she admits, "and prefer to work with an engineer who watches the technical part of the recording. But when I can go deep inside my creativity, it's good when I'm alone. For this album, during that period I composed over 40 tracks."

Mark Harder, engineer for McHale at New York's Irving Place, oversaw all the raw material Daulne had recorded in Brussels and at Luc Weytjen's Studio in Antwerp, Belgium. The engineer also did overdubs with her and two completed tracks—the title and "Where Are You?" (co-produced by McHale and Michael Leonhart).

Harder says, "A lot of this record was starting a session here, then going over to Europe and doing some things. It comes back here, we do some things and it goes

—CONTINUED ON PAGE 119

MÖTLEY CRÜE'S "GIRLS, GIRLS, GIRLS"

By Heather Johnson

Aquanet hairspray flew off the shelves when the new wave synth-pop acts of the early 1980s gave way to an onslaught of glam rock a few years later. Hair got longer and taller, clothes got tighter, and the music got louder, faster and, well, louder.

Mötley Crüe—the hard-rocking, hard-living L.A. foursome formed in 1981 by bassist Nikki Sixx, guitarist Mick Mars, vocalist Vince Neil and drummer Tommy Lee—led the "hair metal" phenomenon with a string of hit albums, racy videos and large-scale tours. Their third major-label release, *Girls, Girls, Girls*, found the band at the height of their career. Their 1983 debut, *Shout at the Devil*, and its follow-up, *Theatre of Pain*, had hit triple-Platinum. As they entered the studio to record *Girls, Girls, Girls*, Lee's highly publicized marriage to actress Heather Locklear was barely a year old, Sixx had checked himself into a methadone clinic to kick a pernicious heroin habit and the video for their power ballad "Home Sweet Home" still aired consistently on MTV.

PHOTO: ROSS HALFIN/ 1987

L to R: Vince Neil, Tommy Lee, Mick Mars and Nikki Sixx

While *Theatre of Pain* had a slicker, more pop-oriented sound than the wicked *Shout at the Devil*, the *Girls, Girls, Girls* album contained nothing but sleazy rock 'n' roll, albeit with a commercial bent. Tom Werman, who had produced all of the band's records since their 1983 signing with Elektra, says that the album's more straightforward sound and relatively easy recording process stemmed from the band's maturity level. "The difference was mostly chemical," he says, referring to the members' respective drug and alcohol abuse. "They were much more serious, more relaxed and more professional about this album. Also, Mick [Mars] had found a guitar tech who really helped refine his guitar sound. The band was just better in every way. Nikki was better at his instrument, and I knew 'Girls, Girls, Girls'—the song—was a hit from the first time I heard it."

During pre-production, Werman and the band worked hard on drum and bass parts, some rhythm guitar and song structure. "Because 'Girls, Girls, Girls' has such an up-front guitar lick, it was pretty much there from the start," says Werman. "It was a very straightforward song rhythmically, too: just four on the floor, bang, straight-away. Excellent song. We had a lot of fun doing it."

After pre-production, the band moved to One on One Studios in North Hollywood (now called Ecstasy Recording Studios) to record drum tracks. They had the time and the money to try new ideas and took advantage of that luxury by toying around with Lee's drum sound. "Tommy was very exacting about his drums and was a very adventurous experimenter," says Werman. To get an even more explosive sound, engineer Duane Baron made use of the studio's P.A. system to send kick and toms back out into the large main studio.

They also discovered a new way to isolate the drums. "We were just screwing around and trying to find an optimum way to record drums, keep the leakage down and get rid of some of the hi-hat," says Baron, who first worked with the band on *Theatre of Pain*. "We put towels on the toms, hi-hat and cymbals, and then Tommy would play kick and snare because he wanted really good isolation on those. Then we'd do the opposite thing, where we'd pad up the kick and snare and he'd play the hi-hat, toms and cymbals to a click track. He's one of the few drummers who could really pull that off."

The towel method worked. In addition, Baron incorporated drum samples for the first time with this record. "We were using a MIDI sequencer and programmed one hit at a time," he recalls. "Then we would record it off the sequencer as opposed to triggering. We were trying to get rid of the delay between the triggers and the real snare." They used an E-mu Emulator 12-bit sampler, operating at half-speed. "We realized that by using a half-speed sample and doubling up, you got a better bit rate," says Baron.

Drums amply recorded, the band moved to Rumbo Recorders, a three-room studio in Canoga Park, Calif., designed and built by Daryl Dragon (aka the "Captain" of Captain & Tennille). Ross Hogarth, the studio's chief staff engineer at the time, assisted Baron on the sessions. They camped at Rumbo for several weeks to record Sixx's bass parts and Mars' guitars. The tracks were built in a layer-by-layer fashion, beginning with drums and continuing with bass, guitar and vocals. Despite the time spent experimenting, Lee had his parts nailed within a week; the rest of the band took a bit more time, but not much. "They knew the songs well and were very well rehearsed," says Baron. "Tommy knew exactly what he wanted."

Hogarth recalls that Mars was especially focused while recording his rhythm guitar parts, and although Lee, a driving force in the band along with Sixx, often had very clear ideas on how the guitars should sound, Mars held onto a few ideas of his own. "We spent a little more time on the guitar solo on this song than we normally did because it played such a prominent role," says Werman. "Mick usually had his solos mapped out, which is good news for a producer, so I basically helped him with fills."

"The guys respected each other and what they wanted to do," says Baron. "They didn't interfere with the way Tommy wanted to play or Nikki or Mick. But that's not to say Tommy wasn't there every minute making sure everything went down good." On the other hand, Paul Miles, Webmaster of the extensive "Chronological Crue" Website and books, reports that Mars' soloing at the end of "Girls, Girls, Girls" drops off because Mars fell off of his stool while recording it. [*Eds. note: Mars suffers from an incurable rheumatic disease called Ankylosing Spondylitis, which decreases his mobility.*]

Whether he fell on top of it or not, Baron used a RCA 77 ribbon mic for Mars' six-strings. "Also, I'd play around with two Shure 57s; one on the outer side of the speaker and one in the middle, with a 45 capsule to get it the same distance in front," Baron says. "Sometimes in front or behind the cabinet I'd use a ribbon mic. I love using ribbon mics on guitars, but most studios wouldn't let you use them back then because you'd kill the ribbon, but I'd try to get away with it as much as possible."

At the time, Rumbo's Studio C was a work in progress, but Baron and Hogarth used the unfinished concrete space to their advantage. They put the guitar cabinets in this very live makeshift chamber and put the amplifiers in the control room.

From Rumbo, the group made a quick stop at Can-Am Studios for more overdubs, then on to Conway Studios to record Vince Neil's vocals, finish the remaining overdubs, and mix. Neil sang into a mic that Werman owned. "It worked very well for Vince because he tends to sing a little through his nose, and it took the nasal quality out of his voice," he says. "On *Girls, Girls, Girls*, he sounds as good as he ever sounded with me."

John Purdell, a top session keyboardist, sang the background vocals because he was the only one of the bunch that could hit the high notes. Sixx played a crucial role during the vocal recording process. "Most of the lyrics and melodies came from Nikki," says Baron, "so when Vince came in to sing, he was pretty much directed by Nikki. For the most part, I don't think anyone knew the melodies until Nikki came in." Sixx probably had the most influence on "Girls, Girls, Girls." "This was the title track, and it was very important to Nikki," says Werman. "And if it was important to Nikki, then he made sure everybody knew what he wanted."

> ["Girls, Girls, Girls"] was the title track, and it was very important to Nikki. And if it was important to Nikki, then he made sure everybody knew what he wanted.
>
> —*Tom Werman*

Lee, whom Baron describes as a "bundle of energy," offered input during every stage of the recording process. The idea to add roaring motorcycle engines at the beginning and end of "Girls, Girls, Girls" came from him. "At the time, they decided they were all going to get Harleys," says Baron. "They were like that. If one guy got a Corvette, they all got Corvettes, and during that record they had gotten into Harleys and wanted a Harley on the album." The opening motorbike sound was recorded in Conway's courtyard. As Werman recalls, "We brought the mics outside and I sat on Vince's Harley while wearing earphones. I heard the track and started up the bike around the count-off so the guitar came in right after. I revved the engine where it fit." For the end Harley sample, Werman rode Sixx's bike in nearby Franklin Canyon. "We set up stereo mics, and I went through all five gears in a hurry," says Werman. "It was a lot of fun."

Elektra released *Girls, Girls, Girls* on May 17, 1987, with the title track as its debut single. The single peaked at Number 12 on *Billboard*'s Hot 100 chart—their highest-charting single at the time, while the album hit Number 2. MTV immediately banned its video due to shots of topless strippers dancing; a censored version proved acceptable.

Following *Girls, Girls, Girls*, Mötley Crüe recruited Bob Rock to produce *Dr. Feelgood*, their first album to reach Number One. Werman continued his production career, which totals more than 60 hit albums, including titles by Cheap Trick, Ted Nugent, Dokken, Twisted Sister and Poison, among many others. He teamed with Baron through the '80s; at the dawn of the 1990s, Baron and Purdell partnered up to produce albums for Ozzy Osbourne, Heart, Foreigner and Alice Cooper.

Baron continues to work with a variety of acts, including such up-and-comers as Ken Oak Band, Jetset Satellite and Karen Eden (also his wife). He recently launched Pro Home Recording School, an online educational resource for home recordists. Werman and his wife, Suky, moved from Los Angeles to Werman's native Massachusetts six years ago and opened Stonover Farm, a luxury bed and breakfast near Tanglewood in Lenox, Mass. He has few dealings with the music business these days, which is just how he likes it. "This is a superb life, no question." ■

ROBERT PLANT/ALISON KRAUSS

FROM PAGE 114

termingle within the spare soundscape. From the rubbery rockabilly drive of the Everlys' "Gone Gone Gone," to the scrumptious harmonies of "Killing the Blues," to timeless folk of "Your Long Journey," this CD covers a lot of stylistic ground, but always retains its own characteristic sound.

Plant and Krauss first teamed up on four songs at a 2004 tribute to Leadbelly at Cleveland's Rock and Roll Hall of Fame. Hitting it off both personally and professionally, they found they had many of the same influences and interests. Plant was the one who first suggested they get together to make a CD, but it was Krauss who suggested producer Burnett, who turned out to be the linchpin in the project. It was Burnett who suggested most of the songs that were ultimately recorded for *Raising Sand*, and, of course, he

PHOTO: CALLIE KHOURI

From left: Bellerose, Baugus and Blake play as Krauss and Plant look on.

put together and directed the band.

"T Bone always goes to great lengths to put together song lists and recommendations," notes engineer Piersante. "It's no secret that T Bone's well runs *very* deep. [Laughs] He knows so many obscure songs, so he'll put together these lists and then he'll pare them down and also still find new things all the time. Then he ends up with CDs of original versions of the suggested songs. In this case, Robert knew most of the songs—he also has a vast knowledge of musical history—and Alison was also very much involved in selecting the songs. It was a very collaborative effort."

Indeed, the three of them also spent an afternoon at Krauss' Nashville-area home figuring out who would sing what and in which key, and discussing the basics of how the arrangements might come together. Then, Piersante says, they flew in some of Burnett's regular players—what Piersante calls "our Kill Squad band"—to Nashville and set up shop at Sound Emporium, "our usual Nashville haunt," he says. "It kind of feels like home when we go there. We've made some good albums there [including the Grammy-winning soundtrack to *O Brother, Where Art Thou?*]. They have a nice 81 Series Neve there, which we basically used as a playback desk during the tracking, so we obviously rented gear to record through and go straight to tape with it."

I ask incredulously, "When you say tape, do you mean *tape*?" "I do mean tape," he replies with a laugh. "We ran a Studer [multitrack] with 2-inch tape. That's really our preferred way of working. We did another recent tracking date with John Mellencamp and used tape for that, and we're doing a B.B. King record now and we're running that to tape. And we still mix through an analog console. For us, nothing sounds better to our ears, so we still stick with what we know and like.

"This project sort of started as an experiment," he continues. "It was, 'Let's get together and cut a few songs and see how it goes and then we'll figure it out from there.' But we shipped in massive amounts of gear—T Bone's guitars and amps and microphones and things—so I think we were always thinking, 'We're gonna really try and dig into this thing and make it work.' From the beginning, I was thinking very vintage and authentic-sounding. So we recorded the band live, and I had Robert and Alison in a booth kind of facing each other at about a 45-degree angle."

PHOTO: CALLIE KHOURI

Engineer Mike Piersante with Robert Plant

As for the all-important vocal mics, Piersante says, "I actually bought a mic, as I'll sometimes do, just for this project. I had Allison singing through a Blue Cactus, which is sort of their retro mic that's like an old [Neumann] M49 or something. Blue got it right with this—it has a real thick quality to it and it's not too bright. Alison can be a fairly bright singer and I wanted something to complement that and not accentuate it. So I chose this mic to try on her and it ended up sounding very good; very old tube-sounding. I probably had her through an LA2, as well. Robert sang on one of T Bone's [Neumann] U-47s, and I probably had an LA2 or LA3 limiter on him.

"So I had the idea of that classic chain I described, and then I thought, 'I'm going to make a super-retro chain for both of them,' and hang these RCA 44s right under their mics and they'll be kind of singing into both of them at the same time and I'll have my options. Well, the magnets in those things created the biggest hum you can imagine, so I ended up getting rid of all that and going with the classic tube mic sound and limiter. For preamps, I had Neve 1073s and some 1081s."

Piersante used a fairly straight setup on the band from song to song, "but [drummer] Jay Bellerose did a lot of reconfiguring between songs. He was definitely setting up things for each particular song, which was really great. It kept me real busy setting up mics and moving them around and getting new sounds. He's such a great player. He tends to play really quietly like T Bone likes him to do, so just the mic on the tom, for example, will be picking up a lot of room because he's playing soft, and we just crank that up and pump it. So you get room mic in there by default. I didn't really have to do any tricks on this music. It was really a matter of capturing what these guys are doing and presenting it in the best light."

Typical of Burnett's style, he was looking for a certain spontaneity in the performances, so none of the songs were rehearsed much

before the two weeks of tracking in Nashville. "Everything was learned on the spot," Piersante notes. "It was all very gut-reaction. T Bone, Robert and Alison would agree on a certain approach to the arrangement, they'd get together with the band, work through it a bit and then cut it immediately—hopefully before the song is learned too well so it's still fresh and not too perfected. A few songs on are actually first takes, vocals and all."

Rather than comping together performances from multiple takes, each song represents a complete performance by the band, though there are judicious instrumental overdubs and selected vocal retakes. "Marc [Ribot] would come in at night and do overdubs," Piersante says. "He'd get his part for the track and then he'd come in later and have 10 *new* ideas: 'Oh, man, I hear *this*!' He has ideas pouring out of him. Some of them we'd use, and some of them we wouldn't."

Mixing and further vocal and fiddle overdubs were done in L.A. at Burnett's Electro Magnetic Studios, which is centered around a vintage Bushnell board that once resided at Sunset Sound and Piersante's beloved Westlake monitors. Again, the approach was to keep the sound simple and real, though there was a certain amount of experimentation at the mix stage. "'Gone, Gone, Gone' was [a mix] we looked at a whole lot of different times and tried different things; we went back and mixed it several times, and then went back to the first mix we did, which was actually the first mix we did on the album," Piersante says. "We really explored a lot of avenues with that."

In the end, though, the album was more romp than rigor, and the finished product shows that. "We had a lot of fun," Piersante offers. "In fact, it's probably one of the most fun sessions I ever did, outside of the fact that when I flew into Nashville and was setting up the night before the session and I developed an abscessed tooth, and I realized I was stuck there for two weeks with a tooth that had gone bad. But the sessions were really fun because of the personalities involved: Alison loves to laugh and joke around, and so does T Bone, and I gather Robert is an instigator from way back. So with the three of them together, it was really a blast."

As just one example, he cites "a day when we were all here doing overdubs at T Bone's, and we put Alison in the foyer with the high ceiling to do a fiddle part, but she was not having fun with it for some reason. Maybe she wasn't feeling it on the track, or something. So she starts playing a little hoedown version of [Led Zep's] 'Whole Lotta Love,' and that spun Robert off the couch and he runs out there and starts dancing in his boots and singing along with her. Then T Bone comes walking down the stairs with a toy piano and they all had a little Zeppelin hoedown going on. I was rolling on the floor crying, hoping I'm recording it. I don't know if anyone will ever hear it, but it was priceless. We all had such a great time and that's really what the whole record was about—having fun." ■

ZAP MAMA

FROM PAGE 115

back and forth. This was one of those projects that was not really done on a time frame, but more on a vibe and availability." Though a little fuzzy about specific dates, Harder believes he started working on *Supermoon* in mid-2005 and continued throughout 2006, roughly a year and a half. During that period, Daulne would typically come to New York for a week at a time, rent an apartment and work from about noon till 2 or 3 a.m.

"The several things we did here were more aimed at crossing over Marie from the world-music scene to one a bit more commercial, but maintaining the integrity to her longtime Zap Mama fans," Harder notes. "The idea was to move from a groove base/world feel to elements of commercial triple-A radio."

Working with material culled from different sessions in different countries on some different equipment proved to be one of the project's more challenging aspects. As Harder details, "Some of the tracks were a background sax, a rough vocal and Marie loving the second verse. That would stay and then we would have to do the first verse to match it, but with different equipment and the original done at 3 o'clock in the afternoon as opposed to 3 a.m. We had to work on her trusting us to get all that intimacy with the pop filter six inches away. Vocally, what we ended up using mostly was a reconditioned U87, an AMX mic preamp and a compressor on her vocals. For some special situations, such as the song 'Princess Kesia,' which is very lush and mysterious, we used an Audio-Technica 4050 and a Hardy preamp."

Axel Niehaus (a native of Cologne, Germany) mixed the project at Irving Place using a combination of vintage gear and modern plug-ins to achieve the warm, analog sound Daulne and McHale were looking for.

"[For Zap Mama,] I used a summing

amp and I had the Dangerous 2-Bus and my API 2500 stereo bus compressor for a sound I just can't get with a plug-in, along with three Neve 1102 compressors and a beautiful old Pultec," Niehaus says. "Marie is also used to bigger analog studios and completely aware of what a tape machine will do to her music and what a compressor will do to her voice."

Even while the mix was taking place, Daulne was constantly adding elements and improving takes. "With a soul like this, she never stops," says the mixer. "You let the project sit for a day, and when you come back there's a whole choir at the end of a work in progress. She gets inspired: 'Oh my God, I hear African percussion!' Then Chris goes over to the computer, and 10 seconds later you have an entirely different thing to deal with. That was enlightening to me, and Chris being from the ad world had plenty of media in his hands. It made a difference in the creative process, and we were able to adjust pretty quickly to Zap Mama's every need. It was a lovely time, and [Daulne] is an amazing artist."

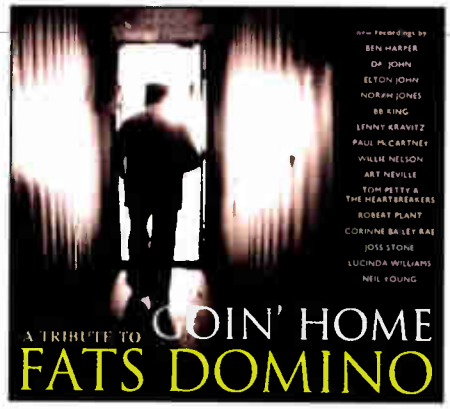
In addition to the work done at Irving Plaza, there was more tweaking and mixing by Harder and some by Dave O'Donnell and one track by Luc Titgat.

In closing, Daulne notes, "Previously, I had helped but I never did a whole album. This is the first time I did my own and paid for everything. That was something new and hard. Now I'm ready to produce others and know how to do it.

"Keeping the music positive balances the energy of the world. When you're having a bad day or something goes wrong, music can be magical and bring you happiness. This is what I do every time through songs and performances." ■

COOL SPINS

The Mix Staff Members Pick Their Current Favorites



Various Artists

Goin' Home: A Tribute to Fats Domino
(Vanguard)

As one who has groused occasionally about the plethora of lame "tribute" CDs in recent years, I have to admit that 2007 has produced two of the best to come down the pike in a long time: the John Lennon *Instant Karma* benefit for Darfur and this two-disc tribute to the great Fats Domino (a fundraiser for Tipitina's Foundation to help revitalize the Lower 9th Ward, Fats' New Orleans neighborhood that was destroyed by Hurricane Katrina). Wisely, most of the artists stick fairly close to Domino's originals (and Dave Bartholomew's brilliant arrangements), but they bring their own personalities to the proceedings, and in all cases demonstrate their affection for this timeless R&B, rock 'n' roll and blues. Believe it or not, there isn't a clinker in this batch of 30 tunes, which includes all of the expected hits, but also many lesser-known numbers, so to single out a few is to ignore many that are worthy of praise. Still, favorites so far include Paul McCartney's uncanny Domino imitation on "I Want to Walk You Home," Elton John's *perfect* "Blueberry Hill," Rancy Newman's moody "Blue Monday," Taj Mahal & The New Orleans Social Club's bluesy "My Girl Josephine," Robert Plant and the Soweto Vocal Choir's Africanized take on "Valley of Tears," Neil Young's quirky "Walking to New Orleans" with swelling strings and choir, Ben Harper and The Skatelites' joyous "Be My Guest," Norah Jones' tasteful and moving "My Blue Heaven" and the Los Lobos–ized reading of "The Fat Man." But it's all good stuff—a can't-miss party in one package!

Executive producer: Bill Taylor. Coordinating producer (and also engineer on several tracks): Chris Finney. Full credits listed at mixonline.com. Mastering: Stephen Marcussen/Marcussen Mastering (Hollywood).

—Blair Jackson

Luna Halo

Luna Halo
(American Recordings)

As the old guard of rock falls away, it seems there are always plenty of hard-rockin' young bands trying fill the gap. Luna Halo can't quite fill the old-timers' shoes (yet), but they're much better than most of the newbies. Whereas many of their compatriots' recordings sound like they were recorded in a garage, Luna Halo's first EP has a tight-knit sound that smartly fuses punk's "jumpy" quality with the sort of hammering drums and swooping bass lines key to many rock anthems. From the bouncing "Kings & Queens" (yes, it's the theme song for *King of Queens*' final season) to the Oasis-ish "Medicate," to the quiet, melodic "On Your Side," Luna Halo seems comfortable in their own skin for their first outing. Catch 'em in your hometown's favorite club—they are sure to please!

Executive producer: Rick Rubin. Produced, mixed and recorded by Neal Avron.

—Sarah Benzuly

Steve Earle

Washington Square Serenade
(New West)

As the title suggests, renegade Steve Earle's latest album is a tribute to his new-ish home in New York City. Earle had his own troubles when he lived in Nashville. "Tennessee Blues" documents his journey north to find his "tribe" and true love in Greenwich Village, where he and his wife, singer/songwriter Alison Moorer, live. Moorer—who has a beautiful and versatile voice—sings with her husband on songs such as "City of Immigrants" and the lovely duet "Days Aren't Long Enough." But *Serenade* isn't all wine and roses. "Steve's Hammer" is a strong protest song meant to be sung with fists raised. All of the tracks are played simply and directly, with acoustic instruments and plenty of attitude. It seems that Nashville's loss is our gain.

Producer: John King. Recording engineers: Josh Wilbur, Tom Camuso. Mixer: King. Recording studio: Electric Lady (New York City). Mixing studio: The Nest (Hollywood). Mastering: Jim Demain/Yes Master (Nashville).

—Barbara Schultz

Avenged Sevenfold

Avenged Sevenfold
(Warner Bros.)

This is why I love listening to Avenged Sevenfold: They may be considered a hard rock/almost scream-metal band, but they delve into a bit of country and emo-tinged vocal territory. Best of all, the album doesn't feel slapped together, but rather sounds as if the band is taking you on a sonic journey. After months of touring, the band's live energy was easily translated to L.A. area control rooms. And while the album's belly is full of rock and metal influences, there is great variety to the instrumentation that brings a fullness to their sound: Check out the soaring strings in "Afterlife" or the gentle, if freaky, vocals of a child on "Unbound." You never know what you're going to get from this band, but it's always interesting.

Producer: Avenged Sevenfold. Engineers: Fred Archambault, Dave Schiffman. Mixer: Andy Wallace. Studios: Soundtrack Studios, Sunset Sound Recorders, Eldorado Recording Studios, Capitol Studios. Mastering: Brian Gardner/Bernie Grundman Mastering (Hollywood). *—Sarah Benzuly*

Roger Powell

Fossil Poets
(Inner Knott)

Best known for his long stint with Todd Rundgren's Utopia, multi-instrumentalist Roger Powell teams up with guitarist/bassist Greg Koch and musician/arranger/engineer Gary Tanin for an instrumental voyage that combines pleasingly catchy retro (and modern) synth textures with atmospheric guitars in a series of stylistically varied compositions. If parts are redolent with echoes of Tangerine Dream and Kraftwerk and other synth pioneers, there is still a lot of original thought in these arrangements, which variously pulse and drift and cascade in many directions. Back in the day, we would've called this "a great headphone album"; that's still a compliment. The sonics are amazing—every bleep, bloop, swoosh and guitar cry is *right there*. Check out "Crème Fraiche," "Tribe By Fire" and "Miles [as in Davis] Per Gallon."

Producer/recorders: Gary Tanin, Roger Powell. Engineering, mixing and mastering by Tanin at GT Labs (Milwaukee). Powell's studio work: Pitchbend (Northern California). *—Blair Jackson*

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L.A. GRAPEVINE

by Bud Scoppa

Weekends at Bernie's have been lively indeed since mastering legend Bernie Grundman and veteran producer Stewart Levine launched Straight Ahead Records in 2005. The partners are passionate about the label's concept, which is dedicated to the recording of performances by top-notch musicians live to 2-track.

Grundman has come full circle with the SAR venture. A jazz buff and an audiophile since his childhood in Phoenix, Grundman got his indoctrination into recording

Bernie Grundman (left) and Scott Sedillo record a live session for Straight Ahead Records. In the background is technician Beno May.

while working at storied Hollywood jazz label Contemporary Records in the '60s, prior to joining A&M in 1968. "They did it in a unique way at Contemporary," Grundman explains, "and I've always had it in the back of my mind to do something similar—to make recordings with good musicianship and good sound, because if you can get those together it's a more fulfilling experience. That's what we're attempting to do with this label. We're just trying to get that sense of being there—to get the best of both worlds."

The most recent SAR project, the just-released *Orbit*, stunningly captures the inspired interaction of a one-off sextet led by keyboard player Neil Larsen, sharing the foreground with guitarist Robben Ford, sax player Gary Meek and trumpeter Lee Thronburg, with bassist Jimmy Haslip and drummer Tom Brechtlein supplying the grooves.

Like every recording in the series, the *Orbit* project went down during the course of a weekend at Bernie Grundman Mastering studios, which has been in its present Hollywood location since 1996. The action started during the day on Friday, as the BGM staff transformed the spacious foyer into an instant recording studio, taking advantage of the space's nonuniform surfaces. The minimal modifications included covering the carpeting with wood flooring and putting up baffles here and there.

In the late afternoon, as the musicians arrived, BGM recording engineer and technician Scott Sedillo swung into action, replacing the custom-made hardware in the adjacent mastering suite (every device in this place is custom-made) with a console sporting 10 old-school rotary knobs built by chief technical design engineer/chief technician Beno May and hooking up a pair of computers he'd designed specifically for this purpose, including the "lunar module," a metal box that looks like a prop from the 1950s TV show *Captain Video*.

Sedillo also fired up a hot-rodded Studer rolling quarter-inch tape. The three devices would record each take simultaneously and identically, capturing the sounds of 12 mics positioned by Sedillo as the players warmed up. Grundman says they're able to get the resolution of two microphones with just one additional stage of electronics. "In a sense," says Grundman, "you do the equalization with the mics."

Another device in constant use during the sessions is a high-end espresso machine, reflecting another one of Grundman's passions. "The espresso really helps," says Sedillo.

There's no window between the suite and the foyer-cum-studio, so Sedillo has no eye contact with the musicians on these sessions. Instead, he focuses on the sounds coming out of the room's large built-in monitors, custom-configured and

—CONTINUED ON PAGE 126

NASHVILLE SKYLINE

by Barbara Schultz

Not long ago in this space, we reported that Masterfonics studios had closed, a casualty of the Emerald Entertainment Group's bankruptcy. As *Mix* has since discovered, we were happily mistaken. In fact, the mastering rooms at Masterfonics have barely changed hands; the "new" faces behind the name Masterfonics are Tommy Dorsey and Jonathan Russell, two staff engineers who have called the facility their home for 13 and seven years, respectively. Dorsey and Russell acquired all of the studio's mastering gear and the Masterfonics name from Voss Development earlier this year.

"We're so glad to have our own business now. It's very exciting, and our clients are excited about it, too," says chief engineer Dorsey. "We obviously put in a lot more hours dealing with all of the transitional business, but we're glad to be doing it. I think it just adds to the positive momentum."

Each of the two new owners has retained his own room in the original Tom Hidley–designed facility, each with its own custom mastering console and Kinoshita/Hidley two-way monitors with TAD components. These two mirror-image studios were once at the core of an expanding studio complex; Dorsey and Russell have reverted to a more personal, boutique approach. "Masterfonics started out where the owner was the head mastering engineer, and it's come full-circle," Dorsey says. "It's very natural and very comfortable this way. This is a service-oriented business, so it only makes sense for us to be deciding what gear to purchase and what decisions are in the clients' best interests—we're on the front lines of all of that."

Dorsey, a Nashville native, says that personal service has become increasingly important as the music business in town has evolved in general. "For a long time, the industry was so much more label-driven," he says. "Now that the technology is so much more affordable, it's the producers and engineers who actually approach us as mastering to work on their projects.

"We're in an industry town and we're in the heart of Music Row, so business is

NEW YORK METRO

by David Weiss

In the seething maelstrom known as New York City's audio post industry, one of the keys for facilities is to keep their eyes (literally) on the bottom line. The concept of mixing and music-creation companies branching out into visual services is nothing new, but these facilities are expanding into editing and graphics creation with an increased level of sophistication.

extremely competitive," Dorsey continues. "But at the same time, the only way to survive is to offer a level of personal attention and a personality-oriented vibe that's very comfortable to people, where clients know they're going to have time to make the decisions they need to make. In mastering, that's so crucial because we're making the final tweaks. That's the last time in the world you want to be rushed."

It's perhaps because of their patient, personal approach that so much work comes to Masterfonics from outside—and inside—Nashville. Both engineers work on styles of music ranging from mainstream pop to hip hop and indie rock, and both have clients all over the country. Russell, for example, masters numerous live recordings for the Dave Matthews Band. (For more on those releases, see this month's "Tour Profile" on page 78.) Dorsey and Russell also say that no matter where their tracks come from, clients are generally checking in with their mastering engineers earlier and earlier in the production process.

"They're coming in or e-mailing files to check in about their mixes," says Russell, who worked alongside Denny Purcell at Georgetown Masters for seven years before joining Masterfonics in 1999. "A lot of times, if they're working in their living rooms or

—CONTINUED ON PAGE 126

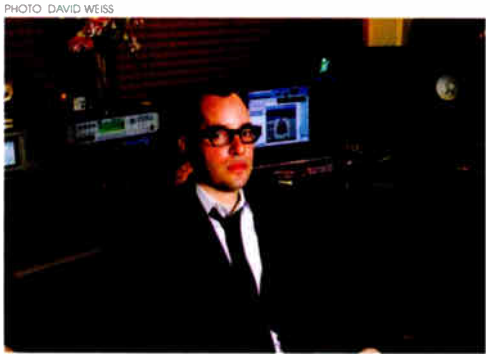
Masterfonics studio owner/engineers Jonathan Russell (left) and Tommy Dorsey

At SoundHound, convergence has officially taken hold with the founding of thePound, a full-service HD and SD video-editing division. Already a bustling audio post house primarily for promos, commercials, trailers and radio with eight audio suites (including three highly advanced 5.1 mix rooms), SoundHound launched thePound as the next logical step for the business.

"Both in New York City and nationally, what's happened is that in audio post you have a high end, a low end and very little middle ground," says Gail Nord, general manager of SoundHound. "It becomes very hard to compete unless you continue to grow and make wise purchases. We tend to be conservative here: We don't build a bunch of rooms and then figure out what to do with them. Instead, we like to have our client base tell us what they need to do. If you jump too early, you end up doing things that are not what the market needs. Wait too long, and you don't have what your clients need and they go elsewhere."

At the New York City original music/sound design/post mix company Ear Goo, the inspiration for opening the motion design company Element was as much owner-driven as it was client-driven. "I always liked the creative process; it's not just about running the company," says Paul Goldman, president/founder/senior creative director of Ear Goo. "I'm a creative person. I'm not a designer, but I have good opinions on visual design. From a business point

PHOTO DAVID WEISS



Paul Goldman of Ear Goo

of view, I wanted to expand my own career."

Partnering with Element co-director/co-founder John Yu, Goldman set up an advanced 2-D/3-D design house with the same address but a decidedly different corporate culture. "Ear Goo is Ear Goo, and Element is Element; they're not a division of each other," he points out. "Element is very buttoned-up, while Ear Goo is more fun because designers and musicians are a different breed."

Although SoundHound has offered video editing of some sort for five years, thePound consolidates formerly spread-out rooms into one purpose-built area, providing Avid Adrenaline and Final Cut suites for the fully blown one-stop shop. "It's a great process because the mixer, editor and producer are completely involved in the process from beginning to end," Nord says. "If they make changes to the picture or to the VO, it's all happening organically in one location."

SoundHound's audio-centric engineering staff had little trouble adapting their skills to the construction of video suites. "Obviously, there were lots of issues with video we needed to discover," says Nord, "but audio post rooms are actually way harder to build [than video rooms]. You're still dealing with picture and video monitoring in both, but in audio rooms, for example, you can't have buzz—the light switch can't make noise—and the rooms must be floated. It took our CTO a little while to

—CONTINUED ON PAGE 127

NEW MASTERING STUDIOS LAUNCH

PUGET SOUND AND COBALTT CELEBRATE GRAND OPENINGS

After two years in the building, Puget Sound Studios (Issaquah, Wash.; www.pugetsoundstudios.com) opened for business this past October, offering diverse services to the Seattle audio industry. The facility comprises a post-production/control room, mastering studio, iso booth and machine room. Owner Bruce Brown points out that the space was meant to be flexible to accommodate any of his clients' needs. "For anyone wanting to record," he says, "the mastering room can also be used as a tracking room."

Brown's studio is built in the basement of his home. It was designed by recording engineer Chris Huston and tuned by Bob Hodas. "We bought the house four years ago when it was just framing," Brown says. "We had the builder increase the height of the basement ceiling to 12 feet." The house is on Cougar Mountain, just outside of Seattle, and Brown says his is the only studio in Washington state that can record, edit and master multichannel DSD/DXD material. The post room features a Pro Tools HD4 Accel system and the first Neve Masterpiece II from Legendary Audio.

PHOTO: DAVID GOGGIN

Cobaltt Mastering owner/chief engineer Bruce Maddocks

The mastering room centers around a Pyramix DSD workstation with EMM Labs converters; monitoring is via Wilson Audio WATT/Puppy speakers. "This has been a dream of mine—bringing the Pacific Northwest a mastering room it can be proud of."

In September, five-year-old recording/archiving facility Cups 'N Strings (Santa Monica, Calif.; www.cupsnstrings.com) welcomed the addition of Bruce Maddocks' Cobaltt Mastering suite. "We opened our Cobaltt Mastering suite to distinguish it from the restoration and tape archival work we are known for here," Maddocks explains. "In a sense, Cobaltt is a case-study room to utilize some of my loudspeaker designs and the acoustic paneling systems I have developed for the personal-use studios of artists and film composers like Harry Gregson-Williams. The concept involves a combination of diffusers, broadband Helmholtz absorbers and membrane bass absorbers. Cobaltt has the flexibility to satisfy the needs of popular music mastering, as well as motion picture and game soundtracks."

Puget Sound Studios owner Bruce Brown

Maddocks, with 30 years of engineering experience, works on a Mac G5 Dual Core running Pro Tools 7.3. His mastering room is still fairly new, but he has already completed projects for rapper Nash the Kid, MC Nate Nerd and chanteuse Pauline Drossart. A number of soundtrack projects are also in the works.

—Barbara Schultz

BEHIND THE GLASS

NOT JUST A HOBBY

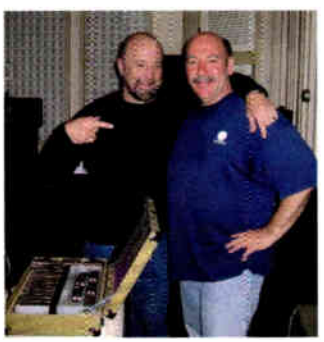
LOCKETT TRACKS IN L.A.

Bassist Tommy Lockett completed tracking a new album at The Hobby Shop (L.A.) this fall. Ai Fujisaki and Andrew Murdock co-engineered the Heat Records release, which features performances by drummer Tom Brechtlein, keyboardist Steve Weingart and sax player/studio owner Scott Gilman.

From left: Tom Brechtlein, Steve Weingart and Tommy Lockett

ABSOLUTELY FABULOUS

RIGSBY RECORDS THE T-BIRDS



Tempest Recording (Tempe, Ariz.) owner/engineer Clarke Rigsby tracked a live performance by the Fabulous Thunderbirds at The Rhythm Room club (Phoenix). The tracks will be used for an upcoming live release co-produced by Rigsby and the T-Birds' longtime frontman, Kim Wilson.

Kim Wilson points to engineer/studio owner Clarke Rigsby

STUDIO ICONS

ULTIMATE SESSIONS
SANTANA AT LAUGHING TIGER

From left: vocalist Tony Lindsay and engineer Jim Reitzel with Carlos Santana

Carlos Santana visited Laughing Tiger Studios (San Rafael, Calif.) to lay tracks for an upcoming album. The sessions included a collaboration with Jennifer Lopez, which was produced by Dr. Luke, and the Santana-produced song "Interplanetary Party." Both songs were engineered by Jim Reitzel with assistant Rick Vargas.

ECHO UPGRADE
NEW CONSOLE FOR T.I.

Echo Studio A now sports a Digidesign ICON.

Hip hop artist/actor/producer T.I. has added a Digidesign ICON console to the George Augspurger–designed Studio A of his Echo Recording Studios (Atlanta). The studio's two other rooms are fitted with Pro Tools HD and Control|24 systems. Chief engineer Elliot Carter says many projects at Echo begin in the B or C room and are completed in Studio A.

TRACK SHEET

SOUTHEAST

Projects mixed and/or mastered at owner **Jose Blanco's Master House Studios** (Miami) received six Latin Grammy nominations this year. Currently, Blanco is mastering a classical album featuring the **Miami Symphony** with conductor/composer/director **Eduardo Marturet**...**Dave Harris** mastered recordings for **Slow Runner**, **Mama Said**, **Madison Smartt Bell & Wynn Cooper**, **Regina Hexaphone** and **The Spongetones** at **Studio B Mastering** (Charlotte, NC)...**JamSync** (Nashville) president **KK Proffitt** celebrated the tenth anniversary of the facility by adding video production to the studio's list of services. Proffitt also recently completed several surround mixes for Big Idea's *VeggieTales* TV/DVD series.

NORTHEAST

Avatar Studios (NYC)-based mastering engineer **Fred Kevorkian** mastered projects for **Kelly Rowland**, **Blood on the Wall**, the **Dub Trio** and **Joseph Arthur**. A few other recent sessions at Avatar: **Mick Jagger** was interviewed by *The Today Show*'s **Matt Lauer** in Studio C; **Chase Levy** produced and **Rick Kwan** assisted. **James Blunt** was in C for a video shoot for Walmart Soundcheck. **Charles Gant** produced, **Anthony Ruotolo** engineered and **Aki Nishimura** assisted. **Mudvayne** tracked in Studio B with producer **Dave Fortman**, engineer **Jim Keller** and assistant **Justin Gerrish**...**Monday Night Fight Club** just opened a new recording studio in Manhattan. The 5,000-square-foot facility includes an SSL 4000 G+–equipped A room and a B room centered around ProControl 24...At **Chung King Studios** (NYC), producer **Prince Paul** (of De La Soul) and engineer **Larry Legend** spent six days tracking for children's book/CD project *Baby Loves Hip Hop*, part of the *Baby Loves Music* series. Paul assembled a cast of emcees to participate, including **Chali 2na**, **Wordsworth**, **Ladybug Mecca** and **Scratch** (from The Roots)...Producer/engineer **George Walker Petit** (featured in last month's "New York Metro") mixed singer/songwriter **Amy Lennard**'s new CD in the A and C rooms at **Legacy Recording Studios** (NYC). **Kevin Porter** assisted. The release is slated to be mastered by **Emily Lazar** at The Lodge (NYC).

MIDWEST

Jack LeTourneau recorded, mixed and mastered the 5.1 and stereo versions of the soundtrack to the film *Madison* at **Elabs Multimedia** (Madison, WI). Also at Elabs, blues artists **West Side Andy** and **Mel Ford Band** mixed and mastered an upcoming release with producer **Andy Linderman** and engineer LeTourneau.

The Waybacks, from left: Joe Kyle Jr., Warren Hood, Chuck Hamilton and James Nash

COMPASS POINTS TO WAYBACKS

Compass Records artists The Waybacks spent 10 days in Compass Sound Studio (Nashville) tracking for a spring '08 release. The Greencards and the Infamous Stringdusters are among the special guests who will appear on the album. Erick Jaskowiak recorded the sessions to Pro Tools HD using API, Millennia and Valve Audio mic pre's and Tube-Tech compression. Producer Byron House says that numerous small- to medium-sized rooms at Compass made the recording setup flexible and workable. "Whenever we needed total isolation, we actualy had six live rooms working simultaneously," House says. "It was quite an asset to the project and an incredible feature for a medium-sized studio with a very cool studio apartment-type feel."

NORTHWEST

Kevin Nettleingham mastered releases for Portland, OR–area artists **Eric Hatcher & The Worker Bees**, **Carol Schmuland**, **Matt Vrba**, **Shama** and **Valet** at his **Nettleingham Audio** (Portland) studio. Nettleingham also receives numerous projects via the Web, such as recent tracks for Latvian band **Zidruuns** and the New Mexico–based radio show *Gilbert and Friends*...Guitarist **Buckethead** visited **Studio 880** (Oakland, CA) with Guns 'N Roses bandmate **Brain**. The session, for an upcoming soundtrack, was produced by **Peter Scaturro** and the artists. **Sean Beresford** engineered and **Brad Kobylczak** assisted.

SOUTHERN CALIFORNIA

Stephen Marsh mastered **The Donnas**' *Bitchin'*, produced and engineered by **Jay Ruston**. Marsh works out of his **Stephen Marsh Mastering** in Hollywood...While on tour, **Ted Wulfers** stopped at **Mad Dog Studios** (Burbank) to record overdubs for two upcoming CDs; **Eric Corne** engineered...**Ocean Way Studios** (Hollywood) hosted some of the mixing sessions for **Lyle Lovett**'s new album, *It's Not Big It's Large*. Other mixes were done at engineer **Nathaniel Kunkel**'s **Studio Without Walls**. Lovett, **Billy Williams** and **April Kimble** produced the tracks, which were engineered by Kunkel. ■

Please send "Track Sheet" news to bschultz@mixonline.com.

L.A. GRAPEVINE FROM PAGE 122

assembled from vintage Tannoy components, as Levine and Grundman offer specific comments.

These are virtually instant records. "We're mixing with a mastering suite as

All of the gear at Grundman Studios is customized. Says Paul Grundman, "And that's not an API! Mixing on the bottom, mastering on the top."

opposed to a mixing room, so we're listening in a calibrated environment," Sedillo points out. "So when I'm mixing, I know what I've got. Everybody's hearing the same mix as it happens. They're playing live, I'm mixing live and it's done. We don't need to master except to sequence and occasionally to edit, creating a tail end or editing a solo section."

"The audiophile world is getting to know us, thanks to Paul," says Grundman, referring to his son, Paul Grundman, whose most challenging task as Straight Ahead's managing director is figuring out how to turn this labor of love into a viable business. "We now want to expand into some more mainstream stores and areas because it's difficult to sell enough numbers in the audiophile market to be able to keep making these records."

Grundman is delighted with the five albums (including an as-yet-unreleased jazz vocal album from Dwight Tribble) recorded for SAR thus far. "It's a challenge to see what we can get out of this way of recording," he says. "But the process itself isn't that formal. It's grass-roots—everybody just hangs out and there's no ego anywhere. And Stewart's really good at getting the most inspired performances out of the musicians; he knows when it's happening."

There's no recording session scheduled at BGM for the Friday of my visit, but there is an intriguing mastering project going down. Arnie Acosta, U2's mastering engineer, is in one of the four suites remastering *The Joshua Tree* for the landmark album's 20th-anniversary reissue. It's highly unusual for BGM to allow an outside mastering engineer to work in one of the rooms, but this project is special. Acosta is an old friend of Grundman's, and this is the second project he's done here, following his mastering of the band's 2005 album, *How to Dismantle an Atomic Bomb*.

Before the project started, Sedillo put his head together with Acosta and Cheryl Engels, who's coordinating the mastering effort. "We asked the question, 'What can we do to *really* remaster this?'" Sedillo explains, "because there's no end to the amount of digitally remastered reissues that don't sound any better than the original release. So we thought about how we could really make a difference, and Beno and I designed some vacuum tube electronics around a tape machine to try to extract as much as we could from the tape itself. Because what we found from analyzing all the previous releases and the original master tape from 1987 was that the tape machines of old could actually record more information than they could play back."

It turned out that there were a lot of hidden gems on the analog tape. "There's also the matter of the mastering chain and how transparent a transfer you can make without losing fidelity," Sedillo explains. "When you compare a master tape and even an audiophile transfer of it, it's not close. So we strove to preserve what was actually on the tape, and the electronics we developed captured that detail so well that Arnie was able to choose the approach he wanted to take, unencumbered by a lack of fidelity coming off the tape. In fact, I heard that one bandmember commented that they hadn't heard some of the drum parts since they mixed it."

Sedillo tempers his enthusiasm for what he's hearing with a more practical consideration: "When you legitimately improve something that the fans are used to hearing a certain way—a wider image, more fidelity, bottom, space, what have you—the question then becomes, 'How will it be received?' So it'll be interesting to see how the fans respond to this version. But the band is excited, and we're excited."

What I find particularly fascinating is the way the recording and mixing techniques employed on the Straight Ahead sessions flow so logically out of Grundman's less-is-more mastering methodology. But synergy is a way of life at BGM, which Paul Grundman refers to as "the Rand Corporation of mastering."

I make my exit to the sound of an assistant whipping up foam and the aroma of another Daneli cappuccino. These guys really appreciate quality. ■

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

NASHVILLE SKYLINE FROM PAGE 123

home studios, they don't necessarily know how it's going to sound. When you're monitoring in home studios, getting the low end can be a crap shoot sometimes."

And, according to Dorsey and Russell, low end has never been as important to as many types of music as it is now. "In mastering, being fluent in diverse styles of music is the name of the game," says Russell. "Even on country records now, you hear a lot of low end, which you would normally associate with hip hop and rock records."

"People are crossing boundaries," Dorsey agrees. "Country styles are not all alike. The pop market is broadening. There's so much more wide acceptance of different styles that you could call 'pop.' That holds true for 'urban.' Whereas you used to be able to make so many generalizations about what you needed to listen for in certain genres, now it's really more about getting to know the artist's taste. It's about connecting with the client more than trying to impose some sort of industry-standard construct of what a hip hop record is supposed to sound like."

During their tenure as staffers at Masterfonics, Dorsey and Russell have amassed a stellar list of clients from across all of those genre boundaries. A small sampling of credits include Rissi Palmer, Kimberley Locke, Young Buck, Alison Moorer, Synonna, LeAnn Rimes, Lil' Wayne, Chingy, Venus Hum, Kylie Minogue and Twista.

"Being in this situation, being at Masterfonics has always given us wonderful exposure," Dorsey says. "We see so many industry people all the time. Even if it's stuff we're not working on, people bring things in to play for us. That's what's so cool about this location. People come by to share what they're working on, or share their thoughts in terms of mixes or in terms of gear. There's a lot of interaction, and manufacturers come in to let us evaluate their equipment, so we're always testing things. Having been at Masterfonics for this length of time and now being in the stream of everything that's going on as business owners is really a bonus for us and our clients."

The other rooms within the building that houses Masterfonics Studios will also soon be up and running, as a separately owned commercial recording facility. *Mix* will share details as they become available. ■

Send Nashville news to Barbara Schultz at bschultz@mixonline.com.

realize that they were over-engineering the video rooms and that they could back off."

Conversely, the purely software-based nature of motion-design work gels nicely with the direction that music production has taken. "There was a time when you were doing 50-percent outboard, but audio is now 100-percent in the box," Goldman says. "In video, it's also just guys with a mouse and a keyboard. With OMF'ing, a lot of visual programs will transfer directly to Pro Tools—not just Avid, but also Final Cut. When it comes to bridging the audio and visual components, there's a lot of internal logistics that the client never sees."

According to Nord, beyond the technical nuts and bolts there are some other key differences between audio mixing and video editing that SoundHound had to grow accustomed to during the past five years. "One of the main differences is the way the work comes in. With eight audio rooms, four or five of them can have full-day mixes and the rest might have half-days—it can add up to 25 or 30 sessions in a day with a tremendous amount of client contact.

"With the Avid rooms, there's more prep work. You have to get elements delivered in advance and prepared for the load, and then work all day, sometimes day after day. So there were lots of media-management issues we weren't used to; in audio, tapes come and go, but they don't stay."

Goldman has also experienced a learning curve in adopting motion graphics into his workflow. "The difference between audio and visual workflows is night and day," he says. "For audio, they book you and do it in a day. In design, you could have six people working on one 3-D move, and it could take days to render that move. Also, designers sometimes never even talk to a client because in that world there are producers. But at Ear Goo, one of the reasons people are hired is how they deal with clients directly."

While owners Burman and Nord are excited about what SoundHound and thePound can do for their clients, they also like the positive impact the diversity offers to the staff. "Certainly, from a business standpoint, our hope is that we continue to get really juicy projects that require everything we have to offer," she says. "The thing that's most appealing to our clients is that they can say, 'Wow, I need Damon Trotta to write original music for something that Lee Gurevich will be cutting.' But if someone has a project that they want to simply pop in our laps, and ask us, 'How can we get this done?' that's an ideal scenario, as well."

PHOTO ANDREA RHODES

Jeff Berman (owner) and Gail Nord (general manager) of SoundHound and thePound

For Goldman, the fun has been seeing where the music leads him and his fellow artists at Ear Goo and Element. "If we're pitching storyboards or designing spots for a show, I'll be thinking about the sound design and music that goes along with the visuals—that makes our pitches really strong," he points out. "From a creative standpoint, audio will always be a major player in what we do." ■

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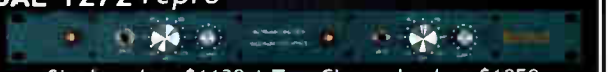

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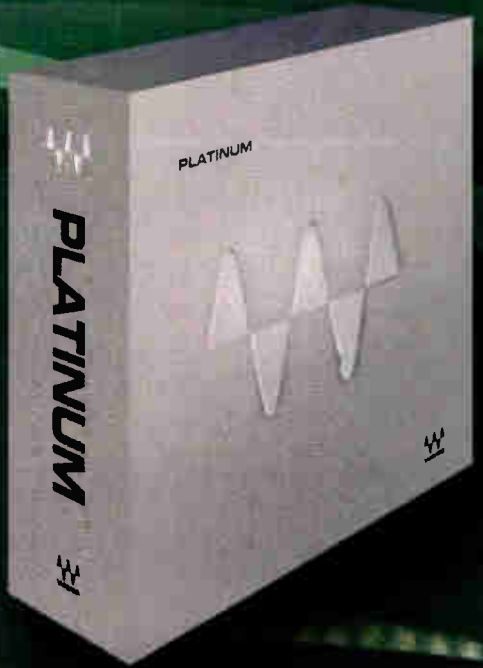

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An essential addition to your MOTU studio are the six new PLAY-powered Virtual Instruments just released by critically acclaimed sound developer EASTWEST/QUANTUM LEAP.

All of these Virtual Instruments include the EASTWEST PLAY advanced sample engine, with 64/32-bit support, easy to use browser, user controllable articulation window that allows users to build custom key-switches, built-in scripts, legato sensing, high quality convolution reverb (including 29 impulses), unique effects such as ADT (Automatic Double Tracking), and a high quality resampling engine.

There are too many other features unique to each product to cover here, so we urge you to go online and check out the video tutorials and audio demos.

- **SD2**
  The sequel to Stormdrum that is twice the size of the original with all new content
- **FAB FOUR**
  Virtual Instrument containing 47 instruments inspired by the sounds of the Beatles
- **VOICES OF PASSION**
  Female voice based instrument - Ethereal, Passionate, Mysterious vocals
- **MINISTRY OF ROCK**
  The ultimate production toolbox for rock producers recorded in famous EASTWEST Studio 2
- **GYPSY**
  Extremely detailed Gypsy style instruments essential for film, tv and game composers
- **QUANTUM LEAP PIANOS**
  The most detailed collection of the world's finest grand pianos

Komplete control

For DP5 users who want it all: KOMPLETE 5 is a first-class collection of 11 groundbreaking instruments, including the all-new KONTAKT 3 and GUITAR RIG 3 Software Edition. You also get the award-winning MASSIVE, ABSYNTH 4, BATTERY 3, FM8, REAKTOR 5, B4II, AKOUSTIK PIANO, ELEKTRIK PIANO, and PRO-53. Add KORE 2 — the Super Instrument — and you have perfect synergy with KOMPLETE 5: Use the Sound Browser in KORE 2 to access any of the 7,500 presets from KOMPLETE 5 within seconds. Open the sound and instantly tweak it analog-style using the KORE 2 hardware controller. Access and tweak your software instruments like never before. KORE 2 and KOMPLETE 5 — an infinite universe of sound at your fingertips.

Vintage EQ/Compression

The Focusrite Liquid Mix is another Focusrite first and a true one-of-a-kind. Based on the award-winning Liquid Technology, the Liquid Mix provides 32 channels of simultaneous DSP powered vintage and modern EQ and Compression plug-ins into your DP5 mix without affecting your host computer's CPU. 40 classic compressors and 20 timeless EQs are included. Each EQ and Compressor emulation is painstakingly created though a process called Dynamic Convolution which is a huge step beyond modeling. Through Dynamic Convolution, every frequency at every possible combination of settings is perfectly sampled. That means that you get the true sound and feel of a vintage or modern classic. Tens of thousands of dollars of gear is now right at your fingertips! Think how great your Digital Performer tracks will sound with the Liquid Mix.

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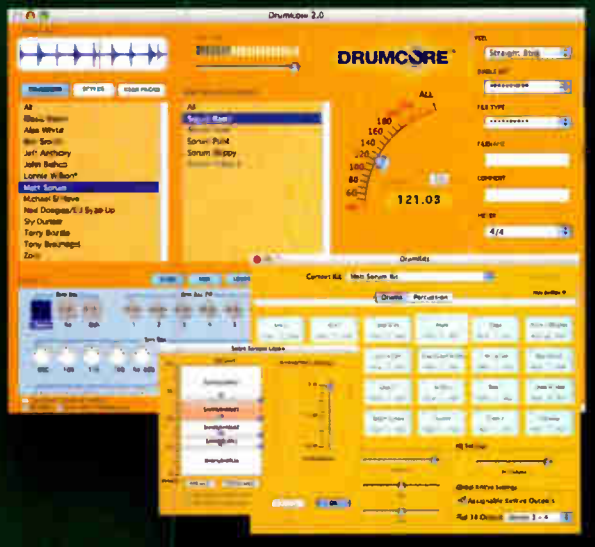
The Sleek and Powerful MOTU Studio

Legendary grooves & drumkits

Submergible Music Drumcore delivers access to twelve world-class drummers, such as Terry Bozzio, Matt Sorum, Sly Dunbar and Zoro. The perfect tool for songwriters and composers who need drums quickly in a multitude of styles. Features include an Audio and MIDI librarian (quickly find that perfect groove), "GrooveSets" (for easier songwriting), MIDI instrument (loaded with each drummers' MIDI drumkits) and the "Gabrielizer"(groove generator). Simply drag-and-drop from Drumcore to your Digital Performer 5 tracks or Clippings window.



Complete control

The M-Audio Axiom 25 represents an entire line of advanced Axiom MIDI controllers that are perfect for Digital Performer and your MOTU virtual instruments. Built around a rugged chassis, the Axiom 25 includes 25 semi-weighted velocity-sensitive keys with assignable aftertouch, eight MIDI trigger pads, six reassignable transport buttons and 20 non-volatile memory locations. Eight endless rotary encoder knobs let you get your hands on MachFive 2 parameters, Digital Performer's Mixing Board and more. Virtually everything is freely MIDI-assignable, and the backlit LCD screen makes programming easy and intuitive. If you need more keys and controller options, the 49-key Axiom 49 and the 61-key Axiom 61 complete the line.

Advanced waveform editing

Your DP mastering and processing lab awaits you: BIAS Peak Pro 5 delivers award winning editing and sound design tools, plus the world's very best native mastering solution for Mac OS X. With advanced playlisting. Superb final-stage processing. Disc burning. Plus PQ subcodes, DDP export (optional add on), and other 100% Redbook-compliant features. Need even more power? Check out our Peak Pro XT 5 bundle with over $1,000 worth of additional tools, including our acclaimed SoundSoap Pro, SoundSoap 2 (noise reduction and restoration), Sqweez-3 & 5 (linear phase multiband comoression/ limiter/upward expander), Reveal (precision analysis suite), PitchCraft (super natural pitch correction/ transformation), Repli-Q (linear phase EQ matching), SuperFreq (4,6,8, & 10 band parametric EQ) and GateEx (advanced noise gate with downward expander) — all at an amazing price. So, when you're ready to master, Peak Pro 5 has everything you need. it's the perfect complement — and finishing touch — to Digital Performer 5.

Professional pad controller

The Akai Professional MPD24 is the velocity sensitive pad controller for musicians and DJs working with sampled sounds. The MPD24 features 16 MPC-style velocity and pressure sensitive pads plus transport controls for interfacing with Digital Performer and your virtual instruments. You get Akai's exclusive feel: either MPC 16 Levels or Full Level features for ultimate pad control. Now add four selectable pad banks totaling 64 pads, six assignable faders and eight assignable and 360 degree knobs for transmitting MIDI Control Change data. Included editor/librarian software gives you complete, intuitive programming and control for DP5 all of your other software titles. The MPD24 provides unprecedented creative freedom for manipulating sampled material.

The MOTU experts at Sweetwater can build your customized MOTU studio for you. We'll help you select the right components, and we can even install, configure and test the entire system for you. Why shop anywhere else?

New Mackie monitoring

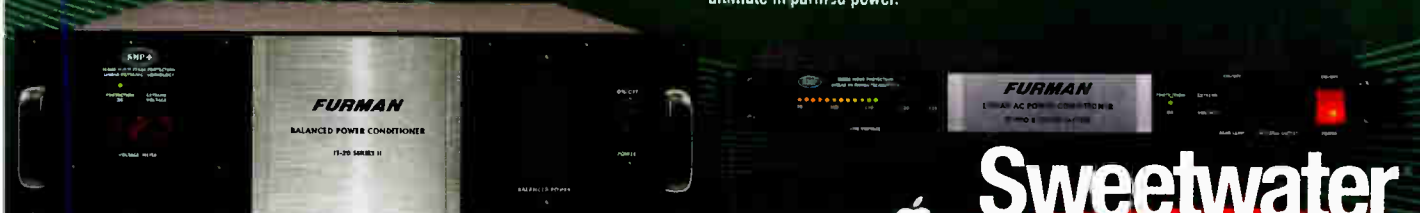
The high-resolution Mackie HR824mk2 active studio reference monitor sounds as smooth as it looks. The new Zero Edge Baffle™ minimizes diffraction for a crystal clear image of your Digital Performer mix, and controls sound waves for wide, even dispersion. The rear-firing, mass-loaded passive radiator ensures tight, detailed bass extension, down to 35Hz. And thanks to remarkably linear frequency response, you always get accurate mix translation. Acoustic Space, LF roll-off and HF controls let you tailor the sound to suit your MOTU studio space—and your taste. With all this and more, the HR824mk2 turns your Digital Performer desktop studio's sweet spot into a full-on sweet zone.

New hands-on control for DP5

The new Mackie Control Universal Pro control surface gives you ultimate hands-on control of your Digital Performer desktop studio. Nine motorized, touch-sensitive Penny + Giles faders, eight V-Pots and more than 50 master buttons let you tweak parameters to your heart's content. Unlike generic MIDI controllers, the MCU Pro employs a sophisticated communication protocol that delivers ultra-precise control, makes setup easy - no mapping required - and enables you to see your mix in action with real-time visual feedback via the huge backlit LCD and eight LED rings. Apply the custom overlay for Digital Performer for dedicated labeling of DP-specific functions. The MCU Pro is the ultimate way to mix in DP5!

Purified power

To get the most out of your MOTU studio gear, you need the cleanest power possible. The negative effects of poorly supplied wall outlet AC power on your gear can be dramatic, without your ever knowing how good your gear can really sound with properly supplied power. Furman Sound introduces the all-new Power Factor Pro with its ground-breaking Clear Tone Technology™, which actually lowers the AC line impedance supplied by your wall outlet while storing energy for peak current demands — over 45 amps of instantaneous current reserve. Additionally, Linear Filtering Technology™ (LiFT) dramatically lowers AC line noise to unprecedented levels in the critical audio frequency band. Also included are Furman's unique Series Multi-Stage Protection Plus (SMP+) surge protection and automatic Extreme Voltage Shutdown (EVS), which protect you from damaging voltage spikes or sustained voltage overload. Equipped with the same LiFT and SMP+ features, plus EVS Extreme, the Furman Sound IT-20 II ultra-low noise balanced isolation power conditioner is designed for the most critical, ultra-low noise installations. Delivering an astonishing 80dB of common noise reduction from 20Hz-20kHz, you're assured the lowest possible noise floor for all the gear in your MOTU studio. The IT-20 II's toroid transformer design assures a contained magnetic field for complete isolation from sensitive studio components nearby. The ultimate in purified power.



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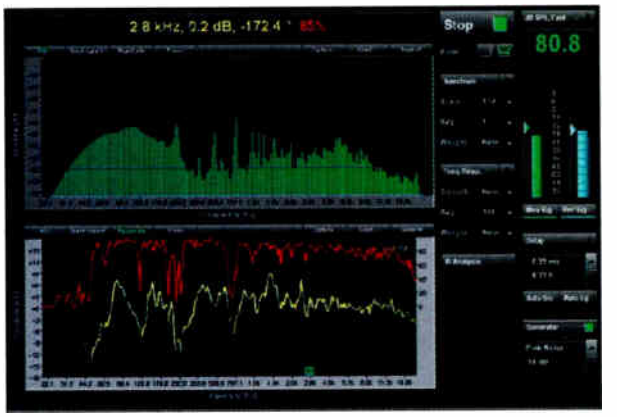
BY HARRY BRILL JR.

EAW Smaart Version 6

Plotting Polars, Tweaking Traces



Smaart's two-up screen allows for any combination of RTA, spectrograph, magnitude or phase displays. RTA (top) and magnitude are shown.

Over the years, SIA Smaart has revolutionized the pro audio industry, offering dual-channel FFT analysis at an affordable price. Now in Version 6, EAW Smaart offers a streamlined interface that's easier to navigate and faster than previous versions because it's been rebuilt from the ground up. Smaart 6 is available for Windows 2000/XP/Vista and Mac OS 10.4. I'll focus on the Windows version, which is what I use, but many of these techniques also apply to the Mac platform.

SEE WHAT YOU HEAR

Smaart 6 allows a two-up display of any combination of RTA, spectrograph, magnitude or phase readings. Connect your cue bus to Smaart in Spectrum view to display whatever you cue up. The RTA is in real time, while the Spectrograph shows frequency and amplitude over time, which is especially useful for finding drum resonances, problem frequencies onstage or when EQ'ing lavalier and podium groups.

You can find room resonances by using terminated pink noise while viewing the Spectrograph. Place your measurement mic in the room, and with the Spectrograph display active, play pink noise into the room and set your levels. Mute the pink noise and note which frequencies continue to ring.

CHECK YOUR MICS' RESPONSES

From the Magnitude display, connect your measurement mic as the reference channel and your favorite mic as the measurement channel. Place the capsules on-axis and close together about 10 feet in front of a speaker. Use Auto-Small to set delay, and you'll see your mic's frequency response. Without moving the reference mic, change the angle of the testing mic to show the response at various angles. This is useful for showing frequencies that are likely to feed back and finding the best off-axis angles for placing wedges or loud instruments.

MAKE YOUR OWN POLAR PLOTS

Place your measurement mic about 10 feet from your speaker. Play pink noise through the speaker. Start the Spectrograph. Press Stop when you reach one division on the graph. Turn the speaker 5 degrees and repeat the previous step. Continue through 360 degrees of rotation, and you'll have a decent 2-D polar plot on the screen.

QUICK TRACE CAPTURING

To capture a trace, press the space bar. A Capture dialog box pops up, where you can name the file or press Enter to save the captured trace. To view the Trace Legend, use Alt + L. Once the Legend is open, you can select a trace, choose to show/hide it using the buttons in the legend, delete it using the Del key or move the front trace up/down using Ctrl + the up or down arrows.

Pressing Ctrl and then clicking on the screen at the desired location will lock the cursor position. With the cursor locked, press H for that frequency's harmonic view. Successive H key-presses will toggle between even/odd/all/off. Pressing Ctrl + X removes the cursor lock.

SCREEN SUNGLASSES

Bright sunlight can be a problem when using a laptop outdoors. Select High Contrast View from the Options menu, which turns the text black and the background colors white. You can also make the plot lines thicker from the Options window on the Freq Resp tab. Under Graph Parameters, select the Line Thickness drop-down and choose "2."

When in Freq Resp view, the trace will not settle on some newer computers, even with a lot of averaging in some cases because the software calculations are so fast. As all measurements run at all times, a workaround is to increase the FFT size of the Spectrum measurement. This increases CPU overhead, thus slowing down and settling the jittery trace. Click on Options -> Spectrum, go to FFT Parameters and use the FFT Size menu.

THE PHASE TRACE

The Phase Trace is useful for fine-tuning your crossover alignment, delay rings and seams between subsystems. The horizontal, flat part of the phase trace shows where the reference and measurement channel are arriving in time. The left side of the horizontal flat spot (usually a left-to-right downward slope) is where the measurement channel lags behind the reference. The right side of the horizontal flat spot is where the measurement channel leads in time (usually a left-to-right upward slope). One complete wrap equals 360 degrees.

SUB-TO-MAIN ALIGNMENT

Use 32 or more averages. Place the measurement mic close to the floor, about three-quarters into the room. Un-mute the lows on one side. Use Auto Lg (press L, then Enter) to set Smaart's internal delay. Go to Freq Resp and capture a trace (press Space, then Enter). Mute the LF drivers and turn on the subs. Adjust the sub drive so that the levels match to the low trace at the crossover frequency. Do not adjust the delay within Smaart, but rather on the sub output of your system controller until the phase response of the subs is parallel with the lows through the crossover frequency.

If the phase overlaps, you're done. If the phase trace is parallel through the crossover region but not overlapped, this usually indicates that the sub polarity needs to be inverted. Invert the polarity of the sub drive and verify that the traces overlap through the crossover. These examples assume your subs are closer than your mains. You may need to reverse the order (delay the mains) if you're using horn-loaded subs with a stacked P.A. system. ■

Harry Brill Jr. is a freelance front-of-house engineer, A1 and system tech based in the Orlando, Fla., area.

m201

microphone preamplifier with A/D converter

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Each channel has an input mode switch to select between standard 48V input, ribbon mic mode, front panel HI-Z inputs, or optional DPA high voltage (130V or 190V) inputs. Also included is our newly designed M+S matrix circuitry with a front panel width control.

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External synchronization to word clock or Digidesign™ LoopSync™ is available, and features our proprietary dual stage PPL with s-Lock for extremely low jitter and rock solid digital stability without the use of sample rate conversion.

Whatever the application, the exceptional sonic performance and remarkable functionality of the new m201 will help you make the finest recordings of your career.

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Musical Director / Keyboards / Programmer
Justin Timberlake
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"There are hundreds of virtual instruments to choose from. But every time I walk on stage with Justin, I use MachFive. It's rock solid and let's me import any sound from my massive sample library, in any format, with no conversion. Plus, MachFive's sound design features are simply amazing. No other sampler even comes close. With the constant performance pressure and last-minute demands I face on tour, I've got to have the state of the art. MachFive delivers for me, time and time again."

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