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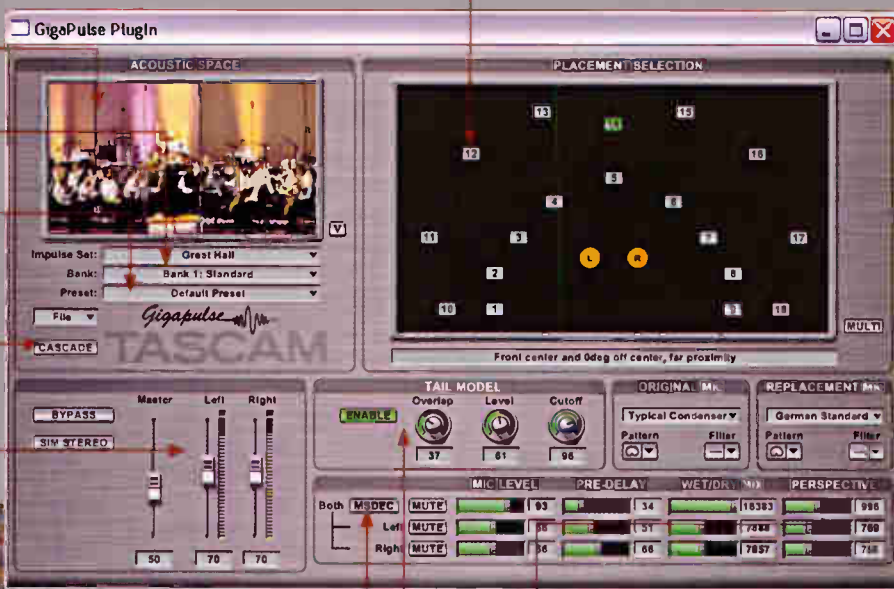
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MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

January 2004, VOLUME 28, NUMBER 1

live sound special!

New products for touring pros, top-selling tours and a look into the business in a special investigative report.

31 Feast or Famine

Challenging Times in the Live Sound Industry

With shorter touring schedules, increasing ticket prices and a decreasing amount of funds from the major labels, for most sound companies, the business directive is on nurturing existing clients, finding new markets and keeping up with technology. *Mix* digs into the "business" of live sound to assess the health of the industry.

42 Wireless Nation

The ABCs of System Setup

The airwaves are becoming more and more congested with the rise of digital television and the popularity of cellular gadgets. For pro audio engineers, this means you can no longer just turn on a mic and hope for the best. James Stoffo, RF guru and owner of Professional Wireless Systems, talks with *Mix* and offers more than a few tips to find the right frequency for the job.

86 Dedicated Speaker Processors

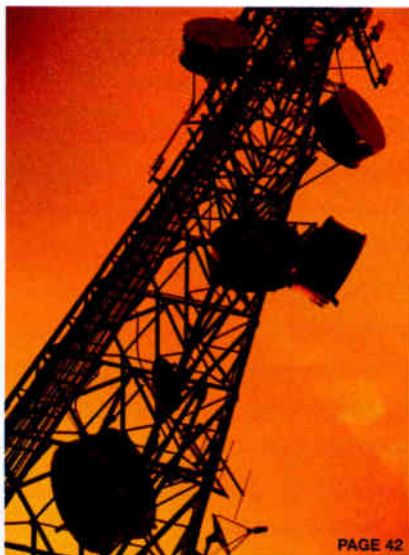
Crossovers, Delay, EQ and a Whole Lot More

What were once simple multiway loudspeaker crossovers have evolved into powerful DSP engines with cluster and alignment delays, a palette of equalization choices, system-protection limiters, common and exotic dividing filters, subwoofer outputs and memory presets to store your favorite settings. *Mix* sound reinforcement editor Mark Frink surveys the scene, looking at the latest offerings on the market.

Tours, Tours and More Tours

Mix expands its touring coverage with profiles of seven of the industry's hottest acts, beginning on page 70:

- Godsmack
- Red Hot Chili Peppers
- Good Charlotte
- Lucinda Williams
- Simon and Garfunkel
- Primus
- Branford Marsalis



PAGE 42



PAGE 86



PAGE 72

On the Cover: Godsmack. Pictured from top to bottom: Good Charlotte, Lucinda Williams, Red Hot Chili Peppers, Branford Marsalis, Primus, Simon and Garfunkel. For more, see page 70. Main photo: Steve Jennings.

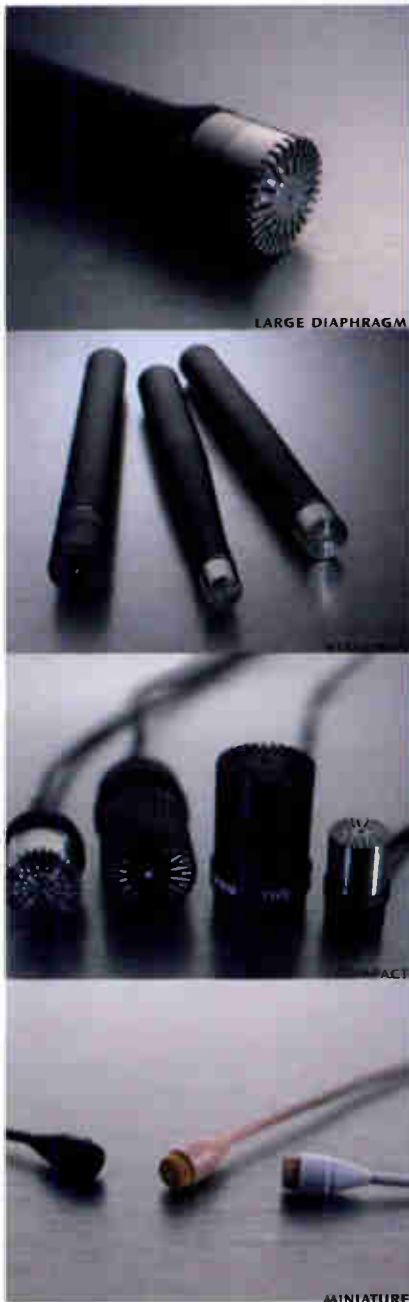


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World Radio History

sections

LIVE MIX

- 66 Live Mix News
- 90 New Sound Reinforcement Products

IN STUDIO

50 In-Studio With Melissa Etheridge by Mr. Bonzai



In 1993, Melissa Etheridge garnered huge commercial success with her fourth album, *Yes I Am*, which sold 6 million copies in the U.S. and won her a Best Female Rock Vocalist Grammy. Last fall, Etheridge took over Los Angeles-based NRG Studios with producer/engineer Ross Hogarth to record her new album, *Lucky*, which will be released next month. *Mix* caught a rare glimpse of the artist in the studio with Hogarth and her ace band in this all-access studio pass.

RECORDING NOTES

- 124 **B.B. King** by Chris J. Walker
- 125 **The Beatles' "Let It Be...Naked"** by Matt Hurwitz
- 126 **Classic Tracks:** Neil Sedaka's "Breaking Up Is Hard to Do" by Gary Eskow
- 128 **Cool Spins**

COAST TO COAST

- 134 **L.A. Grapevine** by Maureen Droney
- 134 **Nashville Skyline** by Rick Clark
- 135 **N.Y. Metro Report** by David Weiss
- 136 **Sessions & Studio News** by Breean Lingle

technology

- 96 **Tools of the Trade**
- 100 **Field Test:** Lake Technology Contour Loudspeaker Controller
- 106 **Field Test:** MOTU Digital Performer 4
- 110 **Field Test:** Oram GMS AI Schmitt Pro-Channel Compressor/EQ/Mic Preamp



PAGE 106

- 114 **Field Test:** Universal Audio Model 2192 Digital Audio Interface
- 116 **Field Test:** Event Electronics ASP8 Studio Precision Monitors



PAGE 116

- 118 **Field Test:** Geoffrey Daking Mic Pre/EQ
- 168 **Power Tools:** Yamaha 03D by Robert Scovill

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Visit www.mixonline.com for bonus materials on select stories in this issue.

columns

- 22 **Fast Lane:** Hit the Road, Jack by Stephen St.Croix
- 26 **Insider Audio:** Bungling in the Jungle by Paul Lehrman



PAGE 26

- 52 **Mix Interview:** John Meyer by George Petersen
- 60 **Mix Masters:** Eric Schilling by Maureen Droney
- 92 **Bitstream:** Quietening Down That Computer by Oliver Masciarotte
- 120 **Tech's Files:** Guitar Sounds, Mods and Tweaks by Eddie Ciletti

departments

- 10 **From the Editor**
- 14 **Feedback:** Letters to *Mix*
- 16 **Current**
- 148 **Ad Index**
- 150 **Mix Marketplace**
- 156 **Classifieds**



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World Radio History



Goin' Live? Tough Climate, Smart Investments

If there's a slow season in live sound, it's January. Oh sure, there were a bazillion one-offs on New Year's Eve, but between Christmas and Groundhog Day, a lot of the touring season pretty much hibernates or drops to a snail-mail's pace. Many tours like to wrap up before the holidays, take a hiatus during the worst part of winter or merely wait until after the new year to start rehearsing for a new show.

Yet January marks a new beginning for weary touring pros, offering a good time to catch a breath and do some strategic planning for their needs in 2004. Depending on a P.A. company's requirements, this could mean adding a new "A" speaker system, clearing out the "C" and "D" boxes, checking out new technologies for other major component purchases—whether it is amps, consoles, system controllers, trucks, etc.—or even ordering a couple gallons of Bondo and some flat-black spray paint to spiff up those tired road cases and beat-up sub boxes.

And while the weather outside is frightful, the business climate for sound companies is no less chilly. Generally, artists are booking shorter tours—or at least into smaller venues, and the number of acts carrying full production is definitely lower than it was in years past, with more tours traveling with their front end and monitoring, and renting amps/speakers from local suppliers at each stop. And even in such cases, where the regional companies get part of the action for racks 'n' stacks, that rental for them is far less lucrative than supplying an entire show.

Meanwhile, those stalwart, tried-and-true acts you've worked with for years can suddenly disappear, either due to a change in artist management or simply due to the economics of the "we found someone cheaper" syndrome. Unfortunately, those money-in-the-bank clients you've depended on are difficult to replace, especially in a slow economy. The astute sound company will make sure that these acts don't drift off from complacency or a lack of attention to their needs.

Predicting your sound company's equipment requirements for the rest of the year is no easy task. Finding gear that was adequately designed to do the job might have been an issue 20 years ago. However, today's selection is nearly overwhelming, and the main problem is selecting among many excellent choices. For example, in mains systems, the selection is vast, whether you're looking at line arrays, traditional trapezoidal boxes or boutique designs, either from a manufacturer's custom shop or proprietary home-brewed. On the console side, analog still dominates the market, but digital boards are definitely gaining ground.

Gear is important, and having the latest doo-dads certainly brings with it bragging rights, but running a successful sound company is also based on people, relationships and a history of on-time, reliable performance. Speaking of reliability, Murphy's Law certainly applies when it comes to transplanting huge sound systems night after night, and an investment in backup gear, spares and redundant power supply systems is worth far more than gold when the need arises. In such cases, a sharp crew can—and often will—save the day, and having experienced, cool-under-fire staff is perhaps the best business investment of all.

George Petersen
Editorial Director

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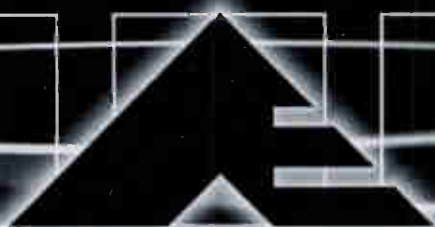
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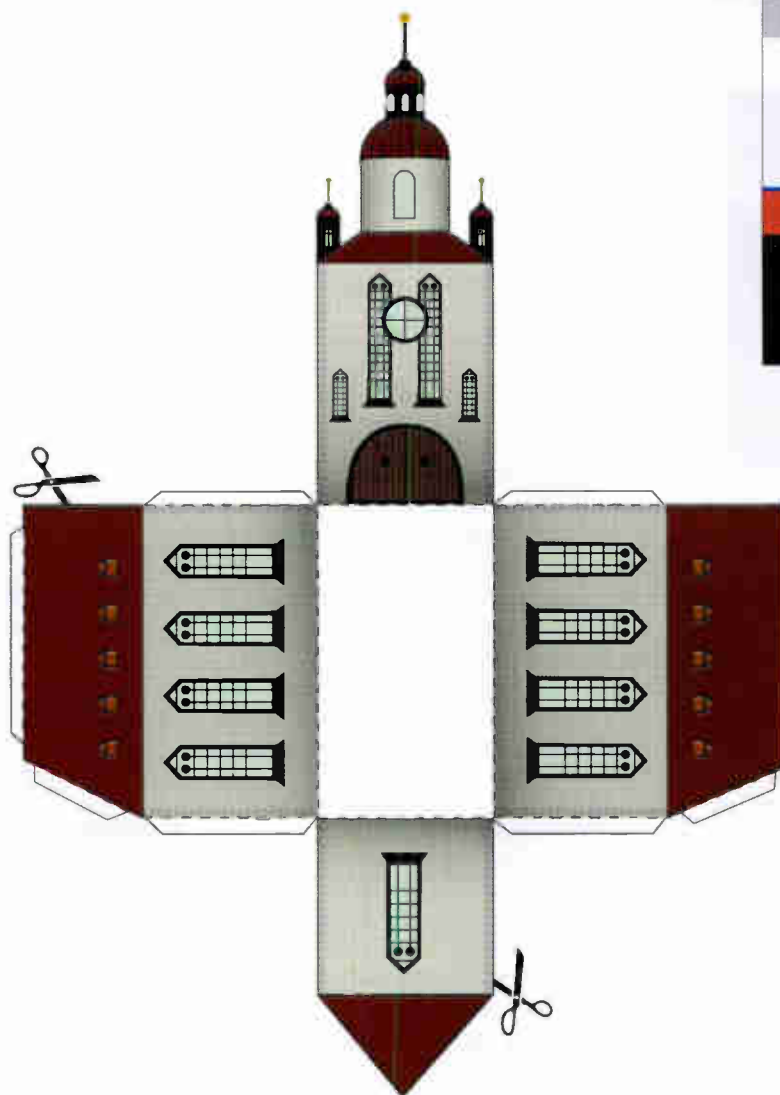
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Fold your own hall.

Space Designer is a new reverb plug-in from Emagic that generates reverbs with stunningly realistic quality. It's as if you are singing or playing in a real hall or room. This is made possible by a process called convolution – literally, folding acoustic space in realtime. Shipping with over 1,000 samples taken from real spaces and reverb units, you have direct access to high-class rooms and halls, as well as the most sought-after classic and modern electronic reverb sounds. Of course, you can sample your favorite rooms and build your own personal reverb collection. Space Designer offers a lot more possibilities than other convolution reverbs: each reverb sound can be edited graphically with great detail using innovative envelopes specifically designed for the task. A unique reverb generation process allows the creation of synthetic convolution reverbs, offering a beautifully smooth and spacious sound that blends musically in every arrangement – even at low effect levels. Fold your hands, close your eyes, and enjoy the outstanding quality of Space Designer.



Letters to Mix



THE GODFATHER UNDER FIRE

I have enjoyed your series on Bill Putnam, "The Art of Engineering," by author Jim Cogan. The quote from Bruce Swedien (page 48 in the November issue) that "Bill Putnam was the father of modern recording as we know it today" is one that I am in total agreement with. In 1960, the concept of combining a mic/line preamplifier, low- and high-frequency equalizer, and an echo send into one small module that used only one connector was revolutionary. Before the creation of the 610 modular amplifier, audio consoles were all custom-designed and built out of discrete parts, such as switches, attenuators and transformers that were all wired to one large panel. This panel would then be connected through a patchbay to a microphone, line and program amplifiers, equalizers and echo sends. This did not make for either easy maintenance or efficient manufacturing methods, unlike the modular 610.

In the interest of historical and technical accuracy, I would like to correct a few errors I noticed on page 50, under "Putnam's Technology Legacy."

The equalizer Cogan discusses is model 508A or later a 508B, not a 50BA. Also, the patent rights for the LA-2A were acquired from Teletronix Engineering Company, not Studio Electronics Corporation. (Jim Lawrence Jr., the inventor of the LA-2A, wrote an excellent article describing the development of the LA-2A, which appeared in the August 1964 *SMPTE Journal*, for those who wish to know more about it.) Also, the LA-3A and LA-4A are both solid-state designs and do not use vacuum tubes.

Bill Putnam was inspired to develop what eventually became the 813 monitor system by Ed Long's 1976 *AES Journal* article about time alignment. The author states, "These were the standard for large-scale studios from the late '60s to the '80s," which, of course, is impossible for a product that wasn't available until 1979.

The 1108 solid-state, Class-A FET line amplifier is what is used in the most highly regarded versions of the 1176 limiter and in the current version made by Bill Putnam Jr. The author states, "UREI also introduced the 1108 FET Preamp and some innovations, such as the Cooper Time Cube and the Electrostatic Reverbulator...that are best not known." The 1108 FET Preamp is a superb design by any standard that is still being produced to rave reviews. It is not fair to lump it in with the two other items that are definitely best forgotten.

Keep up the good work.

Paul McManus

CILETTI'S SCHOOL OF HARD KNOCKS

Thanks for hitting the nail on the head ["Tech's Files," November 2003]. Even if young engineers don't do the school thing, there's still the concept of internships, apprenticeships, etc. Guided discovery and the school of experience is a good thing. Hell, they can just read the bloody books and manuals themselves.

George Petit

OPEN MIND: BETTER MIX

Yes, technical knowledge creates better recordings, and some of us understand this better than others. I have been guilty in the past of erroneous ideas, but that has never stopped my being creative or being willing to accept ignorance as part of the learning process.

In fact, by making mistakes and testing weird theories, we are better able to understand why things do and don't work on a record. I suspect a lot of the world around us exists because people have been willing to try out their ideas, however mistaken they may be.

Piotr Orloff

KRAUSE GROUSE

I'm always amazed at the audacity of some claims in this business. To wit, quoth Robert Margouleff [in the Isley Brothers "Classic Tracks" article, November 2003]:

"The thing is, the reason we became so indigenous in the business is the fact that we worked with everybody, whereas most of the other synthesizer players, like [Morton] Subotnick and [Wendy] Carlos and Beaver & Krause mostly worked for themselves. We put ourselves in a major recording studio and worked for everyone who wanted to come through the doors; we made ourselves a ubiquitous comestible."

Horseshit! It's a bloody wonder he didn't claim that he invented the synthesizer, too.

How does this self-promoting, solipsistic, historical-revisionist blathering idiot explain the work Paul Beaver and I did on a synthesizer with the following artists, sometimes working on multiple projects with them? For instance: Beach Boys, The Byrds, Elmer Bernstein, Jimmy Cliff, The Doors, George Harrison, Mick Jagger, George Martin, John Mayall, Van Morrison, Gerry Mulligan, Randy Newman, Jack Nitzsche, Prince, Carly Simon, the Rolling Stones, Simon and Garfunkel, Phil Spector, The Tubes and Neil Young, to name just a few. Or on numerous films, from *Apocalypse Now* to *Cool Hand Luke* to *The Graduate*. In all, I believe we worked on more than 250 albums for others, aside from the five we did for ourselves, at least 135 major feature films and several dozen TV shows. While I believe [Margouleff and Cecil's] *Tonto's Expanding Headband* was one of the most brilliant albums of the time, that momentary stroke of genius does not warrant a claim to even a small chunk of the universe.

Bernie Krause

Wild Sanctuary Inc.

FROM FLORIDA, A FOND FAREWELL

To all my friends,

I just wanted to take a moment to say farewell, as I have decided to move on. I spent the past 12 years at 441 W. 53rd St. in New York City, [known] most of the time as the Power Station, the rest as Avatar Studios, serving both as technician and chief technician. I also had stays at a few other facilities, as most of you know, but Power Station was my home.

Basically, it was time to move on. My wife and I decided to sell the house, pack up the kids and move to a beautiful town outside of Tampa, right on the Gulf, where I am currently pursuing other musical ventures. I would like to say "thank you" and "see you later" (never goodbye, as I hope our paths cross again) to a few people I considered friends and with whom it was a pleasure to work: Zoe and Pat Thrall, Al Schmitt, Elliot Scheiner, David Baker, Jim Anderson, Joe Ferla, Jay Newland, James Farber, Neil Dorfman, Jason Corsaro, Kevin Shirley, Vince Caro, Kirk Imamura, Ed Evans, Vinny Sofia (the greatest studio carpenter), Tony Bongiovi (who built the greatest studio in the world. Let's face it: If there were no Tony, there would be no Power Station.) and many others I simply don't have room to list.

Good health and continued success to all of you.

Ken Bailey

kxxb1964@aol.com



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World Radio History

HITMAKING STUDIO GETS INTO LABEL BIZ

Avatar Recording Studio's Harvey J. Rosen (president, COO) and Kirk Imamura (chairman, CEO) have formed 441 Records Corporation (www.441Records.com) within the studio's 441 West 53rd St., New York office complex.

According to Rosen, "For years, Avatar's management was astonished that dozens of great, world-renowned jazz albums recorded at Avatar Studios were never made available for sale in the U.S. However, they did well in foreign markets. That said, 441 Records' initial mission is to market in the U.S. much of the jazz music recorded or mixed at Avatar. Our goal is to take the enormous care that goes into recording and extend it to the process of packaging, marketing

and distribution."

The first releases for the label include Joe Chambers and his trio's *Urban Grooves*, *Waltz for Debbie* by pianist Don Friedman and his trio, and *Itacuruca* by Brazilian jazz vocalist Pamela Driggs.



UK jazz vocalist Ian Shaw recorded in Studio C at Avatar Studios using the Neve VRP console. The session was tracked to DA-88. The resulting album will be 441 Records' first original release. Pictured from left are pianist Billy Childs, Katherine Miller (engineer), Darren Crowley (Shaw's manager), Shaw and Mark Fletcher (drums) listening back to a take. Not pictured: producer Todd Barkan. Mixer Roy Hendrickson (left), who has recently been appointed chief engineer of Avatar, also mixed the session.

TRUTONE HOSTS SHMOOZEFEST

For the October grand opening of Trutone's new mastering facility in midtown Manhattan (the studio spent 25 years in New Jersey and has moved into the former premises of Record Plant Studios), the studio hosted the NYC Music & Media Shmoozefest, a networking mixer of music and media industry professionals.



Pictured from left: host Debra Erikson, Chubby Checker, Trutone's Adrianna Rowatti, Tom Silverman, Curtis Urbina and Kevin Hedge



Atop Trutone's rooftop, Shmoozefest attracted celebrities such as Chubby Checker and industry VIPs, including Tom Silverman, Michael Paoletta, Hosh Gureli and Kevin Hedge, among others.

For more, visit www.trutone.com.

Trutone's mastering Studio A was designed by John Storyk.

JESSICA SIMPSON KISSES UP TO FANS

Taking time out from her MTV newlywed show, Jessica Simpson stopped by Reflection Sound's (Charlotte, N.C.) Sanctuary studio for a KISS FM Superstar Listening Party, where she performed three acoustic songs accompanied by two guitarists and a percussionist. Simpson's production manager/monitor engineer Mark Weglinski was at front of house, while Reflection's house engineer Robert Charles recorded and mixed the performance.



Pictured from left: engineer Robert Charles, percussionist Jason Dering, Jessica Simpson, studio manager Michelle Kreuz and acoustic guitarists Clay Jones and Ray Brady

TEC AWARDS CALL FOR ENTRIES: PRODUCTS AND STUDIOS

The Technical Excellence & Creativity Awards nominating panel is accepting product nominations for the 20th Annual TEC Awards to be held October 29, 2004, in San Francisco. To be eligible, products must have been released and in commercial use during the period from April 1, 2003, to April 1, 2004.

Categories are Ancillary Equipment, Digital Converters, Amplifier Technology, Mic Preamplifier Technology, Microphone Technology/Sound Reinforcement, Microphone Technology/Studio, Wireless Technology, Sound Reinforcement Loudspeaker Technology, Studio Monitor Technology, Musical Instrument Technology, Signal Processing Technology (Hardware), Signal Processing Technology (Software), Recording Devices/Storage, Workstation Technology, Sound Reinforcement Console Technology, Small Format Console Technology and Large Format Console Technology.

Companies that wish to nominate products should send complete prod-



uct name and qualifying category, date first commercially available (proof of shipment may be required; beta test sites do not qualify), and a contact name and telephone number.

Send all information to TEC Awards, 1547 Palos Verdes Mall #294, Walnut Creek, CA 94597; fax 925/939-4022; Karen@tecawards.org. Forms can also be downloaded from www.mixfoundation.org. All product entries must be postmarked by Saturday, January 31, 2004.

For Outstanding Studio Design Project, entries must be new studios or rooms, or major renovations completed and in use during the eligibility year of April 1, 2003, to April 1, 2004. Companies wishing to nominate studios should send the studio name and location, date completed, and name/phone number of the architect(s), the acoustician(s) and the studio owner(s). All studio design entries must be returned by Friday, March 12, 2004.

ON THE MOVE

Who: Mark Pinske, COO at Crest Audio

Main Responsibilities: lead the decision-making, coordination of the employees and implementation of the overall company plan and budgets

Previous Lives

- 2000-present, general manager, Architectural Acoustics and MediaMatrix
- 1998-2000, sales and marketing, CreamWare U.S.
- 1996-1998, product development manager, CreamWare U.S.
- 1987-1996, chief engineer/studio owner, Skylab Studios (Gainesville, Fla.), recorded numerous albums, live sound engineer for acts such as David Lee Roth, Terence Trent Darrow, Men at Work, Bobby Brown
- 1980-1987, chief recording engineer/live sound engineer for Frank Zappa
- 1976-1980, numerous positions at Quad Eight Electronics



How did you make the switch from chief recording engineer for Frank Zappa to management positions? Well, it was the other way around. I did live sound for many years and played in bands. But when I moved to Los Angeles, I took a job as an engineer at Quad Eight Electronics. I worked my way up the ladder and managed a large manufacturing division for them before I took the audition for Frank Zappa.

My favorite moment with Zappa in the studio was when...I got back at him for saying, "I'm not a robot you know, I can only stay interested in these things for mere moments." That was when Bob Dylan asked him what kind of engineer "this here Pinske was." Frank said, "He gets a better drum sound in 20 minutes than most engineers can get in hours."

The most exciting live show I engineered was...Live at the Palladium in New York on Halloween 1981. That was also the first live satellite broadcast for MTV where I had to do a simulcast mix at the same time for the FM radio station so the subscribers for MTV could hear it in stereo.

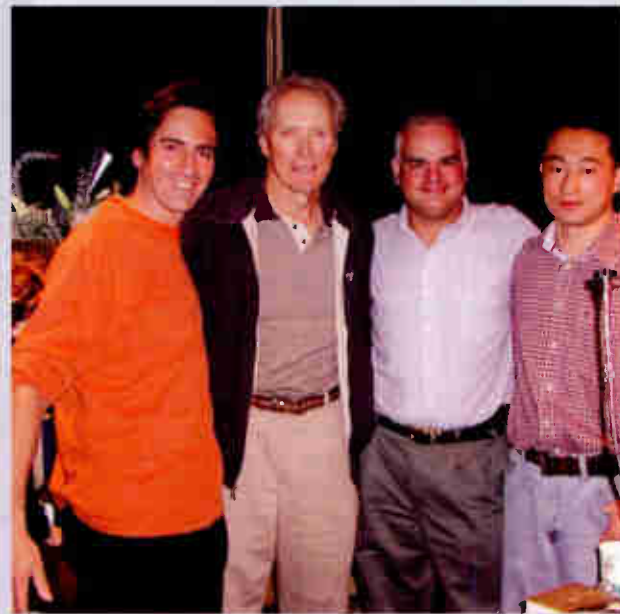
The one profession I would least like to try would be...dentistry. I have no interest in spending my time looking into other people's mouths.

The last great concert I saw was...Tom Petty & The Heartbreakers.

Currently in my CD changer: Weather Report (*Tale Spinnin'*), newer stuff like Linkin Park
When I'm not at work, you can find me...at the movies, playing golf and maybe doing a little fishing.

GO AHEAD, MAKE MY RECORDING

Marian McPartland's NPR radio show *Piano Jazz* celebrated its tenth anniversary of recording at Manhattan Beach Recording (New York City) with guest Clint Eastwood, who played blues on the piano with McPartland and discussed his love for jazz. Pictured, from left: Danny Lawrence, studio owner/chief engineer; Clint Eastwood; Duke Markos, engineer for *Piano Jazz*; and Shin-Wook Kang, assistant engineer.



HENNINGER MEDIA SERVICES OPENS DIGITAL SUITES

Combining the equipment and talent of the former 1150 Post and Henninger Capital locations, Henninger Media Services' (Arlington, Va.) new digital suites are now available for bookings.

Featuring Pro Tools|HD3, the suites also host digital nonlinear video for picture lock—allowing the studio to support/import/export virtually all major file formats—and provide instant access to more than 30,000 online sound effects. Other suite offerings include Waves Restoration X for digital audio restoration, support for narration and voice-over recording,



Mixer Brad McIlvaine sitting in one of Henninger's new digital suites

ISDN, ADR and short-run duplication services. In addition, one suite is surround sound-ready, featuring Blue Sky 5.1 monitoring.

MUSIC BUSINESS MADE SIMPLE

Entertainment attorney J.S. "Skip" Rudenske's *Music Business Made Simple: A Guide to Becoming a Recording Artist* (Schirmer Trade Books, www.musicsales.com) offers aspiring musicians tips to jump-start or further their careers in the music business. Because it is divided up into bit-sized chapters (including practicing, recording, demos, playing in a showcase, etc.), the book provides quick and easy access to essential topics.



BUILT BY MUSICIANS, FOR MUSICIANS

Just imagine: guitar players slinging Sheetrock; mandolin players gripping onto belt sanders; and singers, pianists, bassists and per-

large pane of glass dividing the workspace and the main recording room, which can house three to four musicians, depending on the placement of removable panels around the room. The studio also offers a small live room and a large dead drum room. Monitoring is via a Blue Sky 5.1 system, and Yamaha NS-10Ms with Hafler TA1600 amps.

Geared primarily toward recording and

producing singer/songwriters and small ensembles, with an eye toward restoration and remix projects for DVD-A and SACD, the studio has recently hosted the Parker Hill Band (a local bluegrass act), John David (a Philadelphia-based singer/songwriter) and some restoration and archival projects. Even Wes Chapman (a co-owner with wife Betsy) steals some time to work on his own projects.

For more, visit www.sugarshed.com.

cussionists hammering away. No, it's not a recording scene for a wacky sound library, but the foundation on which The Sugar Shed recording studio (Bath, N.H., about three hours north of Boston) was created.

A musician-based studio, Sugar Shed does not house a traditional console; instead, all mixing is done within a 24-channel MOTU HD192 24-bit/196k AD/DA with I/O converters, a requirement dictated by the studio's space restrictions and the owners' budget. There is no



INDUSTRY NEWS

Bill Dooley is the new chief mastering engineer and director of post-production services at **Paramount Recording Studios** (Los Angeles)...**TC Electronic** (Westlake Village, CA) has appointed **Simon Jones** as its director of product marketing, where he oversees the management of all company products distributed in the U.S....**Wild(child) editorial** (New York City) announced the return of **Elissa Muddell** as VP, head of production...**Robert Diamond** has joined **Cerwin-Vega's** (Simi Valley, CA) engineering department as professional products project engineer, while **Derek Covin** has been hired to fill the international sales manager position...**Yamaha Commercial Audio Systems** (New York City) has hired three district managers to its existing sales force: **Bob Quinones**, New York metro and lower New England areas; **Doug Staab** oversees the Middle Atlantic territory; and **Chris Taylor**, metro Nashville and mid-South regions. In other company news, **Chris Hinson** and **Joseph Lopez** have been named Eastern and Western regional applications specialists, respectively, for Yamaha's new 24/7 customer support program...**Yessian Music** (Los Angeles) has signed composer **Andy Grush** to its talent roster...**John McCaffrey** returns to **APT** (Los Angeles) as licensing manager...**Stanton** (Hollywood, FL) has promoted **Jon Ferren** to the newly created national sales manager position...Former front-of-house engineer for **Carlos Vives**, **Juan Carlos Yepes** joins **Meyer Sound** (Berkeley, CA) as sales manager for Central and South Americas and the Caribbean. In other Meyer news, **Greg McVeigh** has been promoted to the newly created position of VP sales/special projects...New distribution deals: **ILIO Entertainment** (Malibu, CA) is the exclusive distributor of **Applied Acoustic Systems'** (Montreal) products in North America; **Transamerica Audio Group** (Las Vegas) will provide sales and marketing support for **Metric Halo** (Hopewell Junction, NY); **McCauley Sound** (Puyallup, WA) appointed **Sonic Sales** (El Segundo, CA) as the exclusive factory representative in California, Arizona, Oregon, Nevada, Washington and Hawaii; **TerraSonde** (Boulder, CO) added **Sigmat Corporation** (Manalapan, NJ) for the Northeast and **ProSonic Solutions** (Woodland Park, CO) in the Rocky Mountain region; **Group One** (Farmingdale, NY) is the U.S. distributor for **OPTOCORE** (Munich, Germany); and **NTI** announced **NTI Americas** (Quebec), a new organization that will handle distribution in North, Central and South Americas, and is adding a U.S. office in Portland, Ore. **NTI Americas** is headed by **Thomas E. Mintner**.



Bill Dooley



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- **Mike Pappas,**
Broadcast Audio Engineer



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World Radio History

NOTES FROM THE NET

DELL DIGITAL MUSIC SYNC'S WITH MUSICMATCH

Dell's newly introduced Digital Jukebox (Dell DJ) music player—powered by Musicmatch software—will be available through the Dell Music Store (www.dell4me.com/music). The Dell DJ (4.1x2.7x0.86 inches, weighs less than a pound) comes with a choice of 15GB or 20GB capacities (\$249 and \$329, respectively) and features Hitachi's Travelstar hard drive. A built-in, rechargeable lithium-polymer battery provides up to 16 hours of continuous high-fidelity music (MP3 and Windows Media Audio) playback. The included USB 2.0 cable connects the device to a desktop or notebook computer and can charge the battery in lieu of a standard slim-line AC adapter. A 2-inch backlit LCD serves up file information while users browse with a front-mounted scroll barrel for one-handed operation. The unit works on Windows XP/2000; plans for Mac compatibility were not announced.



The Dell Music Store also features Dell Jukebox music store, which provides a simple graphical interface between the user's computer and Dell DJ, and access to Musicmatch Downloads. Users can download more than 250,000 songs for \$0.99/each and most albums for \$9.99 (no subscription required).

AN OLD RIVALRY REVIVED

Within its first week, Apple's Windows-based iTunes Music Store sold 1.5 million songs. Two weeks later, *The Wall Street Journal* was the first to report that Microsoft had confirmed plans to launch its own music download store this month, joining Apple, Musicmatch, Napster 2.0, RealNetworks' Rhapsody, MusicNow and BuyMusic on the PC front. A Microsoft spokeswoman did not give details beyond the early 2004 launch date.

ONLINE OUTLET FOR INDIE MUSICIANS

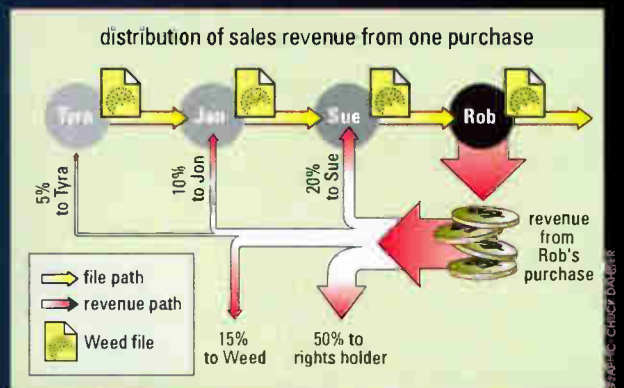
Disc Makers' DAD (Digital Audio Distribution; www.discmakers.com/dad) provides independent bands and artists an opportunity to sell their songs on sites such as Apple's iTunes Music Store, Listen.com's Rhapsody, AOL's MusicNet, Emusic and BuyMusic.com.

To qualify, an artist needs to have a CD out on the market. Once an artist completes the sign-up process, he/she automatically gets

CD(s) distributed through CD Baby. CD Baby will administer the program and use its encoding and tracking system to distribute and monitor CD sales, keeping 9 percent of the net income generated from online digital sales. The service is free with new CD orders with Disc Makers. The service is also available for \$75 to artists who do not make their CDs with Disc Makers.

SHARE YOUR WEED

In a new spin on paying to download, Weed (www.weedshare.com) pays file traders to purchase and share music files. In much the same vein as other services, users can preview a track (up to three times) before having to purchase it. Users can play the track on up to three computers, burn to CD and download to a portable player. Twist Number One: The price is set by the artist. Twist number two: Buying a song makes the user eligible to earn a share of future sales. For example, if Rob sends a file to Sue, who then purchases the track, Rob receives 5 percent of the sale. If Sue then sends that track to Jon, who



purchases it, then Rob receives 10 percent of the profit and Sue receives 5 percent and so on and so forth.

"If you pirate the music contained in a Weed file and distribute it to others, you're not only ripping off the artist, you're also ripping off yourself," explained SML co-founder and president John Beezer. "Instead of hurting artists, you're helping them by promoting their music, so why shouldn't you get paid?"

TUCKER, HERNDON TEAM UP

Country superstar Tanya Tucker stopped by the B room at Nashville's East Iris Studios to record a duet with alt-country artist Ty Herndon for a remake of Elton John's "Don't Go Breaking My Heart." The track was wanded out at the recent Country Music Awards as a promotion effort for Herndon's new album. Eric Fraley engineered the session with Mike Paragone assisting. Fraley recorded the duo to the studios beefed-up Pro Tools system, which sports all Apogee A/D converters on the front end.



Pictured from left: East Iris studio manager Mike Paragone, Ty Herndon and Tanya Tucker

CORRECTIONS

In the Joshua Thompson "Producer's Desk" (October 2003), the caption incorrectly stated that Thompson was in the A Room at the Sony DMX-R100; Thompson was really sitting in front of a Yamaha 02R and Paris Controller.

Of course we know that John Bonham was Led Zeppelin's drummer ("Recording Notes," October 2003). We were just testing your Zep knowledge.

In "On the Move" (November 2003), the last name is spelled Wray, not Ray.

Mix regrets the errors.

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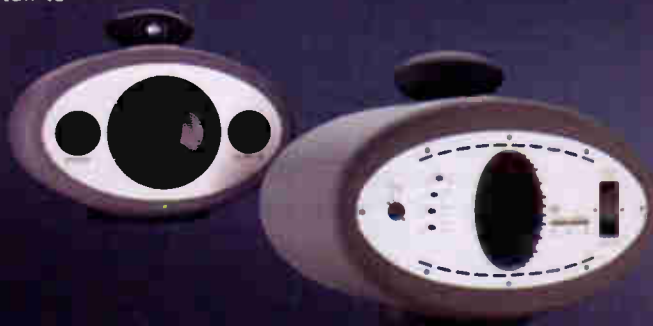
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Hit the Road, Jack

Don't You Come Back No More

Welcome back. Cotter pins and bones alike snapped in the first installment, and this month I will wrap up the crash-and-burn saga and even make the single point that became clear during my last nine weeks of drugged and undrugged, totally immobilized thinking. Here we go.

The only thing left of my identity when I wrote the "Yellow Brick Road" column following 9/11 was that I still rode Harleys and still played guitar. Well, now my left arm and hand are pretty much useless and I can't pick up a piece of paper, much less play guitar. The doctors want another half to full year before they will even tell me if I will ever regain playability, so from this point on, I must deal with the idea that I am no longer a musician. I can't play keyboards, can't play a guitar, can't even cup a harmonica. So the last remnants of everything I was are now gone, and I'm looking at my life—past, present and future—and I'm evaluating.

I remember once standing in line at Spago's, barking at Wolfgang's people because they sat other customers before me. There were 10 people waiting when I showed (unannounced), and I expected to be immediately moved to the front of the line, not *second* to the front. Those were my values. That's what I thought was important. That's what I thought was fun. And that's what I thought was power.

Now I spend 15 minutes 50 times every day trying to bend one finger two degrees as part of my physical therapy. As you can imagine, I am no longer quite as concerned with my position in line at Spago's.

I long to sleep in a bed instead of a chair. I long to be complete. I just want to be a human. I haven't given up; I am building my new life. And I now realize that before the crash I *had* lost touch. The game I thought I'd been controlling my entire career had actually been controlling me. I was playing the game to the point of forgetting why I was playing.

I got into music for silly reasons but luckily stayed in music long enough to fall in love with it. I still loved the perks, but the actual music itself became my life. The R&R lifestyle—the toys, the women, the pharmaceuticals, the immunity to laws, the special treatment, the ego boosts—they were all part of what I thought life was. Now I did work hard, just like all of you. I worked all night, night after night. I did those 10-day blocks. I worked hard and played even harder. I did what I had to do. I did what you do if music is what you do. "Honest, Judge, it's just what we *do*..."

It's human nature to be incapable of truly envisioning yourself in a horrible situation, crippled permanently, in some way destroyed. You can *intellectually* touch it, but there's a safety mechanism in all of us that stops us

from actually *feeling* it. If someone says, "Put yourself in his place," as you both look at some guy in a wheelchair, you can't *really* do it unless it has actually happened to you. It's too much; it's more than we are designed to bear.

Who wins all those insane motocross races where they fly through the air for five seconds at a time? The new guys, because they haven't crashed yet and don't have the slightest idea what they are risking. Come on, all 18-year-olds are immortal, even the dead ones. You remember...

Everything I used to take for granted, including taking a breath without eye-watering pain, I now see as indescribably wonderful. Last month doctors looked me

The game I thought I'd been
controlling my entire career
had actually been controlling me.
I was playing the game to the point
of forgetting why I was playing.

straight in the eyes and actually said, "Oh my gosh, it's you. We didn't expect you to still be here." That didn't mean they expected me to go home. They didn't expect me to live. I look at myself in the mirror and my left collar bone is four inches lower than my right. My back, over my scapula, is caved in; it goes two inches further in than my right. I am deeply, deeply damaged. I will never be the same, and Spago's used to piss me off? Damn, talk about derailed!

Maybe it's not a bad idea to take a day off and *really* look at your life in order to avoid portions of it slipping down paths that you don't want them to. Evaluate everything. Do it once a year or so. Optimize for what you want. I'm not saying be a better person. Be whoever the hell you want to be.

But I think most of you are like me. So when I write this column, I feel like I'm writing to a friend. That's why it's so informal and personal. I view almost all of you as friends, and those enemies who read me I view as challenging, so I write for them, too. And given this attitude, you can see that occasionally I have to share some personal point that *might* improve your life. Maybe. Kinda.

At this point I expect that you are preparing yourself for the cliché about living your life as if each day



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were your last, about re-examining your priorities and spending more time with your loved ones. No such luck. If you haven't already figured that one out, you are so lost that you should not even be reading this.

Friends come by the studio and tell me how high the surf is, and I sometimes respond with, "Not now, working," as would you. You honor your commitments if you want to play this game for real. But a time comes, though it may quietly sneak up on you, when some of your dedication may be driven by inertia, not aspiration. If you feel that you are spending more time doing boring stuff and less doing what you like, the game may have gotten away from you, too.

Now I'm not advocating bolting when your buddy shows up with tales of eight-foot surf and you're late on a movie piece, or you're working with 10 guys on an album. Nope. I'm only advocating the re-evaluation of your "B" time, the time you spend doing tedious or boring tasks. Ah, yes—the crappy stuff. The stuff that has to be done to keep everything running so you can do the stuff you signed up for.

I certainly did glamorous, dramatic

work, and I did tedious work. We all know it takes both to be a responsible, successful person in this industry. But now, after nine weeks knowing that I will never play guitar again, I wonder if recording music really re-

If you feel that you are spending more time doing boring stuff and less doing what you like, the game may have gotten away from you, too.

quires quite so much B time these days.

Again, I'm not advocating walking out on responsibilities. I'm advocating exactly the opposite. Look at those tedious work-related functions in your life. I propose that instead of doing them yet again, the same old way, or maybe even delaying them so they build up, you stop and entertain the possibility that they're taking up so much of

your time *because you're just not good enough*.

Don't get me wrong, I'm not telling you that you're not good enough to demagnetize a tape head or clean the patch bay. I am not suggesting that you can't balance your studio books or replace old leaky bypass capacitors to stop popping in the console. I'm saying that you may not be applying the same creativeness, inventiveness or joy to these dark duties that you apply to the fun parts of your career.

Most tedious jobs can be made less so with a fresh attack plan. Create a new, superior approach to each of your steenkin' bumper tasks. If you really do this, the results will probably be better *and* the time they take will be less. The trick is simply changing, or specifically *updating* how you do the job. Your reward? Less of each day spent doing things to support the things you actually want to do that day.

During my Matrix months (only the first Matrix, not the two crappy sequels), I sort of added up the total time I spent doing studio maintenance—cleaning and demagnetizing heads, repairing consoles, going over horn arrangements by deaf trumpeters—

—CONTINUED ON PAGE 144

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Bungling in the Jungle

How I Met the Third World



ILLUSTRATION: WILL TERRY

Okay, kids, it's the longest night of the year, so it's time to gather 'round the simulated virtual fireplace and I'll tell you some more stories from the bad old days, when I started out in this here recording business. It was 25 years ago this month when my girlfriend and I boarded a plane at JFK International Airport for Port of Spain, the capital of Trinidad and Tobago, for my first full-time gig as a recording engineer.

I was lucky, or perhaps unlucky, enough to start at the top. Unlike most of the folks you read about in this magazine, I didn't break into the studio biz as the assistant ashtray-emptier at a great metropolitan studio, nor did I open my own little 8-track studio and record local bands at loss-leader prices until one of them signed with Columbia Records. No, my first studio job was as the manager and chief engineer of a beautiful, brand-new 24-track recording facility. The reason I got the gig was, well, because everyone else in New York had turned it down. They must have known something—either about the owners or about the joys of running a high-tech operation in the Third World—that I didn't.

Actually, this story should have happened 25 years ago *last* month, but life in the Caribbean being what it is, we had to wait for things like a freight handler's strike at the airport to be settled, and delays in getting work visas and import licenses for our household goods, all aggravated by phone service that was, to put it very politely, spotty.

At the time, the two-island nation boasted of having the highest per capita income in the English-speaking Caribbean, but that wasn't saying much, as most of the population was still desperately poor. While the tiny Toboggoan economy was built on tourism, in Trinidad, where the studio was, there was little of that. Instead, there were oil refineries. Thanks to its proximity to Venezuela and harbors deep enough to handle transoceanic tankers, as well as a lack of government regulation in general, Trinidad was home to some very wealthy natives, most of whom had direct financial interest in the (foreign-owned) refineries. The rest of the populace lived in hope that the extreme levels of pollution they suffered would someday make them rich, too. In the meantime, many took advantage of the castoffs of

“I Switched”

Who: Francis Buckley

Occupation: Producer / engineer / indie label owner

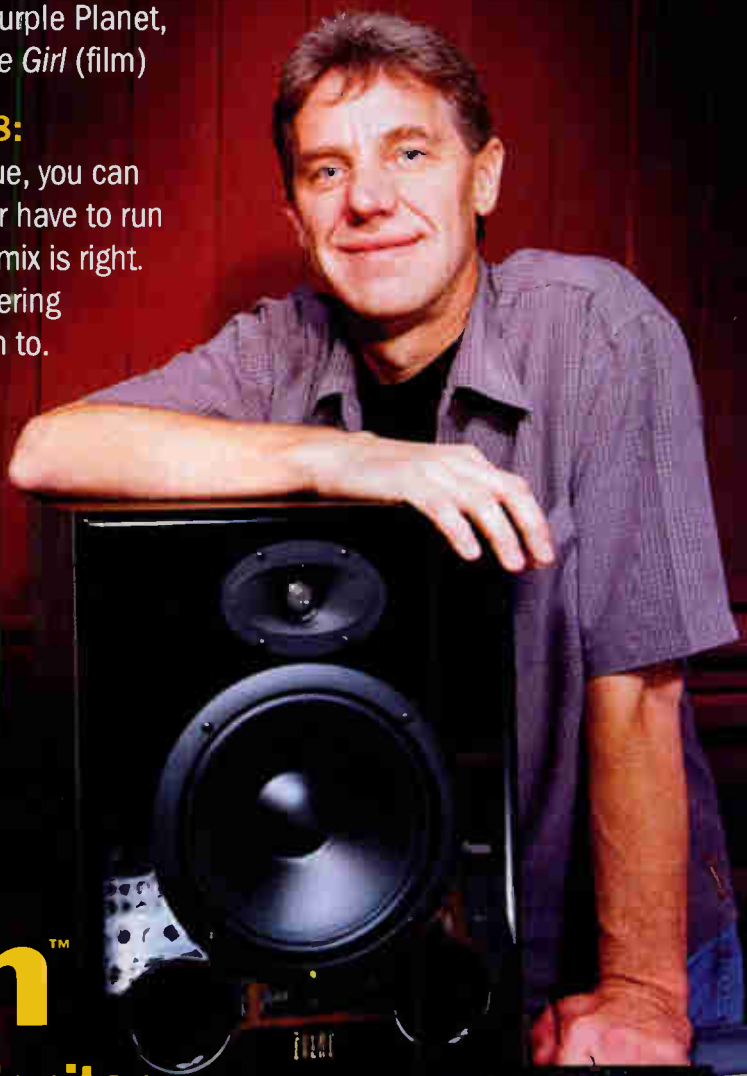
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the local industry and turned them into musical instruments: steel drums, which are, of course, made out of empty oil barrels.

The music scene was actually very exciting. Calypso, that superenergetic, irresistible dance form, was at its height, and reggae was making major inroads. A new type of Caribbean hybrid, soca, was gaining popularity, and local musicians, many of whom had spent time in New York or London, were beginning to understand how the modern recording studio could enhance their music. There was also a burgeoning film industry, at least according to the expatriate American filmmaker and his well-connected Trinidadian wife who had built the studio. They already had shot one feature film (something to do with lost cities of gold protected by Amazon women, which, according to the lead review on the Internet Movie Database, is "the worst movie I ever saw") and were gearing up to do more. They also had plans for a record company, complete with pressing plant and a music publishing arm, and they had built the studio in hopes of attracting American and European artists who wanted a tropical experience but couldn't afford George Martin's recently opened Air Montserrat.

When we touched down in Port of Spain, my boss impressively had us waved through customs and took us to the apartment he'd found for us in a residential neighborhood upstairs from an elderly landlady. As is true in most countries that have suffered long periods under colonial rule, many Trinidadians adopted some of the more obnoxious attitudes of their English oppressors without really knowing why. In our landlady's case, she had an impenetrable Victorian sense of decorum, which took the form of a prohibition on any music being played in her house. I spent an awful lot of time listening to music, and because my girlfriend was a pianist, this created a bit of a problem. To keep peace in the house, I agreed to play my stereo mostly through headphones, and somehow, a few weeks after we arrived, we convinced the landlady to let us rent an upright piano. But when the movers arrived and she was confronted with the actual instrument, she abruptly changed her mind and physically blocked them from coming up the stairs.

The boss found us another place, which we fell in love with right away. It was high on a hill above Port of Spain, with the most gorgeous view of the city, the glowing refinery towns beyond and the coast of South America beyond them. The sunsets, thanks to the high particulate content of the atmosphere, were spectacular. It was a building of

12 terraced apartments set into the hill, accessible only by a harrowing one-and-a-half-lane mountain road, which ended just above the top of the building. There was no landlady, but there were a pair of Canadian doctors, an oilfield worker from the U.S. (whose last job was in Iran), a young lawyer just back from school in England, a local automobile tire (or "tyre") magnate and (rumor had it) the mistresses of several high government officials.

There was just one problem with the place: There was no water. The local water company wasn't legally required to pump higher than a certain altitude, and our little aerie was at least 100 feet above that limit. So instead, the water arrived in huge trucks, and if someone happened to be around to pay off the driver (usually with rum), then maybe we'd see more water in a few days. But if not, it could be weeks.

Inevitably, some poor soul would get up in the morning one day when our tank had run dry, discover that he couldn't take a shower and leave for work without bothering to close the tap. The water truck would arrive later that day and drop its load, and within a couple of hours, the entire tank would empty through our neighbor's bathtub, onto his floor, out the living room and back down the hill from whence it came. And we would be without water, again.

My work life was like that too: occasional progress followed by major, often absurd, frustrations.

One of the first sessions I did was to record a steel band, the local equivalent of a symphony orchestra, for a single to be released just before Carnival, the annual Trinidadian pre-Lent bacchanalia that is rivaled in its over-the-topness only by Brazil's. (I told another Carnival story in a *Mix* column a few years ago; you can find it at www.insideraudio.com.) The writer of the tune was a young man named Len "Boogsie" Sharpe, an absolute genius (and still very active today) at writing for an unusual ensemble that comprised two conga drums, a cowbell, brake drum, standard drum kit and some 30 players, each responsible for between one and four hand-hammered, hand-tuned, carefully matched steel drums.

Steel drums, or "pans," are notoriously hard to record because the sound up close—which is a lot like banging on a tin can—is completely different from the sound at a distance, which can sometimes sound like an ethereal carillon crossed with a weird-overtone pipe organ. The first time I got Boogsie in the studio for a solo recording, it took the whole session to figure out

—CONTINUED ON PAGE 146

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While the major record labels continue to lick their wounds (and tally their losses) from a seemingly endless series of bloody skirmishes with Internet pirates and others who would threaten their previously unassailable sovereignty, the live music industry appears to be thriving in many sectors, even as the dark clouds of the nation's general economic downturn roil overhead. Certainly, various businesses associated with live sound—from regional rental companies to bands themselves—have been tightening their belts and becoming increasingly creative in their search for revenue sources. But there doesn't seem to be the same sense of “what-the-hell-are-we-gonna-do?” panic that's rippling through the record companies.

“I think people are going to keep going to concerts and clubs because you can't download the concert experience—thank you, God!” exults John McBride, general manager of Clair Bros. Audio in Nashville. McBride founded MD Systems, which was absorbed by Clair back in 1997. “It still feels good to go and see a band live. Productions are getting better and better, and audio quality is getting better all the time, too. People still want that experience.

“I've always felt that any act—and I don't care how many records you're selling—can make 75 percent of their money from touring,” he continues. “If you want to work hard, you'll make a lot more money from touring than from selling records. But it's a catch-22 because you've got to sell the records or have the radio airplay to get the popularity to get people to come see you, generally speaking. Certain people have gotten around that: Obviously, Jimmy Buffett has been an incredible touring success without being on the radio that much. And bands like Phish. But they're the exception, not

the rule. Still, playing live can be a living.”

Because “live sound” encompasses so much—tiny clubs, church installs, private corporate shows, mega-spectacles in dedicated environments, the whole spectrum of touring acts that fill theaters, civic auditoriums, arenas, sheds and stadiums—it's somewhat difficult to generalize about the state of the industry. Big tours are earning more money than ever before (that's good), mostly because ticket prices have never been higher (that's bad). All across the country, new entertainment venues of all sizes are sprouting up, providing excellent business opportunities for various categories of sound professionals (that's good). But cur-

Challenging Times in the Live Sound Industry

rent economic and market conditions have made many fans of live music much more selective about where they put their dollars so that more people are going to fewer events (that's bad). And some have stopped going out altogether, preferring to cozy up at home with a DVD (a mixed bag, as sales of concert DVDs have never been higher and thus, in a way, count as tour revenue for a band).

“I see four fundamental forces driving change in what we've traditionally known as live sound or tour sound,” comments David

by Blair Jackson

Feast or Famine

Scheirman, director of tour sound for JBL, and for many years before that a concert sound mixer and an audio journalist widely known for his astute observations about the industry. "Number One is the collapse of the support funding and talent development organizations at the major record companies. Whether it's EMI or Virgin or Sony or Columbia, those companies are struggling to redefine how they develop and deliver content to their markets. So the traditional funding for tour support becomes harder to identify and access.

"Number two, there is an increased sensitivity by concertgoers, music lovers and entertainment consumers to what you might call 'track acts,' where choreography and personality take precedence over musical content and talent," he continues. "I'm not implying there's anything wrong with that, necessarily, just that it redefines the production organization and vendors.

"A third macro trend is the maturing of baby boomer music lovers now in positions of executive responsibility with civic organizations, performing arts centers and venues of all types, and corporate communications

departments. So kids who were hitchhiking to Cream concerts in the late '60s are now on the board of directors of performing arts centers or commanding major promotional budgets within *Fortune 500* companies. That changes the complexion of the rental organizations who invest in sound equipment and who deploy it for these sorts of events. Now it's not at all unusual to have a State Farm Insurance gathering or an American Dental Association convention with, say, a six-day audio rental leading up to a climactic motivational party/concert with Huey Lewis & The News or an Eddie Money or a Sheena Easton. From the artist's perspective, they no longer need to support bus-riding, hard-working road employees as much as they need A/V-savvy weekend warriors who can make sure they have a good show for a fly date.

"A fourth trend is in video staging and lighting companies that are establishing their own in-house audio departments. Those people are wonderful customers [for JBL] because they don't have a pre-existing legacy of using brand X or Y speakers; they're looking for a good

business investment. And that's where JBL is often chosen as a wise speaker system investment because of the brand's durable reputation. At the same time, we've also observed an increase in both the quality and quantity of the inventory of regional sound rental companies. These are people who are not trying to chase the brass ring and go around the world with a band; they're basically supplying events that come into their locale. More of them have high-quality equipment and the personnel to run it effectively."

WHITHER TOUR SUPPORT?

There was a time, not so very long ago, when almost any act that was signed by a major record label could count on being sent

out on the road for a "showcase" tour: major and sometimes a few minor markets, mostly in clubs, with associated appearances in record stores and radio stations. Now, it is much more common for labels to wait and see which acts garner some interest from radio and retail (or MTV) before committing money to even the smallest tour; again, the classic record biz catch-22. As a result,



David Scheirman of JBL

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some groups never get their showcase tour; others finance it themselves, usually losing money in the process.

There are other means to fund a tour, such as large or small corporate sponsorship, which includes everything from playing the B stage on a summer festival tour to headlining amphitheatres and having a corporate logo in every ad, on every souvenir program and maybe even on a banner hanging to the left of the drum risers. And then

there's the slow regional build approach favored by so many groups in the jam-band scene—taking the time to amass a regional following before taking even tentative steps outside of your area.

Even with the record company cutbacks, though, "More acts are working now than ever before," says *Billboard* senior touring writer Ray Waddell. "There are more choices, more venues. Unfortunately, it's a harder choice when you've got tickets up at \$75 or \$100 or more. You don't experiment at that kind of price; you go to people you know you like, which hurts artist development." Still, Waddell notes, "Ticket prices really leveled off this year after a rapid esca-

lation in the mid-'90s. There are more hundred-dollar [per ticket] tours than ever, but I think there are more price tiers, and some acts have actually dropped their ticket prices in hopes of attracting bigger crowds."

Generally speaking, the high-ticket tours have done well, whether it's The Eagles (who it could be convincingly argued started the trend toward high-priced shows with their *Hell Freezes Over* tour several years ago), Simon and Garfunkel or Fleetwood Mac—all baby boomer acts exploiting their legacies and the fact that they have older well-heeled fans who will pay top dollar.

Big package tours also keep rolling: "Lollapalooza did well in major markets and struggled in the heartland," Waddell says. "Ozzfest did well again. That's probably the most solid brand in touring today, thanks in part to Ozzy's amazing success. Metallica's Summer Sanitarium tour and Springsteen were the biggest stadium tours; they both did really well. The KISS and Aerosmith pairing did great business everywhere. Then there are groups like Phish and Dave Matthews who seem to do well every year, no matter what else is happening. It was a big year for rock, but there wasn't a lot of pop out there. That seems to be fading somewhat.

"Country also had a record year after a few years of downturn because the superstars went out. Half-a-dozen country artists are going to be among the Top 25 [for 2003]: George Strait, Kenny Chesney, Toby Keith. Shania [Twain] is putting up a million dollars a night. The Dixie Chicks have done fantastically well; the controversy [over their thoughts about President Bush] didn't seem to hurt them. Alabama's farewell tour has done great. Tim McGraw had a \$50 million tour. Next year, Faith Hill might go out, and Reba McEntire, too. So country is really healthy, and more so because there are new headliners like Chesney and Keith."

THE WORK IS OUT THERE

Dave Shadoan, president of Sound Image, the huge Southern California-based production, rental and contracting company, notes, "Except in country music, the trend we've been seeing is a lot of shorter tours. Some of it is probably economics, but some of it is also how artists like to work now. A group like Blink-182 works for three or four weeks, they take a month off and then work for a few more weeks. People go out for 12 weeks now and they think they're killing themselves! Well, thank God for country music! Brooks and Dunn—they're out all year. Toby Keith, Rascal Flatts, Clint Black—they've been out all year. That used to be the norm. Now, a lot of people believe that 12 to 14 weeks in a summer make a career.

"Those bands that constantly aren't on

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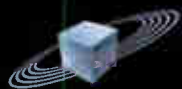
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Feast Or Famine

the road probably have a more sane lifestyle than the ones that are," Shadoan notes. "But it's tough on people like us, because we have to find quick turnarounds. They might work May, June, July. But you've got to have a place to put that system August through November. The toughest part of our industry is maximizing your rental capabilities. We like to say that 32 weeks is very good for any piece of gear. But in the big picture, is 20 weeks of downtime on an investment what we would call good business? I don't think so. Of course, that doesn't ring true on everything, but it affects what we do. We make decisions based on that. Do we want to spend \$150,000 on a DiGiCo D5 or do we want to rent it for a 12-week tour?"

Shadoan says that Sound Image just enjoyed "one of the greatest years in the history of the company," but he describes the current economic climate in the sound business as "feast or famine. I think there's about the same amount of work as there has been, but fewer organizations are getting it. Clair/Showco, us and couple of other players have garnered a lot of the market. I'm not saying that bigger is

better, but in this kind of business climate, people will go with a name they know and that has a good track record. I know our client base has been fiercely loyal—hell, we've had Jimmy Buffett for 29 years!"

The ever-expanding Clair Bros. empire has become a target of sorts for other players in the industry, with some jealous competitors predicting that the giant company will eventually find itself in the same position as so many other corporate behemoths: slashing spending to finance debt repayment, and centralizing operations at the expense of regional charm and efficiency, losing that "human touch" so vital in what nearly everyone agrees has been a people-to-people business. But that clearly hasn't happened yet, and McBride, for one, says that merging with Clair was the best thing that ever happened to his company, MD Systems.

"We've grown in leaps and bounds since the Clair acquisition. Believe me, I looked at [the acquisition deal] long and hard prior to making the decision. What it did was it gave all my guys a broader base: It gave them a

better benefits package than I was able to offer, more job security and definitely more potential to go out and work elsewhere, because now a guy who works here [in Nashville] might be out six months from now on a U2 tour or could be on a Metallica tour, because [Clair] pulls from the whole company.



Clair Bros. Audio's John McBride

"I've heard what people say about a company getting too big and losing something; that does happen. But I believe in this instance, with Clair and us and with the Showco merger, I feel like it's improved this company. We've become more efficient, more standardized. The training has gotten better and better. We have an incredible gear pool from which to pull. We ended up changing all our

power distros, so we have the same connectors, speaker cabling, amp racks—they all work together."

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Feast or Famine

gle owner of music venues in the country and also the most successful concert promoter in the business. ("It's like owning a bridge and collecting the tolls," the late, great rock impresario Bill Graham once crowed of owning his own shed, Shoreline Amphitheatre.) A number of acts have tried to fight or bypass Clear Channel, but to no avail. However, you'd be hard-pressed to find a sound production company spokesperson who has anything bad to say about Clear Channel on

the record, and *Billboard's* Waddell, for one, believes that "the guarantees they've thrown out there for bands has created *more* touring, especially in light of other parts of the business going down. The money has been better because of Clear Channel, but the guarantees also translate into higher ticket prices."

For sound companies, the concerns are less about ticket pricing than they are about nurturing their clients, finding new markets and keeping up with changes in technology. The past decade-plus has seen a huge number of new venues all across the country, but particularly in such entertainment-rich communities as Branson (Mo.), Virginia Beach, and the gambling centers of Las Ve-

gas, Reno and Atlantic City.

"Las Vegas has become a *great* place to do box sales and installs," says Shadoan. "We've been doing installs there for over 10 years, and we hope to increase our profile there even more in the near future." Las Vegas has seen the construction of literally dozens of new theaters in the past few years, from custom venues for *Cirque Du Soleil* and Celine Dion to showrooms of every size.

Meanwhile, across the country in Atlantic City, "We're booking a really wide range of acts in a number of different-sized venues," says Steve Geitka, entertainment director of the Trump Casino properties in that city and a one-time employee of Maryland Sound. "We've been a good customer for a number of [sound] companies. At Trump Taj Mahal, there's a 5,000-seat arena in which we have a Meyer MSL-3 system that covers a majority of what we do if it's a nontouring act. The other properties vary in size from about a 500-seat showroom up to a 1,400-seat theater. At Trump Plaza, there's the Plaza Theater that has a permanently installed EAW 850 [system]. The Taj Mahal also has a theater called the Xanadu, and that has a Meyer MSL-2 system. At Trump Marina, there's a 500-seat showroom called the Shell and a ballroom for bigger acts that has about 1,400 seats, and for both of those, we typically bring in a local audio contractor called SPL, which is a great little company, and they'll bring in a [JBL] VerTec system or something.

"We get a lot of touring artists these days," he continues. "We've done Stone Temple Pilots and Staind and Puddle of Mud—modern rock, which is a trend we started here back in 1997. We also just did Mariah Carey and Matchbox 20, and we're going to have Andrea Bocelli at the Taj Mahal. Just like in Vegas, there's a much broader market in casinos now than just the folks that would see Paul Anka or Englebert Humperdinck or Lou Rawls. Of course, we book them too, and we also have special shows where we'll bring in acts from Russia for Russians who come down here from New York and New Jersey; or for Greeks, or for Asians. We're trying to appeal to a lot of different audiences. But we definitely want that younger rock audience—the gamblers of tomorrow."

BETTER, LIGHTER GEAR

Changes in sound system technology during the past few years have led to more compact and efficient systems, including such modern workhorses as the Clair I-4, Showco's Prism System, L'Acoustics V-DOSC, various Meyer rigs, the JBL VerTec and others. Likewise, sound companies, venues, bands and consumers benefit from improved (and lighter) power amps and various computer-based diagnostic and processing tools that make room

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tuning and sound distribution more precise: the Lake Contour system, the XTA 226, BSS 366 and dbx's DriveRack, to name a few.

"The costs of production and moving tours are so much higher than it used to be, but I think there's more bang for the buck in production," comments *Billboard's* Waddell. "You get more sound from less speaker. The systems are more modular and fit on the trucks much better. So a 15-truck tour from 10 years ago is an eight- or nine-truck tour nowadays, and that's been a reaction to market conditions."

"I'd like to say that the IQSC PowerLight amplifiers have reduced our trucking costs, but that's not the case," says John "Klondike" Koehler, owner of Greenfield, Mass.-based Klondike Sound. "The labor crews aren't any smaller, since it seems to be more about minimum calls, box counts and truck size than it is about how much each piece weighs. Honestly, I don't think there's been any economic benefit from the trend toward lighter systems. I don't think anyone that is now bringing in VerTec, which is two-thirds the weight of V-DOSC, is doing so with a

smaller labor call. It's a big P.A., you get your 12 guys; that's the call."

As the head of a smaller sound company, Koehler has a slightly different perspective than his brethren at larger outfits, one that's perhaps more representative of the vast majority of companies across the land. He says that these are challenging times.

"Speaking to my market here in New England, the small-theater market is in a slump. Most of the 1,000-seat halls are producing far fewer shows than they were two or three years ago, and the ones they are producing do not require as much hardware. The colleges are also in a slump when it comes to entertainment budgets. Most college administrators have realized that parents will kick in a few bucks for kids to go to a local club or dance to a DJ in the dorm basement, but they're just not producing concerts in gymnasiums and field houses the way they used to.

"That said, our spring and summer schedules are incredibly busy," Koehler says. "If you were talking to me in May [instead of November], I would have hung up the phone five minutes ago because I would be too busy to have a conversation. We do an enormous number of commencements and summer festivals—the Philadelphia Folk Festival and Newport Folk, Newport Jazz. There are over a dozen multistage, multiday

festivals with audiences in the 20,000 to 30,000 range that we cover every summer, typically one or two a weekend. But the small-theater and college markets, which used to provide us with another 200 shows a year, and also independent promoters—like arts councils and culturally minded citizens who have a budget of \$10,000 or so from the town or city to do, say, a Christmas show and one pop show—we're probably down to a third of what we did in the '80s and '90s just because of budget concerns." For nearly two decades, Klondike has also been audio director of the New Orleans Jazz and Heritage Festival, an event that is apparently recession-proof.

What can turn things around for businesses like Klondike that are feeling the pinch of a tough economy? "I think it pretty much starts in the White House," Koehler says. "I'm hopeful there will be a renaissance all the way around when it comes to people wanting to celebrate together. That's really what we do—facilitate celebration on a large scale. If folks are feeling tentative about their lives and their futures and prefer to stay at home and push Play, we're not going to be seeing the activity levels that we enjoyed in the '90s." ■

Blair Jackson is Mix's senior editor.

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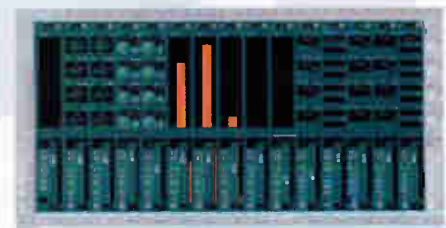
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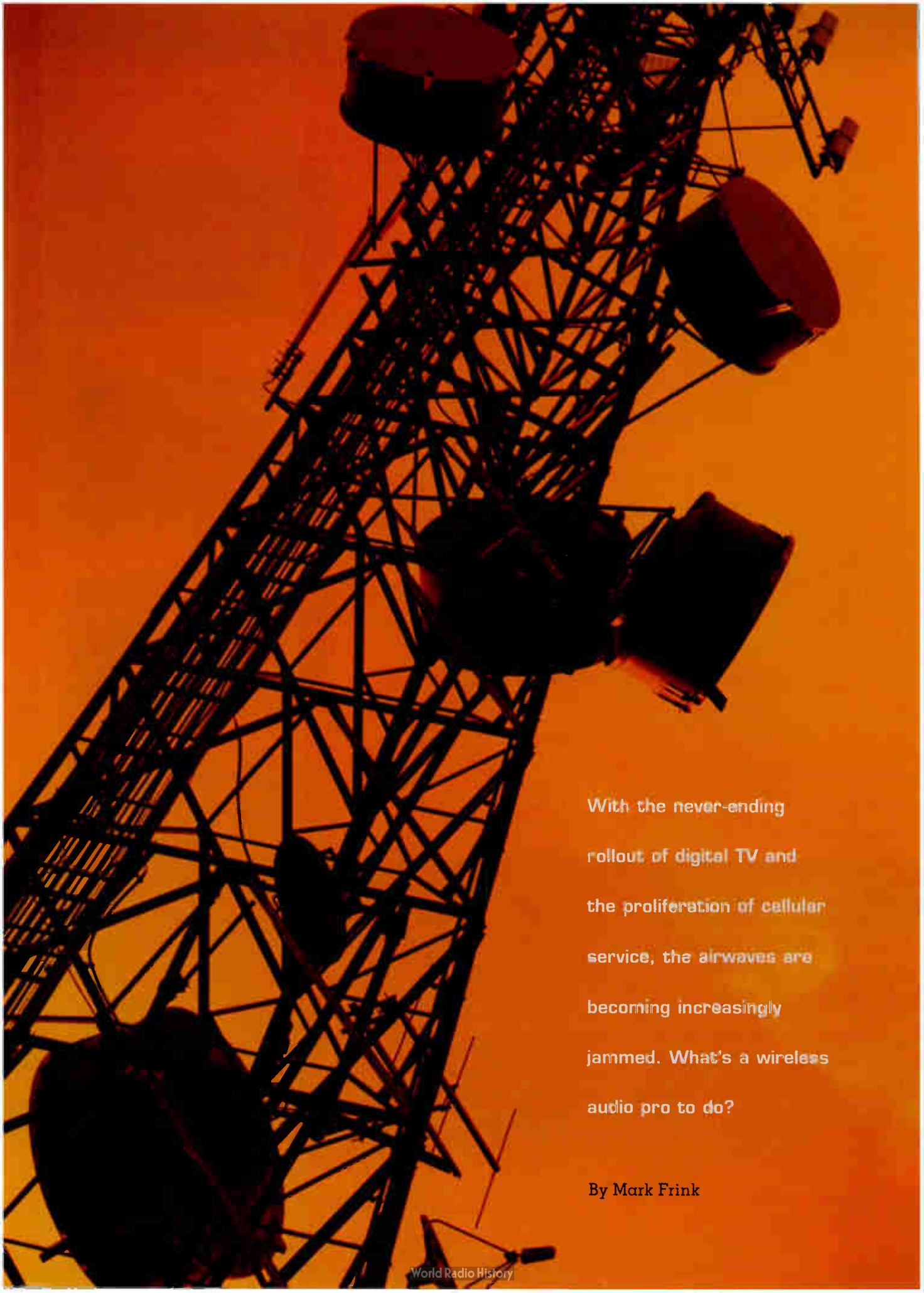


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With the never-ending rollout of digital TV and the proliferation of cellular service, the airwaves are becoming increasingly jammed. What's a wireless audio pro to do?

By Mark Frink

Wireless Nation

Several years ago, the introduction of digital television, along with the auction of bandwidth to digital cellular services, heralded major changes in the American RF environment. Responsibility for more than a few channels of wireless in a U.S. metropolitan area is now a recipe for trouble, and the radio congestion continues to get worse.

The airwaves of New York and Los Angeles are determining factors in which wireless products will go on tour today, and as more digital TV stations come online during the next five years, the situation will become increasingly complex. Manufacturers such as Shure and Sennheiser have made a concerted effort to educate users about frequency coordination and potential problems, but the typical audio user of wireless mics can no longer simply turn them on and hope for the best.

JAMES STOFFO DISCUSSES

THE ABCs OF SYSTEM SETUP

The great majority of professional audio engineers remain incidental users of wireless technology, but there are a handful of wireless specialists to help guide our industry through the miasma of FCC regulations and potential hot spots. *Mix* caught up with ex-Navy ECM technician and RF guru James Stoffo in Florida. Stoffo takes RF very seriously, and he is known for leaving his cell phone turned off. He emphasizes that a few simple procedures can vastly improve your odds of wireless success.

He begins by reminding me that the main problem with RF is that our senses are not naturally tuned to it, as the radio band, between 10 kHz and

300 GHz) falls above sound waves and below light. "Often, your first indication of an RF problem is when your wireless mic clamors through the P.A. in a loud burst or goes mysteriously silent," Stoffo says. "We never had big creatures that chased us and emitted RF before they pounced on us. You can't see it, can't hear it; you just have to know that it's there and understand how to manipulate it."

Pro audio is really only concerned with a small slice of the radio band, and it's getting smaller every day. The UHF band, where nearly all professional wireless mics operate these days starts at 470 MHz and goes up to 806 MHz (TV channels 14 through 69, with 37 saved for radio astronomy). Less than a decade ago, there were fewer than a dozen UHF stations in most areas, leaving more than 75 percent of the UHF band wide open.

Things started changing five years

ago. The introduction of digital television meant the adoption of parallel transmissions, where the analog TV broadcasts continue and a second digital transmission is brought in on a new frequency. Every analog TV station will eventually be duplicated by its digital broadcast on a second frequency, though the FCC imagines that sometime later in this decade, we'll all have purchased DTV sets and the analog transmissions can then cease. In the meantime, there are more UHF TV broadcasts every month.

As of this writing, half of the TV stations have begun digital transmissions. The other 800 of the 1,600 total TV stations in the U.S. can be expected

to begin digital transmission on new frequencies during the next couple of years. Future problems may arise, as the FCC's reallocation of the upper UHF band will force TV broadcasts in America below 700 MHz.

RF WAR GAMES

One of Stoffo's many high-profile gigs is RF coordinator at the Super Bowl, where last year there were more than 1,000 frequencies in use. And it wasn't just audio, but all sorts of wireless intercom, emergency, security, video and broadcast services. Long before kickoff, a day is set aside for what Stoffo calls "war games," where users turn on all of the wireless equipment used by all of the departments to find out how it interacts.

"You don't need a fancy RF analyzer or even a scanner to find intermods," Stoffo points out. "It's very easy: Turn all the transmitters on and then turn each transmitter off one at a time." If the other transmitters are causing intermods on that one frequency, then they'll show up as an RF signal at the turned-off transmitter's receiver. This is the essence of RF war games—a real-world reality check to see which systems are interfering with others.

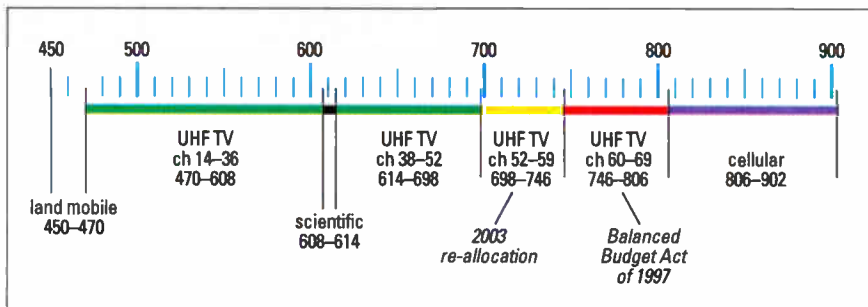
When there's enough interference on an RF system, and when that transmitter's signal fades or drops out, that interference can be hot enough to pass a burst of noise into the receiver and the sound system to which it's connected. This can happen in several ways: when someone touches the antenna, when the battery dies or when the transmitter enters a dropout location. And it doesn't have to be on a receiver's frequency, just nearby. Any RF that falls within a receiver's passband that's hot enough can open squelch and pass noise. The noise is typically 20 dB hotter than the signal it replaces, so it's usually a "showstopper."

Even when these intermod prod-

ceiver, they add gain and they favor signals coming from one direction. Unless you need to receive signals from all directions, whip antennae will put your wireless system at a disadvantage. Most pro audio action takes place onstage, which means the signals are in a particular direction. This directionality can be used to attenuate interference coming from elsewhere. By adding gain in one direction and reducing it in others, the use of directional antennae increases signal-to-noise to provide improved wireless transmission and, as a result, better sound. "The only time you'll see me using an omni antenna is when I'm doing a radio sweep with my RF analyzer," Stoffo points out. "A directional antenna typically raises signal-to-noise by over a dozen decibels."

One common type of directional antenna is the "log periodic dipole array," or "log" for short. It's also sometimes called a "paddle" because it resembles a pingpong paddle. These typically have a 70-degree coverage pattern, add about 6 dB of gain and can cover hundreds of MHz of bandwidth—wide enough for many different RF systems.

Usually, paddle antennae are vertically oriented on mic stands. Occasionally, someone mistakenly uses a stereo mic bar to



Recent UHF band re-allocations

mount two antennae on a single stand. This not only places them in the same polarization, but also less than a wavelength apart. A better arrangement would be one that orients the two paddles perpendicular to each other (by putting at least one on a boom arm) and places them at least several feet apart.

Another less-common antenna type is the Yagi, which is highly directional, like a shotgun mic, and is tuned to a narrower bandwidth, usually that of a single RF system, about 30MHz wide. It also has almost twice the gain of a log. It looks like your grandma's old rooftop TV antenna, with a single long axis and several shorter cross-pieces. In problem areas, these can be used for high focus and high rejection.

A third type is the helical antenna, which is a clear plastic tube with a ribbon of cop-

per wound around its inside like a candy cane and a circular wire mesh at one end. It has about the same gain as a Yagi but covers all 360 degrees of RF polarization at once. Stoffo's company, Professional Wireless Systems, makes helical antennae, so naturally he uses only helical on the Super Bowl, where he can use anything he wants.

Under the rule of reciprocity, a transmit antenna can be used for the same frequencies as a receiver. This is why helical antennae have proven successful as transmit antennae for in-ear monitor systems. Their ability to modulate RF through all angles of polarization makes them less susceptible to dropouts than the usual paddles or whips because they permit 100 percent of possible energy transfer no matter what the orientation of the receiver's antenna—espe-

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B IS FOR BUNNY

"The last dozen problems I've had with RF all had to do with batteries," Stoffo says, "so I've done a lot of testing on the different makes and models. We've used [Duracell] ProCells, and sometimes they've lasted longer, but often they don't. The Energizer is the most consistent. That way, we know how many hours of use to expect."

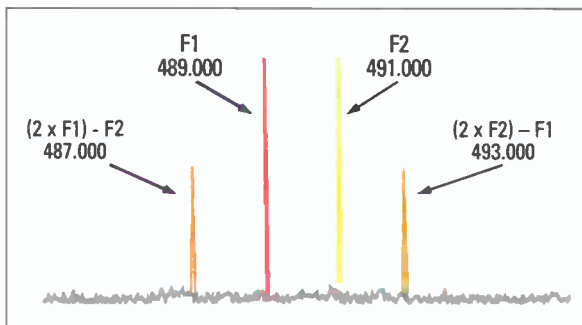
Lithium batteries typically last twice as long as a Ni-Cad, but are only found at professional battery outlets. Most of us are going to get AA, 9-volt or Ni-Cads from an industrial battery supplier, not a local supermarket. Stoffo does warn that though rechargeable batteries are tempting for economic reasons, at best they're only good for half as long, which may not be enough for many shows. Also, if the batteries are regularly recharged before they're dead, memory effect kicks in and you'll no longer get full use.

Stoffo recommends to always meter batteries before putting them into play and using a proper battery meter, instead of an ohm meter as it puts a load on the battery to get

a correct reading. The most cost-effective tool for your wireless system is a dedicated battery tester. You only have to suffer the embarrassment of putting a half-dead battery into play once before this small investment makes sense. Stoffo also points out that once you start using a battery, it begins the process of losing its charge so that it's no longer dependable for future use. Also, many newer transmitters use a DC regulator to get the most out of the battery, which means that when they die, they die fast. Also, the onboard fuel gauges are not necessarily accurate.

C IS FOR COORDINATION

Frequency coordination is more than simply fitting wireless systems in and around the list of known broadcasters in an area. The term intermodulation describes the interaction of any two nearby frequencies to create a third frequency. Stoffo uses a color metaphor to explain: "Red and yellow combine to make orange. If you have two wireless mics and they're on the red and yellow frequencies, you don't want to try to use a



Two frequencies (red, yellow) interact to produce smaller intermodulation products (orange) that are seen on an RF analyzer as symmetrical reflections equidistant above and below them in the frequency spectrum.

third on the orange frequencies because you're already generating signals there as a byproduct of the first two." As the number of wireless frequencies increases, the number of intermod products increases exponentially. A typical rack of eight RF units produces an additional 27 third-order intermods. This is why manufacturers have preset groups of frequencies that are carefully designed to work when multiple systems are used together. Most of that information is available at the manufacturer's Website.



Mark Frink is Mix's sound reinforcement editor.

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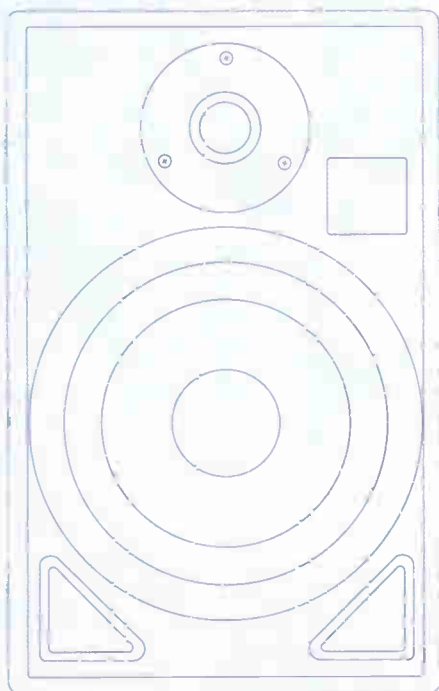
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Melissa Etheridge

Lucky Lady Teams Up With Producer Ross Hogarth

You couldn't turn on a radio in the mid-'90s without hearing Melissa Etheridge's distinctive, evocative rock-folk vocal. And while her subsequent projects haven't approached the commercial success of *Yes I Am*, she remains a critic's favorite. Last fall, she took over NRG Studios in Los Angeles, bringing in a crack band and producer/engineer Ross Hogarth to record her new album, *Lucky*, set for release February 10 on Island/Def Jam.

"Ross has a wonderfully relaxed attitude and creates an atmosphere that truly allows the musicians to expand and relax into their best performances," Etheridge says. "They don't feel rushed, they don't feel pressured. It's very much 'let the good things come naturally.'"



On the day *Mix* stopped by, Etheridge was tracking the sparse ballad "Meet Me In the Dark" on vocals and piano, with Paul Bushnell on bass and Brian MacLeod on drums. Etheridge and Hogarth made full use of NRG's facilities, tracking drums on the Neve 8068 in Studio A, vocals and overdubs on Studio B's Neve 8078, and mixing through the SSL 9000 J into Pro Tools HD in Studio C. The song was tracked live, with no overdubs, except for a cello track recorded later. Guitarist Blues Saraceno, who played on most of the album save "Meet Me...", was in the studio that day working on the song "Will You Still Love Me" with Etheridge.

For "Meet Me In the Dark," Etheridge's piano was miked with a pair of matched vintage tube AKG C-12s through a modified (discrete) Neve 33609 stereo compressor and API 550A EQs. Vocals went through a vintage tube Telefunken ELAM 251 into a Chandler Limited LTD-1 Neve-like module and a UREI LA-3. "The Telefunken gave us a beautiful, silky sound for her overall performances," says Hogarth.



Guitarist Blues Saraceno (left) and Brian MacLeod develop ideas for "Will You Still Love Me." "Melissa and Blues' electric guitars were all basically recorded the same," says Hogarth. "We used old vintage combo amps, recorded using Royer 121 and Royer 122 ribbon mics, supplemented with a Shure 57 and a Sennheiser 421."



Paul Bushnell's bass rig includes an Edair Audio Evil Twin Tube DI, which is routed to a pedal board full of favorite effects. "After the pedal board, I split the signal to another DI for signal pre-bass amp with Paul's effects," says Hogarth. "The other signal goes to Paul's bass amplifier, an old Ampeg SVT. The bass cabinet is recorded with a blend of a Neumann FET 47 and a BLUE Mouse mic. I use separate tracks for each signal, blending the mics to one for a bass amp track."



Tracking drummer Brian Macleod: On snare, Hogarth taped two mics together for phase coherency. "I always use a Shure SM57 or Beta 56L and then for the crack a condenser like an AKG 451, 452 or 460," he says. For this track, hi-hat was a Shure SM 81, toms were AKG 414s, and a Shure Beta 52 ("for the smack") and Electro-Voice ND868 ("for the low-end punch") were used on the kick. DPA 401Ts were used on overheads. Hogarth miked the room with matched Neumann U67s on the outside combined with a stereo Royer ribbon in the center of the room, and for effect placed a Shure Green Bullet radio mic over the drummer's shoulder. "I use this mic as feed to a filter bank with an ADSR that creates a loop or sample-like sound that can either be used inside the kit like a loop or chopped later and used as a loop," says Hogarth. He shares one more trick: "On the outside of the kick drum, for a long time I have used an NS-10 woofer taped to a mic stand as a reverse transducer."



Etheridge runs down a song with Hogarth and the band. "My last album was just me in the studio, but this one is much more a collaboration with the musicians and with Ross," Etheridge says. "The guys and girls who worked on it are just the finest talented musicians in this town."



Some of Hogarth's favorite gear, top to bottom: Sherman Filter bank ("can peel the paint off a wall or even cause erosion of the Pacific coastline"), Manley ELOP Compressor, SPL Transient Designer 4 ("tremendous on mixdown on drums"), Chandler EMi Type stereo compressor ("the best new piece I have") and two Chandler LTD 1 Nieve-like mic pre/EQs. Rack gear is flanked by pictures of Betty Boop and Hogarth's son, Brady Todd.



Hogarth on working with Etheridge: "I feel that Melissa is committed to making a difference and a contributor: to her fans, and in a larger sense to the world as a whole. I believe this comes through in her heartfelt honesty as a person, in her writing and in her delivery of the song. It was my job to keep this in mind and not lose sight of this in the arrangements, tracking, choice of sounds and basically in the overall vision."



John Meyer

Looking Forward Into the Science of Sound

John Meyer, who with his wife, Helen, founded Meyer Sound Laboratories 25 years ago, has always taken a different approach to seeing (and hearing!) the world. There are plenty of companies specializing in professional loudspeaker systems, but the Meyer way has always been different.

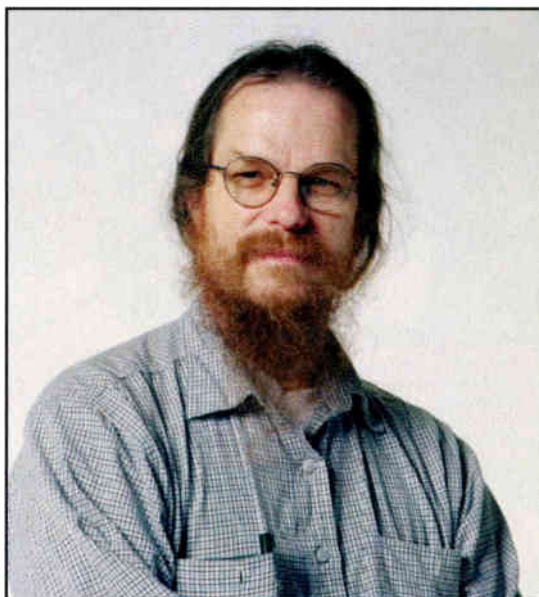
Perhaps the "Laboratories" part of the company name provides a clue, as Meyer has always been scientific and empirical in his methods. In 1973, he was invited to do research and establish an acoustics lab at the Institute for Advanced Musical Studies in Montreux, Switzerland, which led to a patent on an HF compression driver that reduced distortion to a tenth of conventional designs. More recently, Meyer has incorporated technologies from other disciplines into products such as the company's high-end X-10 studio monitors, which use patented Pressure-Sensing Active Control, a sophisticated feedback circuit originally developed for control systems on the Air Force's stealth aircraft.

During the years, Meyer has been known for looking at old problems in new ways. Though many appeared radical at first, some of his ideas became industry norms within a few years. In 1980, he patented the trapezoidal, arrayable enclosure—today, a common concept used by every touring loudspeaker manufacturer. Meyer also led the industry with concepts such as the Source-Independent Measurement system (this allowed for tuning rooms during the show while the audience was present), and he developed both the notion of using electronic processing to optimize speaker performance and the self-powered pro sound reinforcement speaker. In 1999, Meyer did the "impossible" again, this time with the PSW-6 High-Power Cardioid Subwoofer, using a unique six-w woofer enclosure (four front/two rear) and sophisticated phase-manipulation circuitry to achieve a cardioid directional pattern, putting in more bass frequencies when you want them and less unwanted LF reverb in the room.

Now, as Meyer Sound Labs kicks off its silver anniversary, we decided to solicit Meyer's views on live sound technologies, looking at where we've been and perhaps giving insight into what the next five, 10 or 25 years may bring.

Live sound 25 years ago was a pretty different landscape than today. Where are we headed next?

The sound systems evolved originally from a very ad hoc kind of thing, with rental companies building custom sound systems for bands. The McCunes, Clair Bros. and other companies came up in this medium of rock 'n' roll sound in the '70s; nothing [existing] worked, so there was a lot of home-grown equipment being built. Then slowly, companies like us started surfacing to create products



that were more generic for sound companies that didn't want to build all their own gear.

But the systems were and are still designed around having very highly skilled people to run these systems. Essentially what we have today is a racecar mentality of sound, with highly sophisticated gear built for highly sophisticated talent. This creates a limit as to how far we can go in that scenario.

It's getting too complicated to try to teach everybody everything they need to know about dealing with air compensation. We're trying to build systems that are more function-oriented. For example, we just came out with a product called an LD-3. Rather than trying to teach people about air attenuation, gains of arrays and how to do all of this with digital EQ or whatever, we're aiming the product more at function. You just enter the number and type of arrays, the humidity, temperature and distance, instead of giving all this data as EQ functions. I think we'll see more and more of this paradigm shift in equipment over the next five or 10 years. It's a new way of thinking about what we're trying to accomplish.

Doesn't this come down to the user interface?

Digital consoles with layers and layers of controls and features are more like the digital cameras that have so many options and menus within menus that you can lose your point-and-shoot mentality. On the Sony I was using the other day, I had to press three buttons to get it to work in automatic mode. It used to be you could simply pick up a camera and shoot a picture. We're in that same kind of place in the P.A. world, where stuff is very complicated.

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Sound is moving out of the rock 'n' roll mentality and going into churches, theme parks and other venues where people want to have good sound. But it's one thing to staff up dozens of pros to do a high-tech touring show, and it's another thing to do 30 shows at theme parks and churches. In a lot of those installations, there may be a "rocket scientist" mixing engineer who's the wizard that understands it all, but usually you have people who only know how to flip a couple switches to power up the system and hope it works.

Right now, we're still in a very raw state of sound systems, where it takes very high skill to know how to work these things. Something has to bridge this gap to make using systems as easy as knowing how to drive a car.

It's kind of like driving a car where you sit behind the wheel and a voice comes up and says, "Select axle ratio," when all you want to do is drive.

And it's not like you can just turn all this stuff off. You have to set each of these to be off, and the digital control of sound systems requires a lot of things to be set before they will function. It limits the amount of people who can use modern sound systems to a very high degree.

We're kind of lost in a sea of complexity. I think we may just have to stand back, look at the whole problem and decide if this is the best solution for everybody, or if this is a good solution for 5 percent of the users with the other 95 percent suffering as a result.

Why are we still using wood cabinets?

Wood is very light and very tough. We've looked at the honeycomb material that the aircraft industry likes, which is half the



John Meyer, circa 1985, running FFT analysis of 500 Series prototype.

weight of wood but 16 times the cost of wood. Graphite is about twice the weight, so if you build something of aluminum and graphite in a honeycomb structure, you're dealing with materials that are about 10 times heavier than wood—very thin, very strong and very expensive. Honeycombs are also prone to being ripped and torn, but as you make them thicker, they lose their advantage over wood.

Polymers tend to be heavy, and we've experimented with graphite and Fiberglass skins, but in cabinetry, we haven't found that alternate materials save you enough weight to be worth their expense over wood. Wood is a tough material that lasts a long time and is easy to repair. There are other ways to save weight, such as using neodymium drivers, but in many loudspeakers, the wood cabinet is just a small part of the weight, especially when you add rigging components that are strong enough to hold 16 cabinets strung in a row with 7:1 safety margins.

The dynamic loudspeaker was invented 80 years ago. After all this time, cones seem a rather arcane way of moving air and modulating it. Will we still have speaker cones 25 years from now?

This is like the question of whether we'd still have tires on cars 25 years from now. Generally, we see the first hints of a replacement 20 years in advance. That's pretty much been the history, although sometimes

things move much faster. In replacing car tires, one solution came from blowing large amounts of air under the vehicle, blowing dirt all over the neighborhood—that wasn't too popular. Right now, there's no glimpse of a replacement, so tires are probably here to stay for a while.

But in terms of cones, we need to move air to get sound. One way is to ionize the air directly and move it with some sort of electrostatic field. This no-membrane approach has been tried: You take a bunch of

Essentially what we have today is a racecar mentality of sound, with highly sophisticated gear built for highly sophisticated talent.

needles, like a big pincushion, charge them up, spew electrons in the air, charge the field and modulate them with some kind of AC field. But the field moves around, the ions don't stay in one place, the efficiency sucks, you end up with a hard-to-control dispersing field and you get ozone on the side.

There was also the flame loudspeaker that Ampex developed, where you salt a big flame with sodium and modulate the flame. But those things disappeared, and generally, ionizing the air directly hasn't worked out; much like the acoustical refrigerator, which seemed interesting but had a lot of problems and couldn't compete



One of John Meyer's late '60s experimental bass horn systems

Mistral 2500

Analog Power Amplifier, 700 WATT (x2) @ 4 Ohms



ALTO's new Mistral Power Amplifier line comes in 900, 1500, 2500 (shown here), 4000 and 6000 watt configurations. The Mistral line of innovative power amp designs provide clean power and high stability all in two space chassis'. ALTO's Mistral line features a low noise air flow system which directs air flow from rear to front providing maximum efficiency and temperature control. These amps include two channels, each with its own

independent protection system (IPS) and power supply. The Mistral IPS avoids any open circuit, short or overheating while the protection system provides an automatic restart function. All outputs are equipped with standard balanced power connectors and a high quality transformers. Dollar for dollar, the Mistral Line offers reliable amplification at a great price.

Dragonfly PM-16

16-Channel Digitally Powered Mixing Console

The new Dragonfly Series of powered mixing consoles come in 6, 8, 12, 16 (shown here) and 20-channel board configurations, each ideal for a variety of live performance situations. With ALTO's digital amplifier technology, the Dragonfly Series, offers high power mixing and a dynamic sound. Extremely high efficiency means the amplifier is so compact that the console is no larger and barely any heavier than an

equivalent passive console. The PM-16 in its sleek, portable design weighs in at a mere 18 lbs. Equipped with many useful features, the PM-16 is digitally powered up to 900 watts of on board (both channels in 4ohms). When you need a powerful mixer on the go, go DRAGONFLY!



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L Series/S Series Mixing Consoles



The "L" Series offers a range of quality, portable mixing consoles with a built-in 24-bit digital effects processor, 3 EQ bands on each input channel, and a 9-band stereo graphic equalizer for overall frequency correction. Offered in 12 (shown here) and 16-channel boards these mixers are ideal for live sound work but equally at home in your project studio.

The "S" Series are feature packed, versatile and compact mixing consoles for a variety of applications. Offered in 6, 8 (shown here) 12 and 16-channel boards, all "S" Series consoles feature ultra-low noise, discrete mic preamps with +48V phantom power, and deliver extremely high headroom offering extra dynamic range. Perfect for any location mixing or fixed install requirements.



CLE 8.0

8-Channel Compressor/Limiter/Peak-Limiter/Gate



The CLE line of pro compressors come in 2, 4 and 8-channel (shown here) configurations and have grown extremely popular. These interactive compressors have a robust feature

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against compressor-type refrigeration.

Paper also has a lot of problems. But one of the reasons we use paper is because it's naturally designed to flex. Most materials are either work-harden or work-soften. All metals are work-harden. If you bend a coat hanger long enough, the metal crystallizes and it breaks. If you bend nylon long enough, it softens and breaks. Wood is very neutral, and when it flexes, it doesn't change its characteristic so it doesn't make noise. When metal flexes, it makes noise, like a metal clicker toy. If done properly, wood can change its state without making

noise. It's a reasonable solution until something more elegant comes along.

Why don't we have modulated compressed-air systems?

The military has used systems with modulated airstreams, but it takes a lot of air. It's noisy, it hisses and it is hard to control. They're giving that up, and we've been doing more work with NASA using direct radiators. They're quieter and by using a lot of speakers, you can create a lot of power.

Pushing air with membranes, such as electrostatics, has been well explored, but it's hard to get much power out of such a

system, which takes us back to using a cone—paper, Mylar, metal or whatever—to move air. From an engineering perspective, we have to ask how accurately can this be achieved and can we do this at low distortion? Since we're stuck with cones—or tires—we have to make the best cones or tires we can, as the whole car or system is dependent on how well the tires perform.

I feel that way about speakers. Cones are the available technology, so our motive is to look at the cone and study its limitations, such as mass and weight, because once put into motion, it will have its own momentum

In cabinetry, we haven't found that alternate materials save you enough weight to be worth their expense over wood.

and won't stop instantly. We can use electronics to help with this, much in the same way that a car has a mechanical suspension to absorb bumps. A more clever way would be to scan the ground in front of the car with a laser and anticipate the bump with a servo mechanism that adjusts the suspension before it hits the bump. With our X-10 studio monitors, we have the ability to "read" what the speaker is doing with a microphone and use feedback—like in an amplifier—to correct and add energy, forcing the speaker to behave in a linear way.

Until we see an alternate solution, the key is to refine that solution so we can create as accurate an image of the original as possible. That's why I've always liked the idea of combining electronic control with speakers as part of the same working group.

Isn't the room the ultimate challenge?
As we build more directional products and line arrays that direct the sound at the area where the audience is, we're developing better products, especially in some venues where it's hard to get them to do anything [acoustically] about the space, such as churches and historical buildings.

That sounds incredibly simple.
These ideas can take years to figure out. At our installation in Carnegie Hall, we were able to design a system that really does put the sound exactly where it needs to go, but we were only able to do that because the system can be struck for their classical programs. There we proved that if we didn't hit



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MIX INTERVIEW

the walls, we could greatly improve the intelligibility of the space.

As we move out of this high-tech world of rock 'n' roll touring into churches and other venues, it becomes more apparent to me that we need to build products that are designed for people who have volunteers to work these shows. That's what the future will have to solve.

But you've got to be practical. One time, some movie companies wanted to be able to

scan the number of people in the audience, analyze the response and feed the system with antisounds so they wouldn't have to put walls between movie theaters. When they asked me what I thought about it, I told them it would be a lot easier just to build some concrete walls between the cinemas [Laughs].

MIX
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George Petersen is the editorial director of Mix.

Meyer Sound Milestones

A lot can happen in 25 years. Here are some highlights in the history of Meyer Sound:

1979 Meyer Sound Laboratories founded by John and Helen Meyer. John Meyer patents low-distortion horn design (later used in UM-1 and UPA-1). The company unveils its CEU (Control Electronics Unit) active loudspeaker crossover/processor, first used in theater subwoofers for 70mm release of *Apocalypse Now*. The UM-1 UltraMonitor, the first high-SPL, active, processed stage monitor debuts.



John and Helen Meyer

1980 John Meyer patents the trapezoidal arrayable cabinet, first used in the UPA-1 compact wide-coverage, powered FOH speaker.

1984 SIM (Source Independent Measurement) is introduced, allowing sound system performance measurement/optimization to be made during music events. (1986 TEC Award)

1989 HD-1 high-definition studio monitors are introduced, beginning the trend of active, powered studio loudspeakers. (1990 TEC Award)

1991 SIM enters its second generation, with the SIM II, which receives R&D 100 Award from *R&D* magazine.

1995 The MSL-4, the first high-SPL, self-powered sound reinforcement loudspeaker, is shown and is named *LDI* magazine's "Sound Product of the Year."

1996 Meyer creates powered versions of some of its other speakers, including the UPA-1P and UPA-2P, awarded "Sound Product of the Year" by *Theater Crafts International* magazine.

1997 Meyer unveils SB-1 Parabolic Long-Throw Sound Beam speaker, which uses a parabolic dish to project high-SPL sound over long distances.

1998 The PSW-6 High-Power Cardioid Subwoofer—the first directional low-frequency reproducer—debuts. (1999 TEC Award)

2000 The X-10—a high-performance studio monitor using Pressure Sensing Active Control technology to compare input and output levels—is unveiled. The system provides consistent LF reproduction, regardless of playback level. MAPP (Multipurpose Acoustical Prediction Program) is introduced, allowing engineers and contractors to access advanced acoustical analysis programs in the field by linking to a host computer at Meyer Sound via Internet. Meyer's compact, powered wide-coverage UPM-1P speaker receives a TEC Award.

2001 Meyer unveils the M3D, the company's first line array product, which uses a patent-pending REM (Ribbon Emulation Manifold) horn design to mimic the smooth sound of ribbon tweeters from conventional high-SPL compression drivers.

2002 Meyer debuts two curvilinear array systems (compact M2D and ultra-compact M1D), which allow line array use in small venues. (Named "Sound Product of the Year" by *Entertainment Design* magazine)

2003 At Frankfurt Musikmesse, MILO—a high-power curvilinear array system—is shown, allowing the creation of full curvilinear arrays, with the larger, long-throw MILO cabinets as mains and the M2Ds as near-field fills. At AES NYC, Meyer releases SIM 3, the third generation of its Source Independent Measurement system, which costs a fraction of earlier SIM units, while offering far more power, with the ability to calculate 300 Fast Fourier Transforms per second.

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WHATEVER IT TAKES

The K2 represents everything we have learnt from designing and building thousands of valve mics. The test equipment you see in this photo proves how far we go to do it right. The 1950's Tektronix 570, so rare and valuable; most valve

designers have only seen photos. Owning this unit allows us to delve deeply into valve technology. It allows us to extract every last ounce of performance from our circuits.



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Please listen to the K2. Even if you are willing to spend \$20,000.00 on a mic, listen to what we have achieved. RØDE can offer this performance and quality because of the volume we manufacture. Small volume manufacturers aren't better; just more expensive. Once you hear the K2, you too will believe it can be done!

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Eric Schilling

Miami's Latin Rhythms Spice Grammy-Winning Career

Life never gets boring for Eric Schilling. An engineer with a knack for consistently creating polished pop/rock, Schilling is also in demand for the savvy that he brings to jazz and Latin projects. Last year alone, he worked with Gloria Estefan, Julio Iglesias, Chayanne, Cachao, Arturo Sandoval and new artist Anthem, among others. He also took time out from the studio to mix the live broadcast for the *Latin Grammy* Awards, Celia Cruz's television special and the *MTV Video Music Awards*.

Since 2000, Schilling has garnered three Grammy Awards, seven Latin Grammys, and in 2003, was honored at the Florida chapter of NARAS' Heroes Awards gala for his contributions to both NARAS and the state of Florida. His discography is impressive: 16 albums with Gloria Estefan—encompassing most of her greatest hits from “Conga” to “Live for Loving You”—and work with such other superstars as Natalie Cole, Jon Secada, Elton John, Natalie Imbruglia and Shakira. He's especially adept at bridging pop and Latin. Two of his Grammys were for “Best Latin Pop Album”: in 2000 for Shakira's *MTV Unplugged* and 2003 for Bacilos' *Caraluna*.

A San Francisco Bay Area native, Schilling cut his teeth recording remotes for public radio station KPFA in Berkeley, Calif., then honed his chops at The Plant in Sausalito. There, he hooked up with legendary producer/engineer Bill Szymczyk (The Eagles, J. Geils Band, B.B. King), who brought him to Miami to engineer at his own Bayshore Studios. At the facility, Schilling began working with the as-yet-unknown Gloria and Emilio Estefan, a twist of fate that put him smack on the ground floor of the exploding Miami music scene. The rest—well, it's pop music history.

Although Schilling now lives in Orlando, he still works primarily in Miami at his own studio and others. He also makes frequent excursions to New York to engineer for producer Phil Ramone. I spoke with Schilling one autumn afternoon by phone, when he took a break from mixing sessions for Juan Luis Guerra at Miami's Hit Factory.

You started engineering when you were very young.

From age 15 to 19, I volunteered at KPFA, a listener-sponsored radio station. It was a great experience because we did a lot of gigs in clubs—remotes—with a little console and homemade snakes. I learned about music and how to mix from those environments. We did everything: classical, bluegrass, rock and a lot of jazz. At the same time, I met Bob Ohlsson, who'd worked at Motown in its heyday. I worked for free for him just to learn. I got all my theory about microphones, compressors and recording techniques from him.

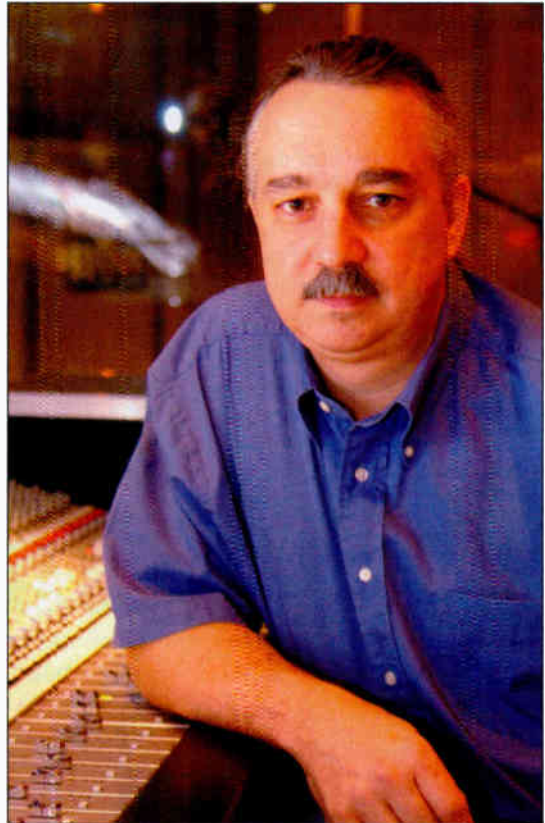


PHOTO: MAUREEN DRONEY

What were some of the things you learned?

Bob was taught, and he taught me, that before you crank a knob on the board, you move the mic or pick a different mic. At Motown, they used a lot of the same mics for everything; the Neumann KM 86 was their stock mic. To get different sounds, they had to work with placement. He also taught me a lot about microphone design. For example, he explained to me that when Neumann designed the U67, they rolled off the bass in it because it was meant for voice—to be used up close—unlike their older mics, which were designed for orchestral work. He taught me how changing from cardioid to figure-8 can alter a sound, making something a little brighter or more compact.

How did you meet Gloria Estefan?

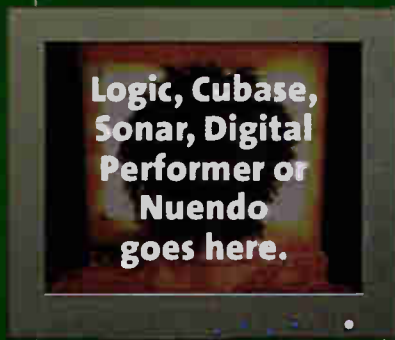
I'd started to freelance when I was still working at Bayshore [Szymczyk's Miami studio]. But as it turned out, when Bill sold the studio, the last paying client to come through the door before it closed was Gloria. I'd worked on a Spanish album [for someone else] with producer Sergio Rozenblat, who she was working with. He called me to do her album, and we hit it off.

I worked on “Dr. Beat” with her, which was a dance

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hit in Europe. That helped get her known. Then they—Emilio and Gloria—convinced their label to let them do an English album by offering to pay some of the cost themselves. That's how they got their English career off the ground; they took away the risk for the label.

What do you think are some of the key elements of recording and mixing Latin music?

First off, you have to bear in mind that "Latin music" is an extremely broad term. Growing up in the Bay Area, I was exposed to a certain type of Latin music—rock, like

Malo or Carlos Santana. Here, the more I worked with it, the more I realized how many facets there are: Puerto Rican, Cuban, Dominican, Mexican and various South American styles; each one has a different cultural point of view. For example, the album I'm working on this week for Juan Luis Guerra, the style is *merengue*, which is extremely specific as to where you place instruments in the mix. You have to learn what the particular style is.

Percussion is something most Latin records have in common. Would you tend to use room sound when recording it?

In most Latin music, with the percussion being as dense as it is, I don't specifically put up mics for a room sound. Really, what you hear in those classic recordings that we call "room sound" usually wasn't something they got by putting out special mics for the room. It was that people were recording all in the same space. The normal bleed between instruments created the sound of the room. That's what I use, if I can. The only time I would put a person in a booth is if I know I have to replace a part [Laughs]. As for setting up mics for a big room sound, with so many people playing percussion, it would probably kill you!

So what mics do you like on percussion?

I use [AKG] C 414s a lot; [AKG] C 12s occasionally, if I can get a good one. On Gloria's records, especially for something like a *suerdo*—the big steel drum—I'd use a single C 12 or 414. If the conga player had two or three drums, I'd try to capture it with one mic. Believe it or not, I use the Sony 800G tube mic, which sounds really nice and bright when you get it three feet away. If you have a bunch of people in the room and you have to mike more closely, I'd use [Sennheiser] 421s on the congas. On Cachao's record, I ended up using a C 37 on congas, which is nice because it's bright and also really warm. But C 37s are very hard to find.

Do you compress the instruments to help get a blend?

No, I don't compress that stuff except when I mix, and even then I try not to do too much.

The review on allmusic.com called Arturo Sandoval's Trumpet Evolution, for which you recorded eight tracks at Arturo's house, "One of the greatest records jazz has produced in the last two decades."

That was a great project and great fun mixing it, partly because Al Schmitt and Armin Steiner, whose work I love, also worked on parts of it. For the songs I recorded, which were either a quartet or quintet, I took my Pro Tools and a bunch of mics and preamps to his home studio.

How were the musicians set up?

He has a big, live, tiled front room. That's where I put Arturo and the sax. The piano was also out there, in a sort of alcove. Horn players like to feel their horns in live environments; Arturo said that he wanted to play in the live room. Interestingly, I'd just gone through a phase of playing all these Rudy Van Gelder albums. I'd also been up at Phil Ramone's studio looking at a book about John Coltrane's album *A Love Supreme*, which Rudy did. The photos showed the piano, bass and drums all in

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one room with no gobos or anything. So I was already in that frame of mind. I did say to Arturo, "You can't fix anything. If you don't like your solo, you'll probably have to play the track again," which he was fine with.

He has a separate booth where we put the drums and a den/control room area that faces into the booth. The acoustic bass player sat in the control room behind me. When we tracked, we'd turn down the monitors and wear cans.

No console?

A little Mackie for monitoring the output of the tracks, but all the mic pre's went straight into Pro Tools. Because of that, I recorded everything flat. It was a case of finding the right mic for the job and working on the source material—changing drums or adjusting the bass. The main monitoring was on a pair of old Klipsch speakers. They were okay, but I didn't know them that well. That's another reason I wanted to record everything flat. I figured if I got the sounds by moving the mics to where they sounded okay, I'd be safe.

If I'm working on such consoles as a [Neve] VR or a [SSL] 9K, I'm not one who's got to have a special mic pre for everything. But in this case, I had to come up with a pile of preamps, so I got specific. For Arturo's trumpet, I used the new UA—new/old actually—tube mic pre. I chose that because he has a very bright sound that's hard to capture with any modern, really fast, transparent mic pre. A lot of the newer mic pre's are pretty good until you put them to the test of a guy like him, whose blowing is really loud. They just fold over. The UA didn't fold over.

What trumpet mic did you choose?

I used Royer 122s. I was really impressed. They didn't need pads; he stood maybe three feet away from them. For one piece, we brought in a trombone and a clarinet [as well as the sax], put them all in a circle and used Royers for the brass and Audio-Technica 4060s for the reeds.

Did you compress the trumpet?

No, I didn't have enough gear, and he's so consistent in his playing that I didn't need to.

Did you record at a lower level than you would normally?

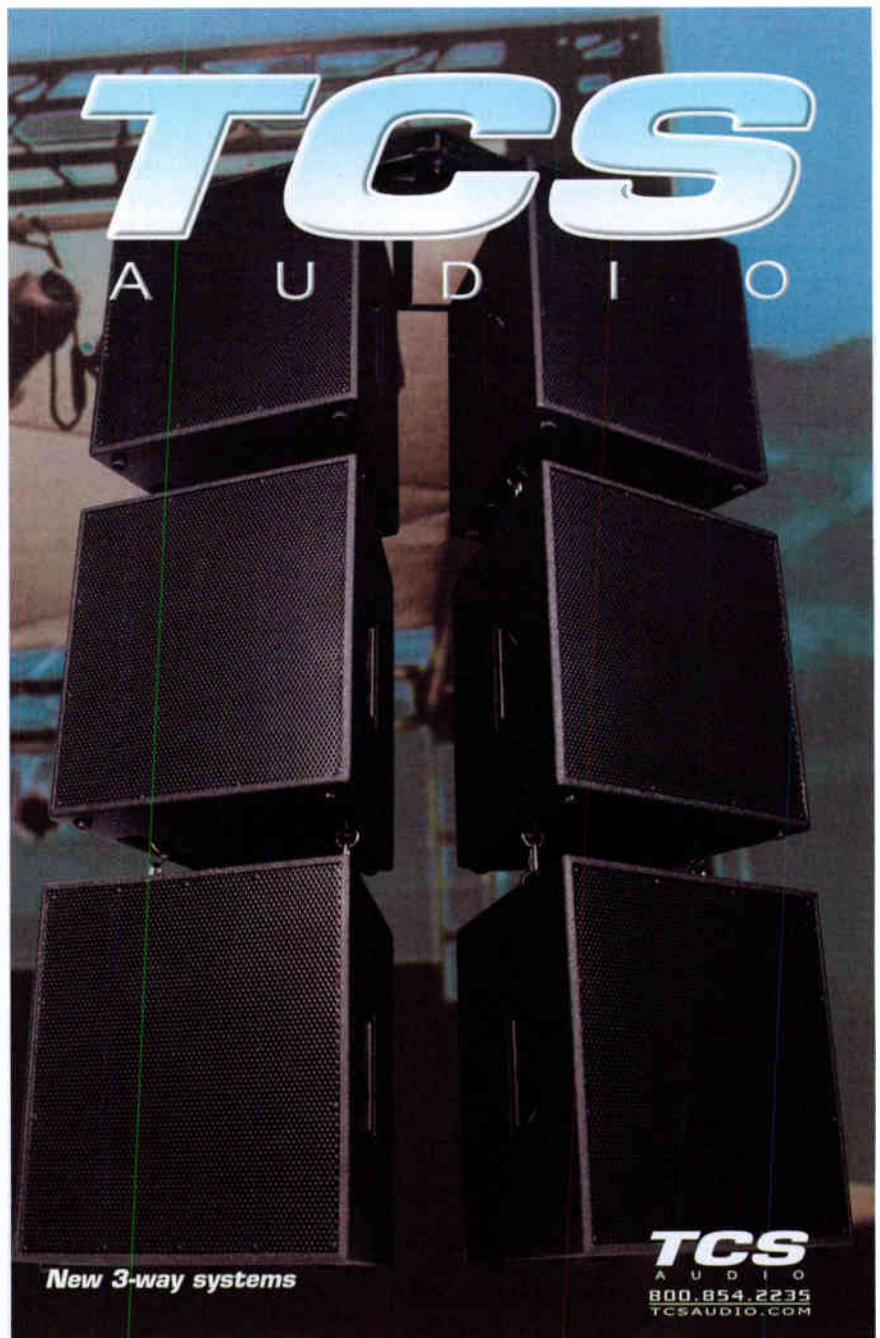
No, we'd run the song through once and I'd learn where the peaks were. I'm from that school of knowing what your gain structure on a particular preamp is supposed to be. If you align your Pro Tools properly and set your mic pre's pretty much where they should be, you're probably going to be okay. I tried to set up the gain structure so that if he was playing a basic

line, he was fine, and if he blew a solo, he had enough room to blow it and not peak. *And the rest of the band?*

I used Great River preamps on the piano and on the bass. They're similar to a Neve design but a little beefier; a nice fat sound. I look for preamps that have a lot of headroom. Our NARAS chapter did a mic pre shoot-out awhile ago that was very enlightening. Some of them did really poorly, especially on drums. I think it tends to be a power supply problem, where there's not enough room in them and they just can't take level.

For piano mics, I used Shure KSM32s; I'm very impressed with them. The stand-up bass was an A-T tube mic and a direct out. When I mixed, I used mostly the mic sound, because it was older-style music and they didn't want too much direct sound.

Drum-wise, because I wanted a warm sound, we ended up using a Royer stereo mic on top of the kit. I used a couple of A-T 40s on the toms and I had this really funky little Sennheiser 604—a tiny mic—that I used on kick and snare. With jazz, you have that boomy kind of kick, but you



want a little bit of edge so it's defined. The 604 worked well for that.

Besides your numerous albums with Gloria Estefan, you've also worked with other top vocalists, like Shakira, Jon Secada, David Bowie, Janet Jackson and Natalie Cole. What techniques do you use when you work with them?

When a singer is trying to perform, they're in a pretty intense mode. They have to focus. If they know how they want to get the song across and it's just a question of getting the performances, then it's about getting used to a person's flow. So that when you really get down to work, you don't need to talk, you've got a rhythm. That's what makes somebody good at doing vocals and why someone would want to use you again. I'm always conscious that I can't bog down the artist. If I bog him or her down and they lose their feel, then I've ruined what we're here for. Again, it's about making them comfortable. That's something I learned from Phil Ramone: "The player is king."

How do you decide what mics to use?

I pick what I think is going to be a good blend between what their voice sounds like and what I know a mic sounds like. For

Shakira, we started with a [Telefunken] 251, which is a really nice mic. But when she got loud, it was too bright. We ended up going back to an 87 [Laughs]. I know for a long time people have shied away from them, but they're workhorses; for many years, the British used them on everything and got really good sounds.

Favorite vocal compressors?

The LA-2A if it's a good one. They vary so dramatically. Or I'll use a Tube-Tech CL 1B; that's pretty transparent, which I like. I don't do tons of compression on a vocal—maybe 4 or 5 dB on peaks. I'll do more riding. I used to, when I was cutting a live scratch vocal that I thought could be a keeper, use the [Compex] Vocal Stressor. With a dynamic mic, you could hit it really hard and it sounded great.

EQ?

Generally, I won't use any, unless there's a specific need. If you find the right mic, it will be close enough and you can touch it up in the mix. Also, if you've got to change rooms or move studios, it's a lot simpler.

How about reverbs?

If I can get my hands on an EMT plate, that's great. But that's rare; hardly anyone knows how to tune them. My three fa-

vorites are the Lexicon 480, the AMS RMX—although more for drums than for vocals—and I just bought a TC Electronic 6K—the best piece of gear I bought all year! We set up Gloria's EMT 250 and the TC 6000 on its EMT program. I couldn't tell them apart. It's also a great box because if you're working in Pro Tools, the reverbs don't sound that good. You can go out to the 6K and stay digital.

What's your personal studio like?

I have a baby Sony Oxford console and a big HD rig that I feed into it. I refer to the HD as my boat because, like a sailboat, I'm always putting cash into it! The studio's control room is 16 by 17 and I have a pair of Genelec S30s with a sub. Originally, it was born out of a need to have a place to do my offline work: vocal comping, flying, tuning—all that stuff you don't need a big room for. Now I mainly use it for mixing. In today's market, it's really a necessity. Nowadays, some projects I want to do don't have the budget to go to a large studio.

Is your setup portable?

I have two HDs; one is smaller and more portable. That came out of the sessions at Arturo's home studio, where it took three guys to haul my 5-foot-high Pro Tools rack!



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I have one I/O with 16 inputs—which for any basic production is generally fine—a laptop and a relatively compact rack with a bunch of mic preamps. I have a self-contained little cue box from Hear Technologies, with either four stereo or eight mono mixes. It runs on Ethernet, so it's very simple to loop around. It works surprisingly well. I've only had to put an external amp on the back of it when I've worked with drummers who need to hear things really loud.

I also have a really neat 8-channel mic preamp by Crane Song. It has A-to-Ds on all the outputs that can feed into anything AES. It has a mixing bus also, so if you want to combine some of the mic preamps, it's extremely clean.

What do you look for in equipment that you're going to buy?

My outboard rack is mostly compressors. If I'm going to compress something, I want to hear the character of my compressor. I want coloration. I just bought a Chandler EMI stereo compressor, which I really like. It's very aggressive and colored. For drum stuff I want to smack pretty hard, I have a bunch of Distressors, which I like because they have lots of rations and you can change them to sound like an opto or a FET device. I've bought a bunch of the new Universal Audio gear, which I've compared to the old pieces and found to be really good. I bought a new black-face 1176, and it's just a little cleaner than the old ones.

Your overall mixes often have a really nice sheen to them. How do you get that?

I believe that you instinctively have taste that leads you to a certain place in all things that you do, and I think I have a pretty good ear for pop. Obviously, the concept of what is pop changes all the time, but I just naturally hear that kind of structure.

When I'm mixing, I like to hear bottom in a certain way that's kind of whole and round, and I like to hear some air and openness on the top. It's not that I won't compress, but I don't like to squeeze the life out. Basically, I'm always heading toward that place that I like [Laughs]. On a Mackie, I'd have to do it differently, but I'd still head to the same place.

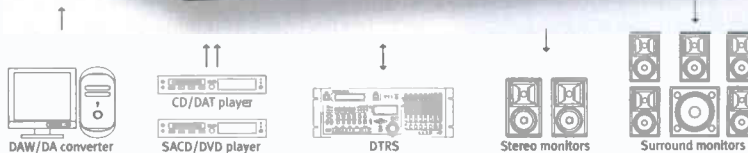
This may sound funny coming from me, because I'm kind of a gear junkie and I love new technology, but it's really not about the equipment. It's about how you hear. Forced to work in a stripped-down environment, as long as I can hear what I'm doing, and the acoustic room is good, I can do all right. ■

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Interpol



Photo and Text by Steve Jennings

New York City-based Interpol will remind most post-punk junkies of Joy Division or The Chameleons. Touring under their first release, *Turn on the Bright Lights*, Interpol is garnering increasing attention. *Mix* caught up with front-of-house engineer Harley when they swung through Northern California.

"For this tour, we are not carrying production. I am renting locally for each show," Harley says. "As a result, I've used a wide selection of boxes from all the major manufacturers. I spec a Midas Heritage 3000, but find myself splitting my time between that and the Yamaha PM4000. Being on a different desk and boxes every night has been a double-edged sword. Being flexible and knowing how to adapt to a changing situation every night has made this job both a challenge and a pleasure. They each

know what they want their instrument to sound like. There is very little corrective EQ used on the desk. Generally, just the highpass filter and a small tweak here and there. They generally give me what I need and let me run with it."

Harley is carrying three compressors from FMR Audio, using two of them in stereo—one for the L/R keyboard channels and the other on a subgroup with guitars—and the third on lead vocalist/guitarist Paul Banks' vocal. Also in his rig are two Behringer AutoCom compressors used on bass DI, mic and two channels of backing vocals; a Yamaha SPX900; and a Roland SDE 1000. As for his microphone selection, Harley employs a Shure SM58 for Daniel Kessler and Sam Fogarino's backing vocals. Lead vocals are miked with an Audix OM5, while drums receive a Shure SM91 and Beyer M88 (kick), SM57 (snare top/bottom), SM81 (hi-hat), Audix Micro-D (rack/floor). For guitars, each is miked with a CAD M37, while bass receives a Sennheiser 421 or a Beyer M88.



FOH engineer Harley

FixIt

Michael Souder

Currently mixing in-ear monitors for AFI and The Donnas.

"With loud rock bands, capturing the true guitar tone is a difficult part of producing good in-ear mixes. I tend to use a direct line, but if DI is not an option, go for a bright-sounding mic. Really loud amps make the problem worse. Guitar bleed in the vocal mics can wash out the guitar mics, making the guitar sound distant in the mix. Using a vocal mic with better rejection or reversing the phase of the guitar line or vocal mic can sometimes tame the problem. Also, EQ settings for in-ear mixes are different and much more dramatic than what's needed in the wedges. Don't be afraid to roll the highpass up above 250 Hz and try boosting 4 kHz for a little added presence."



inside

- 66 **Live Mix News:**
Tours, Events, Installations
- 70 **All Access: Godsmack**
- 72 **Tour Profile: Red Hot Chili Peppers**
- 76 **Tour Profile: Good Charlotte**
- 78 **Tour Profile: Lucinda Williams**
- 80 **Tour Profile: Simon and Garfunkel**
- 82 **Tour Profile: Primus**
- 84 **Tour Profile: Branford Marsalis**
- 86 **Dedicated Speaker Processors**
- 90 **New Sound Reinforcement Products**

News



JBL line arrays at Nashville's Grand Ole Opry

Nashville's Grand Ole Opry boasts a new JBL VerTec system for performance and presentation events such as the annual Country Music Awards...New York's Gershwin Theater announced the opening of the musical *Wicked*, which features sound design by Tony Meola (*The Lion King*, *The Sound of Music*) and a

new 101-slot Cadac J-Type Live Production Console. The system also includes 36 Sennheiser SK-5012 radio mics, various Meyer speakers and an M-10 line array system. The console was provided by ProMix Electrotec (NYC)...Touring FOH engineer Peter Arsenault (Jon Spencer's Blues Explosion, Luna, Susan Deyhim) used Eventide's Reverb 2016 and Eclipse digital audio effects processors while touring with his latest acts...Country artist Phil Vassar toured this year with an Audio-Technica Artist Elite 4000 Series Wireless microphone



Phil Vassar on the road

with AEW-T3300 condenser handheld...The Griffin First Assembly of God (Griffin, GA) installed a new sound system, employing a center cluster of four SPL-td1s, two SPL-td1 subs, SPL-trik loudspeakers (extreme left and right) and an SPL B-DEAP sub for the low end.

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On the Road

Christian Seger

Working for the past 18 months with new country sensation Pat Green, front-of-house mixer Christian Seger has settled into road life. *Mix* caught up with him as he was gearing for a show at the famed Gruene Hall (Texas).

What challenges do you face with Green?

Pat is a dynamic performer who never does the same show twice, and we play every size venue you could imagine. One night we might be doing 70,000 people at Rodeo Houston, the next night we're doing 17,000 at the American Airlines Center in Dallas, and then a 300-seat club. It's my job to keep a consistent sound wherever we go.

Any interesting pieces of gear?

I added an SPL Transient Designer to my insert rack and am blown away by its performance. I hate using EQ to bring an instrument in or out of a mix, and the T.D. adds tons of punch without altering the timbre of the instrument.

You travel with a monitor rig and mics, picking up racks 'n' stacks at each venue.

What is your lead vocal mic?

Pat's a difficult singer because he has so much energy and does a lot of off-axis singing. The Audix VX-10 has a smooth off-axis sound and minimal proximity effect.

What do you do when you're off the road?

I like riding and restoring motorcycles. I have a Honda VFR800 that travels with me in the gear truck. If the weather's nice, I can ride to the next stop!



John Muldowney, 1953-2003

John Muldowney, a well-known and much-respected live soundman and audio engineer, died on November 2, 2003, from a heart attack shortly before soundcheck at a concert for World Peace. Also known by colleagues as Johnny Moe or Moe, Muldowney worked live sound for nearly 30 years on concerts ranging from Bruce Springsteen to David Lee Roth, and from Shania Twain to New Kids on the Block. Muldowney co-founded the sound production company Scorpio Sound Systems with Gary King.

"John was one of the ones who made it happen," George Travis, Bruce Springsteen's tour director, told *The Boston Globe*. "He could walk into a big hall or stadium and figure out how to make the speakers sound correct and then sit down at a soundboard and mix the sound."

King described Muldowney as a man at peace with himself. "He knew how to deal with all kinds of people—often under stress—including entertainers who think they are special."



Audio One Pumps Up Aerosmith Rig

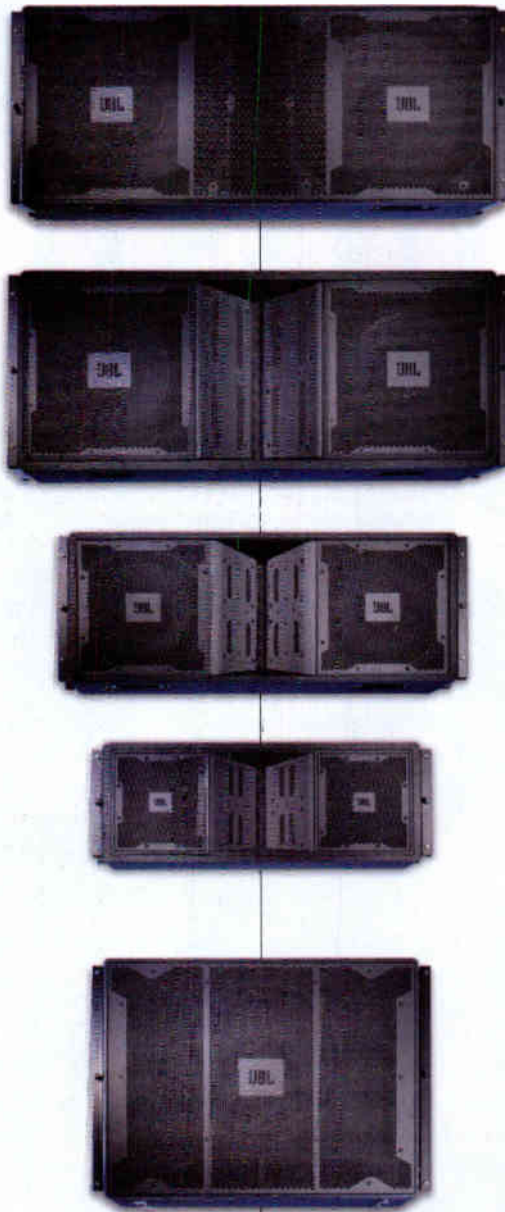
When Aerosmith hit the road for their current co-headlining tour with KISS, they turned to Audio One for a live sound and six studio upgrades, which comprised Pro Tools updates to HD (including a variety of HD Process cards, 192 interfaces, and plug-ins from Waves and Digidesign) for live and studio recording systems, as well as individual studio upgrades for bandmembers Joe Perry, Steven Tyler, Tom Hamilton and Joey Kramer.

Audio One chief design engineer Michael Adams and company founder/president David Frangioni outlined each of the systems into CAD files, which were used as reference documents for the installers. After each system was designed and coordinated by Audio One with the band's technical engineers, Paul Caruso and Paul Santo, the design went to Adams for the actual layout and engineering. From there, each system was installed and wired on-site.



Audio One president David Frangioni (left) with Aerosmith FOH engineer Jim Ebdon

"Audio One's relationship with the band goes back to the *Pump* album and tour," said Frangioni. "Ever since then, we've been designing and implementing all of their technology needs including studios, home theaters, back-line tour rigs and other related electronic technologies. We handle Aerosmith's technical needs so they can focus on making music and entertaining."



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Godsmack



Apparently, ticket prices are a big deal for metal band Godsmack. According to lead singer Sully Erna, they declined to be a part of last summer's Metallica Summer Sanitarium tour because ticket prices were too high for many of their younger fans. Likewise, the band's 2003 release, *Faceless*, was priced much lower than the average CD. For them, it's all about giving back to the fans.

Mix caught up with Godsmack at the Sacramento Memorial Auditori-

um when they came through Northern California last fall. The crowd greeted the band with tremendous enthusiasm, and Godsmack responded by turning in a boisterous set of hard-hitting, in-your-face music. Erna's vocals were truly remarkable and easily heard through the rock din in a great, clear mix. The band has been on the road playing theaters, arenas, sheds and festivals—ironically, including the European leg of Summer Sanitarium.

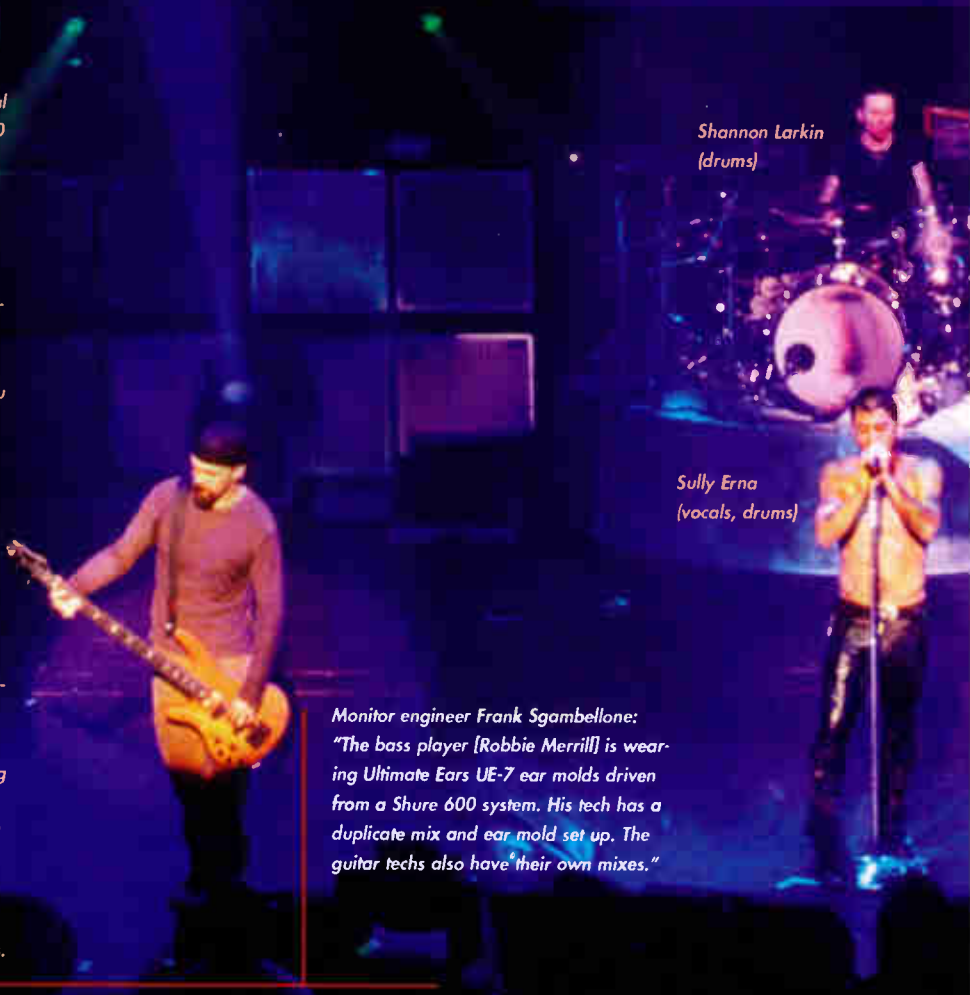


Front-of-house engineer Tony Pieras mixes on a digital Showco Show Console, which offers 80 inputs and 40 outputs, with all dynamic processing built in. "Every channel has its own gate, compressor and Harrison EQ," relates Pieras. "Unlike the other digital consoles, with the Show Console, the audio path stays analog, so the sound that you get from this console is very rich and warm; in my opinion, the best-sounding digital console anywhere.

"I love mixing Godsmack," he continues. "These guys are solid. There are no loops or tracks; what you hear is what is being played."

The P.A. is a Showco Prism System, with five columns (four cabs per column), four under-hung frontfills and eight Prism subs per side. "When we are capable of flying the P.A., we put all of it up in the air except for two of the frontfills that are placed on the deck of the stage," Pieras says. "For our drive, we use the Lake Technology Clair Bros. i/O, a wireless system controller that handles system EQ, crossover, delay and compression. The individual gates and compressors for the console channels are built into the Show Console."

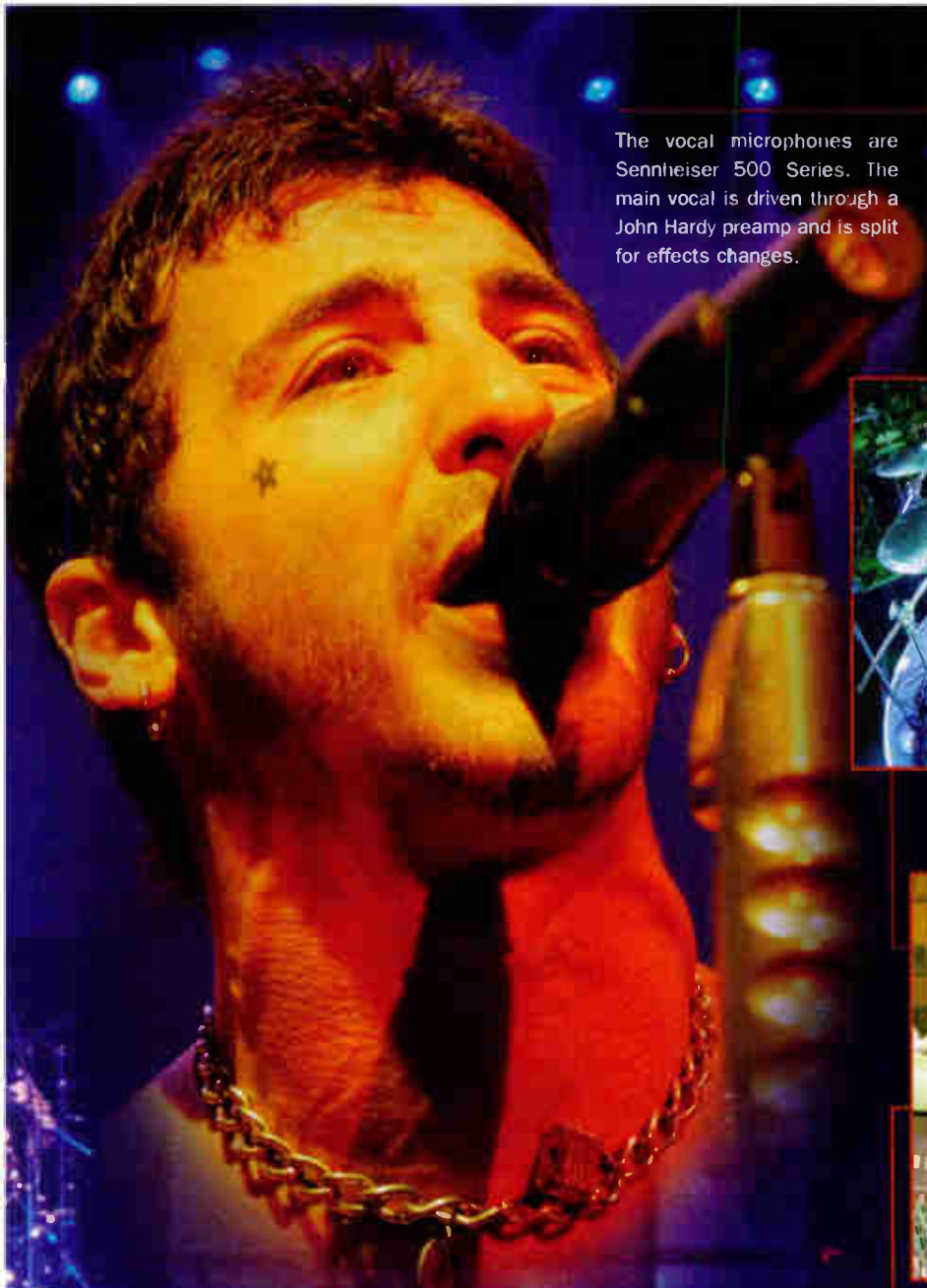
Pieras uses minimum effects on Godsmack, relying only on a TC Electronic M-1 for drum reverb and as a chorus on the vocals. He also uses a TC Electronic D-2 for vocal delays and a Helcion Voice Prism for other vocal effects. All of the drums are sent to sub groups on the console, and a TC Electronic Triple-C stereo multiband compressor is inserted on these sub groups.




Shannon Larkin (drums)

Sully Erna (vocals, drums)


Monitor engineer Frank Sgambellone: "The bass player [Robbie Merrill] is wearing Ultimate Ears UE-7 ear molds driven from a Shure 600 system. His tech has a duplicate mix and ear mold set up. The guitar techs also have their own mixes."



The vocal microphones are Sennheiser 500 Series. The main vocal is driven through a John Hardy preamp and is split for effects changes.



FOH engineer Tony Pieras: "I really love the double-kit drum solo. Mixing it is a real challenge. I try and give each instrument a place in the mix, and it's fun doing this with 33 channels of drums."



Tony Rombola
(guitars, vocals)

Monitor engineer Frank Sgambellone uses a Yamaha 4000 board because "it's got plenty of inputs and outputs, and the metering is easy to see. It makes it easy to hit target gain levels quickly. With all these drums, inputs get eaten pretty quickly. I'm using Showco SRM wedges and I love them. The drum mix has a pair of 181s, as well as a shaker for the stool, in addition to a pair of wedges. For sidefills, I have a pair of Prism full-range cabinets over a pair of 181s per side. For dynamic processing, it's just 15 Drawmer gates for the drums. [Occasional drummer] Sully Erna's drum kit mics are an E604 on kick, E903 on snare top, E604 on bottom, E604 on toms, and E664 on overheads and hi-hat."

Additional Crew

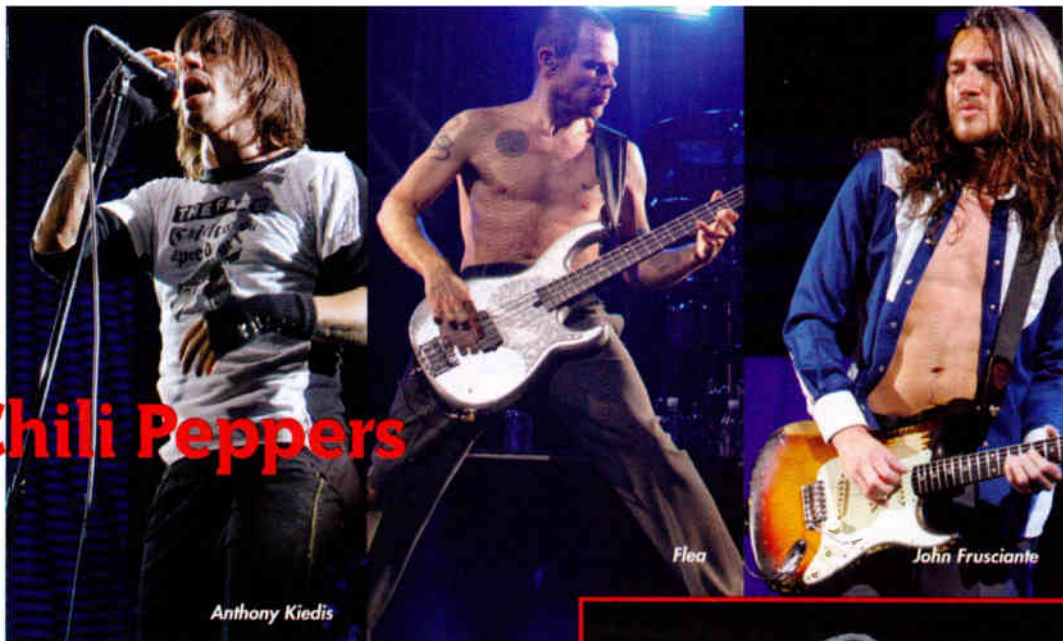
Jason "Rooster" Ruggles, patch/monitor tech
Jim Ragus, system tech



Red Hot Chili Peppers

A Family Affair

By Robert Hanson



In any successful band's career, there is the subtle yet unmistakable point where the bombast of youth gives itself over to the confident bravado that comes with experience. Unlike many of their peers, the Red Hot Chili Peppers failed to succumb to the evils that derail most bands and evolved into arguably one of the biggest acts in the world. Supporting their latest release, *By the Way*, and a new greatest hits collection, the group—bassist Flea, guitarist John Frusciante, singer Anthony Kiedis and drummer Chad Smith—embarked on an ambitious 18-month tour with dates in North America, Europe, Australia and Asia. *Mix* caught up with the tour when it pulled into the Oakland Arena last fall.

A LONG HISTORY

According to longtime front-of-house engineer Dave Rat, the band's positive music image and professional demeanor extend into

every facet of their endeavors. "I've been working for the Peppers for 14 years now," Rat says. "I've stopped taking all other bands I've worked for in the past. They're a friendly and cool group of guys, and that flows downhill to the rest of the crew."

Rat's company, Rat Sound, is also one of the principle vendors for the tour. For this leg of the tour, Rat is mixing from a Midas Heritage H3000 console, running 23 stage inputs, two stereo effects channels and two audience mics. The stage inputs comprise a basic multichannel drum setup: three channels each for bass and guitar, two acoustic guitar mics and three vocal mics. The stage mics include a Shure SM91 on kick, SM98 on snare top, SM57 on snare bottom, SM98s on toms, KSM32 on ride cymbal and overheads, SM98 on bass, SM57 and Beyer M88 on guitar, and Audix OM7s on vocals. The remaining stage inputs, including a drum machine, vocoder,

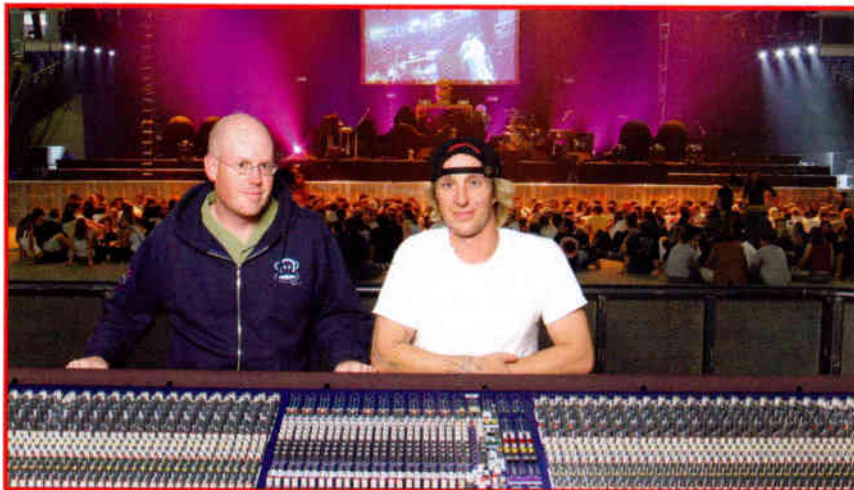


PHOTOS: STEVE JENNINGS

and bass and acoustic guitar channels, are taken DI.

Rat's complement of outboard gear includes a Drawmer 1960, Aphex 622 Expander, Klark Teknik DN514 Quad Gate, BSS DPR-404, two Aphex Exciters, Lexicon PCM60, Eventide H3500, Yamaha SPX990, Klark Teknik DN780 and Tascam DA-38/78/98. "I'm really into minimal everything, very simple setups," he explains. "I don't buy into the whole idea that expensive tube compressors make the band sound better. For effects, I do all of my drum and vocal reverbs on the PCM60 and everything else on the H3500. There is one song where I use the SDE 3000 for delay."

The main P.A. comprises two sides of V-DOSC enclosures with an additional center cluster. "We've been pretty successful in getting the V-DOSC worldwide," Rat continues. "One of the reasons I picked V-DOSC was to try and develop system processing and get everything dialed in and have nothing change no matter where we were in the world. When we came out a year-and-a-half ago, one of the first things I did was get rid of all the cabinets onstage. Lip fills and cabinets stacked on the stage are a total waste of time. They work fine when the room is empty, but as



Pictured from left: system tech Nick "The Fly" Brisbois and FOH engineer Dave Rat

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World Radio History

soon as people come in, they don't do anything except blast the people in front. We developed a way of covering the people in the front. It seems obvious in hindsight to put a center cluster up. We started with six dV-DOSC boxes and we've migrated down to four dV-DOSC over time. It really made a huge difference up there."

During the years, Rat has developed his own approach to sound reinforcement, including moving the main subs off of the stage and stacking them on either side of

the stage behind the full-range enclosures. According to Rat, this approach not only improves the audience's line of sight, but also places the subs in a better position acoustically.

"We worked on trying to resolve some of the low-end issues that most people have in venues like this," says Rat. "Most people will come in and get the low end throughout the floor area and totally disregard subs for the people [who are sitting] hard-left and hard-right. So we really worked on sonic

consistency throughout the room and ended up with a fairly nonstandard sub placement. We have a big block of subs hard-left and hard-right at 90 degrees shooting up.

"I run the subs on an aux send," he continues. "We also do an emulation of the tweeters on another aux send. We lowpass the system, taking everything above 10k out and rolling it off. And then we re-introduce it. We dial up a little kick, hi-hat, overheads, ride, lead vocal and background vocal, which goes back into the BSS Soundweb and that goes from like 12k on up. It gives me tweeters on an aux send. For the most part, I have control of everything above 12k and what goes to it, which takes some of the edge off the system.

"We've really developed a way of approaching a variety of venues and having an extremely high level of consistency," Rat concludes. "The band hasn't sound-checked since April. I guess that's an excellent compliment for the sound and stage crew that they're able to give the band the confidence they need. It doesn't matter if we're in Costa Rica or Singapore, they walk onstage and everything is set."

BEHIND THE BACKLINE

Handling the stage side of the tour is monitor engineer George Squiers, a veteran of tours with The Offspring, Candlebox and Rancid. Like Rat, Squiers is also mixing from a Midas Heritage H3000. While he is taking the majority of the same stage inputs as front of house, he processes and routes many of those sources differently. "With the three guitar channels," he explains, "I take my two main channels, 'Y' them to the in-ears and compress them so that they're flat and balanced. I leave the other two channels wide open so John [Frusciante] can be as dynamic as he wants. He hears actually what he's changing, and the other guys hear a more balanced, compressed level.

"We have three vocalists," Squiers continues. "I take Anthony, though, and wire him off into different sections because I've got a drum fill to feed, and I've got Anthony and John and so on. What I do is 'Y' his channel three times so Anthony has his own EQ'ed vocal channel, Chad has his own Anthony vocal channel that I EQ to the speaker cabinet, and John gets his own Anthony vocal channel. It gives me more options."

In addition to the standard Audix vocal mics that the band uses, Squiers also keeps a Sony wireless handheld system available for Kiedis. "I have a Sony wireless system



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Pictured from left: monitor engineer George Squiers and monitor tech Peter Baigent

with an OM7 capsule on it whenever Anthony feels like running around without a wire. But most of the time, he likes his wire.”

Squiers’ rack includes a scant amount of

outboard processing. Some of his staple items include BSS compressors and gates, Yamaha SPX990 reverbs, Aphex Dominators and an Aphex compressor on Kiedis’

vocal. All of the bandmembers, with the exception of Smith, use Shure PSM 700 wireless IEM systems with custom Ultimate Ear UE-7 three-way drivers. Smith relies on a pair of three-way Rat Trap wedges, a 2x15 sub and two Aura Bass Shakers on the drum throne.

“I’ve got a couple of Dave’s Rat Wedges out in front of Anthony,” Squiers explains. “I just turn the horns off. They’re there in case the ears go down, which is pretty unlikely. For the most part, it’s so he can feel his vocal and the drums. He was always so used to feeling the punch of his vocal, not just the in ears. I just let the 15s and the 10s run to warm it up so he can feel the punch.”

Squiers echoes Rat’s feelings about working with the band. “They’re a great band to work with,” he says. “I wish the tour wasn’t ending. It’s been a long run, but they’re very casual and cool guys. And they’re a great band to watch and listen to. I don’t ever find myself getting bored behind the desk.”

Robert Hanson is the technical editor of Remix.

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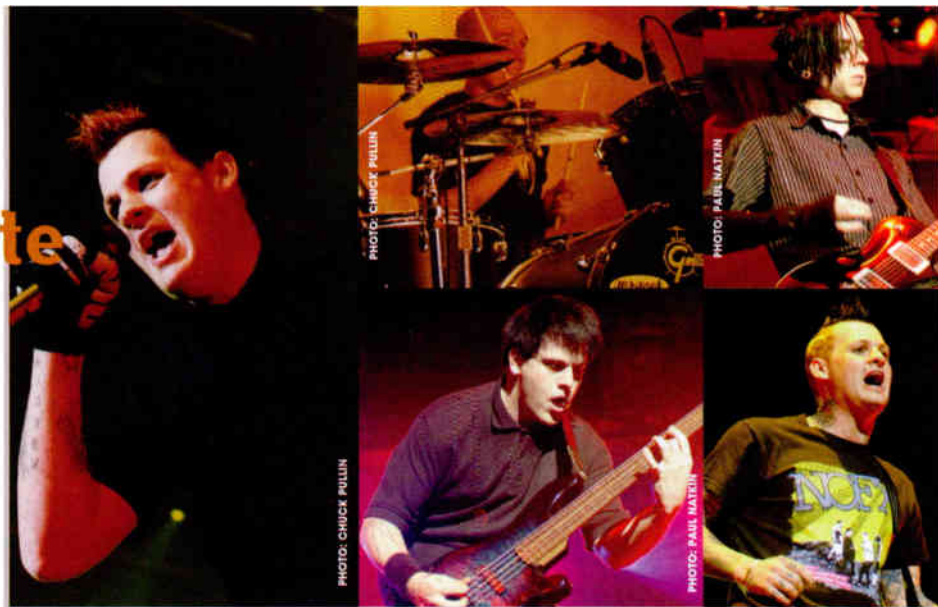
Good Charlotte

New Attitude Punk

By Gregory A. DeTogne

Part of a new breed of tuneful pop punksters on today's music scene, spikey-haired, tattooed and pierced Good Charlotte manages to address the prime topic of the genre—alienation felt by outsiders—but with a somewhat sunny and positive approach that sends 10- to 14-year-old girls into paroxysms of hysteria. Rather than being intense and enraged, their catalog of songs explores relationships, lifts spirits and displays empathy—this is clearly punk of a new stripe. Good Charlotte's *The Young and the Hopeless* tour has been making its way around the country for a few months now, courtesy of Cleveland-based Eighth Day Sound. *Mix* caught up with the band at Chicago's Aragon Ballroom.

Good Charlotte crew chief and monitor engineer Vince Buller rides herd over a straight-up rock 'n' roll rig with the versatility to rapidly switch gears from a 2,000-seat theater one night to a hockey rink with ample space for 10,000 shrieking females the next. Buller, a native of Birmingham, England, is probably best known for a 10-year stint he pulled with the Black Crowes; more recently, he went out with Björk and Tracy Chapman. He signed on to be ringleader for a hard-working Good Charlotte crew that includes house engineer Gary Ferenchak, front-of-house tech Doug Fowler and system tech Marty Tarle.



Pictured clockwise: vocalist Joel, drummer Aaron, guitarist Billy, guitarist Benji and bassist Paul Thomas

Each night, Good Charlotte's show begins in total darkness. As the lights come up and the crowd begins to make out the silhouettes of the band as they take the stage, pandemonium ensues. "You could goose it up for them," Buller says of his monitor levels at that moment, "but there's really little you can do to overcome the noise of the crowd. They're used to it by now anyway, and sort of go into autopilot mode until the audience calms down. Once that happens, it's clear sailing, mate."

Just as in the house, Buller's world on-stage is based around d&b loudspeakers, amplification and processing. Presiding over a Yamaha PM4000 used to orchestrate the activities of 22 inputs, he maintains four mixes using two wedges each across the front of the stage, a pair of sidefills flown above the fray to help reduce chances for feedback, a wedge in front of the drum riser pointing at the rear of the frontline (appropriately dubbed the "butt mix") and "Texas headphones" (two enclosures on each of the immediate sides of the drum kit) for the drummer.

"Once the band hits the stage, they are moving all over the place at warp speed for the show's full 90 minutes," Buller relates. "That's why I have full mixes everywhere. With the amount of activity going on, trying to create individual zones for different players would be a useless proposition."

Monitor world's outboard gear is, according to Buller, simply the "regular stuff": BSS graphics, compressors and Drawmer gates. "There's nothing high-tech," he humbly admits. "After all, this is all about rock 'n' roll: getting it together and then making it as loud as you can get it, while still keeping things clear and intelligible."

In the house, the d&b P.A. comprises two-box full-range enclosures and subs. "We fly

most of the time, but occasionally, we stack because of the widely varying venues we turn up in," FOH tech Fowler explains. "The nice thing about this rig is that we can basically build it however we want to."

A three-way splitter onstage splits once for Buller's PM4K, again for FOH engineer Ferenchak's Midas XL4 and a third time to accommodate a Digidesign/Focusrite control surface employed to govern events within a Pro Tools setup that is used to capture each evening's performance. With no intended purpose at the moment outside of the purely archival, the recorded Pro Tools tracks are an amalgam of 16 channels taken from the snake through the Focusrite control surface and eight others taken as direct outs from the XL4.

Outside of his Pro Tools environment, Ferenchak confides that there "aren't a lot of bells and whistles out front." With most of his compression done in subgroups—he basically subs all of the instruments and compresses them lightly on the guitars and fairly heavily on drums and bass—he does two subgroups in mono of kick and snare, another pair of the rest of the drum kit in stereo, squashes it, cranks the outputs and then brings it up in the mix.

"After all that, it can't help being anything but huge," he says matter-of-factly. "The toms will kind of explode, but it's not out of sync with the rest of what's going on. Others who mix this kind of stuff are more into the older front-loaded systems, because they can make them louder or at least have them be perceived as louder. But for me, this isn't about being loud, it's about balance and clarity."

Gregory A. DeTogne is a freelance writer based in the Chicago area.



Pictured from left: FOH engineer Gary Ferenchak, monitor engineer Vince Buller, Eighth Day Sound system tech Marty Tarle and FOH tech Doug Fowler

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Lucinda Williams

Stripped-Down Performance, Back Porch Feel

By Christopher Walsh



“That should be the porch up there,” says Nathan Harlow, front-of-house engineer for Lucinda Williams, gesturing toward the stage of New York’s Beacon Theatre, barren but for a drum kit, amps and mic stands.

Williams, touring behind her Lost Highway Records release, *World Without Tears*, makes any stage her own, bringing her homey, Southern sensibility to any setting, be it an Austin roadhouse or an Upper West Side theater.

Armed with a 1954 Fender Esquire or Gibson J-45 acoustic guitar, Williams is spell-binding—3,000 New Yorkers hang on every note: country rockers, and plaintive, solo acoustic performances alike. Four-piece band and audience, nothing separates the two. Williams’ heartfelt, wistful voice fills the theater, complemented by Doug Pettibone’s outstanding guitar work. Tremolo, pedal steel and the twang of countrified rock ‘n’ roll twang wash over the crowd.

Harlow is new to Williams’ crew but he is a veteran of innumerable gigs at San Francisco’s Fillmore and Warfield Theaters, along with multiple world tours, including the Further Festival, Primus, Prince and Rob Zombie. With Williams, however, variety can be found from one night to the next.

“We play tiny cowboy clubs with an Allen & Heath [console] or less,” he says. “We did some in Austin; little shows. They came off great, because she loves that environment. And then we do large venues

with huge systems. You’ve got to go between the two of them.”

Perhaps to reflect the simplicity of her superb songwriting and straightforward delivery, the tour carries very little hardware; in fact, Harlow carries just one rack. Local sound reinforcement companies provide loudspeaker arrays, consoles, wedges and additional outboard gear, with RSA Audio Services of Edgewood, N.Y., handling the two Beacon dates.

“I use the Symetrix [551E 5-band] parametrics, two channels for the mains,” Harlow explains. “I just plug that in-line before their drive system. Typically, I’m only using two or three filters to tighten up the low end.

“I have an ATI Pro 6,” Harlow continues, pointing to the multimode processor. “It has a preamp, highpass/lowpass filters, parametric EQ, compressor and a gate that I never use. I inserted a BSS 901 for her voice; the frequency-dependent EQ really helps, because she goes from sultry to loud, and her lyrics are most important.”

For the Beacon Theatre, RSA provided Yamaha PM4000 consoles for both the FOH and monitor positions. Also at FOH are dbx 160 and 160XT compressor/limiters and a 166XL compressor/limiter/gate. Other effects include a pair of Klark-Teknik DN300 graphic EQs, Yamaha SPX900 and SPX990 multi-effects processors, a Lexicon PCM 80, a Roland SDE-3000A digital delay, a Behringer Ultra Curve and an Eventide H3000SE Ultra Harmonizer.

“I moderately compress the kick drum channels, bass DI channels and her acoustic channels,” says Harlow. “They go from a real soft, brushstroke-y snare to good, country-rock beats. I try to get that in a pocket, but not so squished that everything’s the same. Then I do a drum subgroup, and then just compress the two background vocals, as I already have my vocal rack for Lucinda. The ‘visiting’ compressors are dbx tonight. We’ll

see what we have tomorrow night.”

Williams endorses Audix microphones. She and bandmates Pettibone, Taras Prodanuk (bass) and Jimmy Christie (drums) rely on a complement of OM-6, D-3 and D-4 mics. “The one thing I’ve been changing out is the vocal mic,” says Harlow. “[Audix] sent out their new [VX-10] condenser vocal mic, and it’s good. I used it just last night, and I’ll use it again tonight.

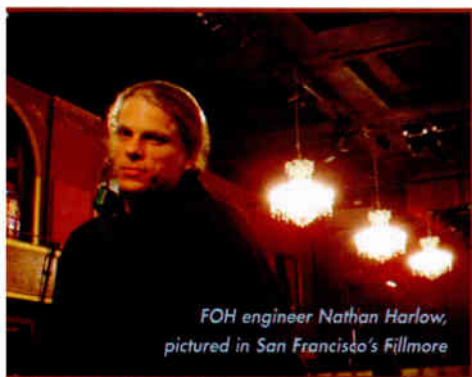
“I’ve also been playing with different kick drum mics,” Harlow adds. “Right now, we have the Audio-Technica dual-element—the [AE2500] condenser and dynamic—which is really nice. Jimmy wanted to check it out, and I know he’s going to love it for recording at home. He does a lot of that.”

To power the “back porch,” RSA supplied a JBL VerTec line array system. “We just bought the VerTecs a little less than a year ago,” says RSA audio engineer Mike Murphy. “We’re in the process of changing over power, but we’re still using the Carver racks that we had from our conventional full-rig system. So everything that’s here is Carver PM 1.5s.”

The outboard supplement at the monitor position is similar to FOH, says Harlow, with additional Klark-Teknik EQs. “We use no compression, reverb or gates in the monitors,” he says. “That’s all pretty natural. With this band, coming from the source, my job is to keep it clean and natural. It’s really about sound reinforcement, as opposed to sound enforcement. I’m not trying to change anything; I’m just trying to make it a little bigger.

“She’s an important artist, somebody who needs to be heard,” he adds. “It’s a pleasure to try to get her lyrics across. Everybody feels like she’s singing to them personally.” ■

Christopher Walsh is a veteran pro audio journalist.



FOH engineer Nathan Harlow, pictured in San Francisco’s Fillmore

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Simon & Garfunkel

Putting Yamaha's PM5000 to the Test

By George Petersen

Despite the hoopla surrounding the biggest reunion tour of the year, I figured this gig couldn't be too tough—just a couple of folksingers, right? Actually, Paul Simon had a few surprises for his "Old Friends" performances with Art Garfunkel, and from any standpoint, this was no ordinary tour.

With a hot seven-piece electric band (drums/bass/guitars/keys/percussion), cello, mandolin, theremin and slide didgeridoo, as well as Simon switching between a Strat and four wireless acoustic guitars, there were a whole lotta input channels going on: 60 in all, plus effects returns. And if that weren't enough to keep track of, the two-and-a-half-hour, no-intermission show also featured Simon bringing in the Everly Brothers to play some of their hits.

Handling front-of-house duties was veteran David Morgan, who came onboard after wrapping up this year's Steely Dan tour. After 17 years of working with Simon, Morgan likes the challenge of creating what he terms "living room" mixes in what were once considered less-than-ideal venues. Although, he adds that "many modern arenas are great-sounding rooms. Mixing in arenas is far more than acceptable—it's not an artistic compromise anymore."

However, Morgan is quick to admit that improved technologies have also helped, especially this show's Crest QSC-powered, 44-box Clair i4 line array system (and 40 sin-



gle-18 i4b subs), which he calls "a great P.A. and a wonderful tool." Morgan is equally enthusiastic about the Clair i/O loudspeaker control system, which he can manipulate from anywhere in the house via a Gateway wireless tablet. "This is what we engineers have dreamed about for years," Morgan notes. "The line array columns are divided into multiple control zones, allowing me to dial in uniform response throughout the arena. While tuning the system, I walk everywhere in the building to make sure every patron will get optimal audio delivery."

Morgan had his choice of toys for house processing, and after the Shure Beta 87C on Simon and Garfunkel's voices, the vocal chain included Tube-Tech CL2A compressors; two Lexicon 224Is and a 480L for reverb; a TC Electronic 2290 for delay and slap; and a hint of Eventide H3500 UltraHarpimizer to spread the vocal image out in stereo. Other rack denizens included a TC Electronic M5000 on acoustic guitars, TC A4000s for drums and piano, dbx 160L limiters ("There's nothing better on electric guitars," says Morgan) and Summit DCL-200 compressors used to smooth warming RF signals from the acoustic guitars. Morgan adds that wireless systems for acoustic guitars (due to their wide dynamic range) are more critical than with electrics. One solution was using Samson wireless on acoustics: "They're the only one that can really take a slam strum," he explains, "especially with Fishman [pick-ups] and all their high end."

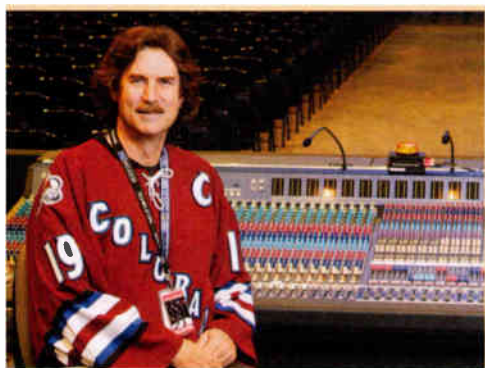
The one thing that truly had Morgan excited about this tour was debuting the first of Yamaha's new PM5000 high-performance analog consoles on the road. Along with all-new redesigned mic preamps and EQs, the board features 52 inputs, 35 mix buses, 12 VCAs, a 16x37 matrix and 1,000-scene recall, yet Morgan needed a few more inputs, so he used an 02R digital

mixer as a sidecar to handle 13 inputs from percussionist Jamey Haddad. Morgan could simply load in a data disk of settings he's used working with Haddad since 1999 as starting points and tweak from there.

Morgan found the PM5000 to be a tweeker's delight. During a soundcheck, I noticed that he had every channel EQ on the board active. "To achieve a natural sound with close-miking, you need to use a lotta knobs, especially when dealing with all that proximity effect," says Morgan. "Judicious use of EQ helps me create a space for each sound source so it stands out in the mix without unnecessary volume increases." Morgan was especially impressed with the console's sound, which reminded him of "a '70s Harrison studio board or an old Alive: sweet-sounding mic preamps and very smooth EQ." Morgan notes that he used to travel with outboard preamps, especially to handle the low end of kick drum and direct or miked bass. "There's no need for that with the PM5000—the bass is incredibly tight, and there's absolutely none of that 8k to 10kHz high-end graininess.

"It's really good-sounding analog, with a reasonable amount of digital control and ergonomics that have a familiar PM4000 feel." But besides having four extra VCA groups, Morgan also liked the little touches, from the 12 stereo sends to the new muting system, which blinks to show the next mute group.

There was one drawback to the PM5000, Morgan notes: "With all its motorized faders, beefed-up frame and logic circuits, it's quite a bit heavier than a PM4000. It's a six-guy lift!" But aside from that, Morgan was enthusiastic about the board. "Yamaha has done a great job of evaluating the needs of front-of-house engineers, and with the PM5000's four stereo and eight mono matrix outs, it could be a great monitor board, as well." ■



FOH engineer David Morgan at the PM5000

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World Radio History

Primus

Effects-Driven Band Stays on the Fringe

By Candace Horgan

For the neophyte at a Primus show, the chant struck up by the band's diehard fans seems disconcerting: "Primus sucks! Primus sucks!" "It just keeps happening and won't go away," front-of-house engineer Derek Featherstone says with a laugh, from The Fillmore in Denver "The chant dates back to the band's early days."

After several years away doing other projects, Primus—bassist Les Claypool, drummer Tim Alexander and guitarist Larry LaLonde—hit the road again this past fall. They have always recorded their live shows for archiving, and this tour is no different. Each show is offered for download to fans at www.primuslive.com at \$9.95 for an MP3 and \$12.95 for a FLAC CD-quality file.

"I am taking the 44 inputs from the band plus two Sennheiser shotgun mics onstage for audience and mixing that to 2-track live," Featherstone explains. "The combined 2-track mix goes through a little left/right compression and is split to two CD-Rs and a DAT. I stagger the CD-Rs so they run continuously; usually, I start the second one after about 60 minutes. The DAT is a backup. The next morning, we FedEx either the CD-R or DAT to Back Office Music in California where they are prepared for upload. The set list is scanned each night and e-mailed to Zoltron who prepares the CD artwork and graphics you can also download."



Engineer Tom Lyon handles monitoring duties.



Les Claypool



Tim Alexander



Larry LaLonde

Featherstone, who works through Pro Media/UltraSound, has been with Primus for almost 14 years—"a crazy thought," he says. Featherstone is using a Gamble EX56 console, which he's been using with the band on every tour since 1991. "It has incredibly good mic preamps, a good EQ section and is very flexible because of the patchbay. It's a great-sounding console."

Featherstone keeps a rack of effects handy at FOH. "I have a couple of Eventide H3500s, a TC Electronic M5000 dual-engine unit and a TC 2290. For distorted choruses, there is a Roland SDE2500. I have a handful of Aphex and borrowed Crane Song compressors, and one UREI LA-3 for the kick drum. I also have several Aphex 622 noise gates. Primus is a pretty effects-heavy band. I've had most of my effects units for 10 years and have [more than 50] presets stored for each song—the idea being that there is a consistency between effects used on the records and what we reproduce live. On top of that, Tim uses some effects of his own for the drum solo, and Les uses a fair amount of effects processing for loops, distortion and samples."

Featherstone's drum miking scheme is pretty extensive. For kick, he has an Audio-Technica AT2500, a Shure SM57 on snare and AKG 460s on the two hi-hats. For the three rack toms and the two floor toms, he employs Sennheiser 409s. Featherstone mikes the four Octobans with ATM35s, while the gong bass drum gets an Electro-Voice RE-20. On overheads, there are two Audio-Technica AT4050s, and the ride cymbal gets an AKG 460. On guitars, Featherstone has three channels of Shure SM57 on the cabinets. For bass, he uses Countryman DIs, though he doesn't mike Claypool's cabinets.

All vocal mics are Shure SM57s with a Shure 520DX on Claypool's Green Bullet harmonica mic for an effects mic. Claypool also has a wireless helmet mic on one song. "I think it is a Radio Shack cellular headset microphone with a Shure wireless unit."

This tour, Primus is using a JBL VerTec line array system. "We have a total of 12



Front-of-house engineer Derek Featherstone at the Gamble EX56

VT4880 subs and 20 VT4889 cabinets. We also use some Meyer MSL2s for front- and near-fills. We power the system with Lab-gruppen amplifiers with XTA processors. For system tuning, we run two BSS Soundwebs 9088ii with custom software. This is controlled with an IBM Think Pad and a second Think Pad running SIA Smart Live Version 5.2. Monitor engineer Tom Lyon, system tech Tony Norris and production manager Tim 'Quake' Mark all share duties in tuning the system."

Lyon is using a Gamble EX68 console. "It's actually an FOH board," he says, "but the old-style patchbay lets you put anything where you want it, so I run the subgroups as aux sends. I'm using a total of two mixes of [Meyer] wedges, two of sidefills and a stereo in-ear feed for Tim, who is using Sennaphonics ear monitors. I love the sonic quality of the Gamble and that I can route anything anywhere."

Lyon has a Yamaha SPX990 for ambient reverbs for the in-ears, but keeps it light. "Everything else is pretty dry. There is a little bit of outboard EQ and very few compressors in the monitor system. I have to keep it nice and loud to overcome the amps; fortunately, the guys are pretty self-policing about stage volume. We've been out for 10 days so far and it's been pretty smooth." ■

Candace Horgan is a freelance writer based in the Denver area.

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Branford Marsalis

Tracking Jazz on the Road

By Breean Lingle

Branford Marsalis, renowned saxophonist and member of one of jazz's most beloved musical families, never seems to rest. In the last year-and-a-half alone, Marsalis founded and launched his own independent label (Marsalis Music), issued two solo CDs and a family effort entitled *The Marsalis Family: A Jazz Celebration* and signed guitarist Doug Wamble for his promising debut, *Country Libations*. Touring with world-class musicians such as Marsalis, Jeff "Tain" Watts (drums), Joey Calderazzo (piano) and Eric Revis (bass) would demand an equal caliber of perfectionism behind the board. Grammy Award-winning Rob "Wacko" Hunter, who, incidentally, shares his Best Jazz Instrumental Album (for *Contemporary Jazz*) with this quartet, has been touring with Marsalis since 1996. He amplifies club shows with "as little sound reinforcement as possible. The balance onstage is really good," he says, "so all I'm doing is pushing it out to reach the people in the back."

The quartet generally tours symphony halls and intimate clubs, such as tonight's venue, Yoshi's jazz club in Oakland, Calif. Hunter relies on the group's natural dynamics and uses effects sparingly. Marsalis'

vision is to create a natural sound, so Hunter only adds "a taste of vocal plate on the piano" to open up and color specific verses. Still, he reports that he's busy behind the board "continuously tweaking. We don't use any amplification on the bass or any DIs—there are no DIs allowed. Other rules: No sax clips on mics, no Plexiglas, no compression and no gates. Branford doesn't use monitors and he's so in tune with the house that he plays the mic really well." In fact, the group is weaning themselves off of monitors, so there are only two monitor mixes, one for Revis and the other for Watts.

Hunter and company travel without P.A. gear, so the Meyer system at Yoshi's (featuring CQ2s and CQ1s, with PSW-2 subs) is a welcome luxury. "We advance the gigs before; sometimes they have what I need and sometimes they don't. It's low budget, baby; it's jazz." Yoshi's house engineer Dan Pettit assisted with this stage setup. Hunter's mics of choice are Sennheiser 421s and Beyer M88 on the acoustic bass, AKG 414s for the piano and a Shure Beta SM58 for a vocal mic, which is used primarily as an announce mic. Audience members were pleasantly surprised by the appearance of guest singer Frank McComb (vocalist for one of Marsalis' side projects, Buckshot LeFonque), who sang one of the ballads slated for the new record. Hunter used the Beta SM58 with just a bit of compression and reverb for McComb.

Hunter may not always have control over what kind of gear list he works with on the road, but when it comes to miking each of the instruments and positioning them on the stage, he follows a definite program. According to Hunter, Marsalis prefers that his saxophone be miked in the soprano position; during shows in larger venues, a small Shure SM98 or Beyer M88 is added to mike the bell. In a small club situation, Hunter seems satisfied using a mid-grade mic and miking Marsalis only when necessary. Because the saxophonist tends to wander away

from the mic, Hunter notes that it ends up becoming Watts' mic drum by default.

Hunter mikes the drums in a fairly standard configuration, though he tends not to use tom mics because Watts' cymbals lie so low. The piano, on the other hand, takes a little more fine-tuning. Hunter likes to mike the piano "up close—but not too close—near the hammers of the keyboards, because these guys are so raucous; that's why I have the lid down a half-stick. If I have mics too far at the low end of the soundboard, they just pick up a lot of drum and bass boom. I have to get some detail, so I have three mics on the piano. I have one coming around the back right at the low-end hammers for the low end, and I have a low, mid and high."

Also part of Hunter's job is to record live shows as a way for the band to track and archive new material. "We just started this process [of recording] when we got the rig at the start of 2003," Hunter says. "We record 24 tracks that comprise instrumentation, vocal and lots of audience room mics. Mics go to my own splitter box, then to Millennia Media mic pre's and from there straight into three DA98HRs [in HR mode at 48k]. Signal out from the DA98HRs goes to a small line mixer so I can check from valid signals. I place [the rig] behind the piano onstage, right next to my splitter box, set the levels at soundcheck and we're good to go. At the end of the night, I check my tapes and unplug the rig." ■

Breean Lingle is Mix's editorial assistant.



PHOTOS: STEVE BERNINGS



Engineer Rob "Wacko" Hunter

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Assuming that you've got the basics (decent speakers and solid amplification) in place, the best makeover for any live sound system can be a new digital speaker processor, a session with a favorite speaker measurement system and some choice music tracks for tuning. And access to memory presets lets users store parameters to handle a variety of events in a fixed install or recall setups for different venues when touring.

Many of the digital signal processors on the market can be used as full-function dedicated speaker processors. Most feature input delay for zone alignment and output delay for component and cluster offsets; parametric equalization of components on outputs; system and room EQ of inputs; onboard limiters for driver/system protection; and increasingly steeper crossover slopes and multiple user/factory presets.

These processors are primarily intended as full-featured crossovers, but live engineers often employ them for speaker zone control, taking the console's stereo mix and distributing it to main clusters, as well as subwoofers, frontfills and delays. For those who want to drive subs on an aux send, products with more than two inputs offer an advantage. While their main applications are live sound systems, these processors are increasingly found in studio control rooms where large-format reference monitors benefit from their use.

An entire class of products *not* included

in this article are processors intended for installations with Phoenix or Euro-block analog connections on the back or those that are normally programmed from a computer. They generally have a bit less dynamic range, often lack front panel controls and typically include contact-closure inputs for use in ballrooms as room-combining processors. Most provide mic level inputs, offering complete microphone-to-amplifier solutions for contractors.

As more engineers use digital consoles in live sound applications, there's a growing interest in AES inputs, either standard or optional, which can increase a system's dynamic range. Some users prefer to tune a



BSS Compact plus FDS-366T

system with parametric filters, but a couple of brands permit graphic EQ to be used instead, or a combination of both.

Whether using a manufacturer's proprietary software or Device Control under SIA Software's SmartLive, the ability to remotely program, operate and archive a processor from a computer makes it more powerful. Through use of wireless networking, this control can be extended, allowing a system tech to move throughout a venue and make adjustments from inside each zone. A wireless touchscreen device control is the new paradigm for pro sound EQ. There's no

mouse on the bridge of the Enterprise.

With that in mind, let's check out a number of DSP boxes for sound system control from a variety of third-party suppliers. The following includes brief product descriptions; a chart later in the article provides more information and offers at-a-glance comparisons of features and functionality.

On the heels of its Intelli-Q stereo digital EQ, Belgian company Apex (dist. by Transamerica Audio Group, www.transaudiogroup.com) introduced the Intelli-X Equalizer and Speaker-Management System. Its four inputs can simultaneously provide a half-second of delay, eight bands of parametric EQ, two shelving filters, *plus* a 30-band graphic EQ. There are also two stereo AES/EBU digital inputs. Multiple Intelli-X processors can be networked with Windows software, allowing control of combinations of Intelli-Qs and Intelli-Xs from the same PC via a USB connection and the Apex RJ-45 serial bus. The Intelli-X has an optional one-rack-unit Intelli-Sense speaker-protection system that continuously monitors the true RMS power delivered to the speakers and adjusts the Intelli-X's internal limiters to prevent thermal failure of transducers.


Ashly Audio's 4.24C (www.ashly.com) is the crossover model in the company's Protea System II line of digital processors. Like most processors in this roundup, the Protea C can be computer-controlled from an RS-232 connection via either Ashly's PC Graphic User In-

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terface, SIA's SmartLive or MIDI. The front panel's 2-line, 20-character display shows parameter, function and utility information.

The Behringer (www.behringer.com) Ultra-Drive Pro DCX2496 is a 3-in/6-out unit with dynamic EQs and parametrics available on all inputs/outputs, along with limiter protection. Other features include four mono and stereo output operating modes; Butterworth, Bessel and Linkwitz-Riley crossover types; 6 to 48dB/octave slopes; individual delays; and an additional sum out signal. RS-232 and RS-485 interfaces enable single or multi-unit control via free Windows-based editing software, and presets can also be stored to a PCMCIA card slot.

BSS' (www.bss.co.uk) Omnidrive Compact plus T is the newest version of the only top-shelf processor with three inputs. BSS' new FDS-366T provides a new crossover type from Australian audiophile company Whise, designed by Neville Thiele. His filters are comparable to Linkwitz-Riley topology, but with steeper roll-offs (36 and 52 dB/octave). The Neville Thiele Method filters maintain phase coherence throughout the crossover region and sum for flat response.

Speaker designers can use them to increase efficiency and widen a driver's bandwidth. Most programs employing L-R filters can substitute NTM filters without further changes, though steeper slopes can permit further optimization of crossover frequencies and out-of-band EQ.

The BSS MiniDrive FDS-336T is the newest version of the company's entry-level product. It now also includes the Neville Thiele filters recently added to the Compact plus, and older units can be flash-upgraded, as can the older 366s. While lacking a few



dbx DriveRack 480

features such as dynamic EQ, the third input, AES/EBU ports and the Alignment Assistant found on the plus, the 336T offers BSS quality to a wider audience. It's also available with four outputs as the FDS-334T, which is better suited to bi-amp monitor applications.

The DriveRack 480 from dbx Professional (www.dbxpro.com) is the company's flagship, and can be used stand-alone, via PC or with the 480R DriveRack Remote, on which 32 instant-access buttons and 31 moving faders can control multiple units. Two slave models, the 481 and 482, lack front panel

controls and offer a choice of XLR or Euroblock connectors. It features separate house and show input EQ with individual lockouts and dual RTAs for two of its four inputs that can be used for measurement mics.

dbx's DriveRack PA is a stand-alone, no-frills processor, offering graphic front-end EQ and 10 ms of transducer alignment delay. However, it has extras such as a classic dbx compressor, 120A Subharmonic Synthesizer, a dozen notch filters and a JBL/Crown setup Wizard. An RTA mic input, pink-noise generator and Auto-EQ with 28-band RTA make the DriveRack PA perfect for value-engineered installs or compact portable systems.

The newest dbx DriveRack for live sound, the DriveRack 260, picks up where the PA left off. Features include a full second of input delay for zone alignment, nine parametric input filters, PC control via DriveWare software or device control under SmartLive. A line of five different wall-panel zone controllers can mount in standard electrical switch boxes and connect up to 1,000 feet away via Cat-5 cable. The 260 also has a full-time RTA for its pink noise and measurement mic input.

Australian firm DEQX (www.deqx.com) offers the PDC-2.6 "ClarityEQ," primarily intended as an active crossover upgrade for passive two- and three-way control room monitors and high-end consumer speakers.

Specs At a Glance

Mfg./Model	I/O	Dimensions	AES I/O	Ports	Smaart	Front Panel Control
Apex Intelli-X	4x8	1U x 11.3 inches deep	2 in	232, 485, USB	no	yes
Ashly 4.24C	4x8	1U x 6 inches deep	no	232, MIDI	yes	yes
Behringer DCX2496	3x6	1U x 8.5 inches deep	1 in	232, 485	no	yes
BSS MiniDrive FDS-336T	2x6	1U x 8 inches deep	no	232, MIDI	yes	yes
BSS Omnidrive Compact plus T	3x6	1U x 11.5 inches deep	1 in	232, 485, MIDI	yes	yes
dbx DriveRack PA	2x6	1U x 5.8 inches deep	no	none	no	yes
dbx DriveRack 260	2x6	1U x 5.8 inches deep	no	232, 485	yes	yes
dbx DriveRack 480	4x8	2U x 12.2 inches deep	no	232, 485, MIDI	yes	yes
DEQX PDC-2.6	2x6	1U x 17 inches deep	1 in (out opt.)	232, USB	no	no
Electro-Voice Dx38	2x4	1U x 14.7 inches deep	no	232, MIDI, opt. 485	no	yes
JBL DSC260A	2x6	1U x 8 inches deep	no	MIDI	yes	yes
Klark Teknik DN9848	4x8	1U x 12 inches deep	no	232, 485	yes	yes
Lake Contour	2x6	1U x 15.8 inches deep	no	232, Ethernet	yes	no
Sony SRP-F300	2x6	1U x 14 inches deep	1 I/O	232 (x2)	yes	semi
Xilica DLP4080	4x8	1U x 10 inches deep	I/O opt.	232, MIDI	no	yes
XTA DP226	2x6	1U x 11.8 inches deep	I/O opt.	232, MIDI	yes	yes
XTA DP6i	2x6	1U x 11.8 inches deep	I/O opt.	232, 485, MIDI	yes	semi

It comes with its own optimization software for making EQ and delay adjustments. It employs FIR filter technology to synthesize extremely steep crossover slopes. While not primarily intended for live sound, there may soon be a sound reinforcement spin-off.

Electro-Voice's (www.electrovoice.com) Dx38 is the company-branded processor based on the Dynacord 244. It includes Real Acoustic Cluster Editor (RACE) software for controlling and programming the unit, which calculates and displays the free-field acoustical output when used with various E-V speaker products. Parameters can also be adjusted from the front panel controls. An optional RS-485 interface can be installed in place of the standard RS-232 port, allowing control over 650 feet of mic cable or six times that with Cat-5.

JBL Professional (www.jblpro.com) has given new life to its DSC260, upgrading it to 24 bits for higher dynamic range, adding new 2-stage limiters and renaming it the DSC260A. The 260 has been employed by more than a dozen other speaker manufacturers as a dedicated OEM system processor, and this will continue to be a widely used product.

Klark Teknik's (www.klarkteknik.com) DN9848 is the original high-density, 4x8, single-rackspace processor that was upgraded in Version 3.0 with Smaart compatibility and four additional parametric filters on its inputs, for a total of 96 filters. In addition to

six user memories and 32 system programs, there are 99 factory presets. Summed inputs have a unique balance control. The RS-485 connections are conveniently provided on XLR connectors, while the front panel RS-232 port is an 8-pin mini-DIN.

Contour from Lake Technology (www.lake.com.au) set the live sound world on its ear with a new paradigm for speaker EQ that employs 96kHz resolution, low-propagation FIR filters and wireless Ethernet operation from a tablet PC. Its method of filter synthesis allows unlimited EQ overlays, and unique topologies such as "brick wall" and "mesa" filters are also possible. Lake's new plug-in provides integration between its Controller software and SmaartLive, showing RTA, spectrograph and FFT displays directly in Contour's software interface. For more, see the Lake Contour "Field Test" on page 100.

Sony's (www.sony.com/proaudio) SRP-F300 is a little-known SR processor that's been living in the shadow of Sony's more glamorous pro audio gear. The F300 features 96kHz sampling, a choice of analog or AES inputs, and either graphic or parametric filters that can be chosen for input EQ. It has an internal pink-noise and sine wave generator, and its compressor can accept sideband EQ. It is programmed from Windows 95/98 software, and front panel controls allow only limited adjustment for security purposes.

At the recent AES show in New York

City, Toronto's Xilica Audio (www.xilica.com) introduced its new DLP4080, a full-featured, 4x8 1RU processor. Any combination of inputs can be summed as a source for an output. As with most DSPs today, its firmware is flash-upgradeable, and refinements like dynamic filters and feedback eliminators are in the works.

The DP226 from XTA (dist. by Group One Ltd., www.g1limited.com) is an industry benchmark processor that's also been spun off into OEM versions for several speaker manufacturers, while being the processor of choice for others. Available with optional AES digital inputs and outputs, it's controllable from its AudioCore software and Smaart. Connections for RS-485, RS-232 and MIDI are standard. A front panel card slot provides convenient PCMCIA storage and backup of settings. A similar model—the DP 224—has four outputs.

XTA's new DP6i has the same circuitry as its 226, but with a stripped-down front panel at a fraction of the cost. Parameters are not front panel-adjustable, but all of the rear panel connectivity of the 226 has been retained. Instead, there are four front panel push buttons for recalling four presets. An internal switch puts the unit into Safe mode where all front panel controls are disabled. ■

Mark Frink is Mix's sound reinforcement editor.

Presets	Max. Slope	Para. EQs	Delay	Limiters	Resolution	Dyn. Range	List
40	48 dB/octave	8 in*, 8 out	500 ms	opt. Servo	24/48	110 dB	\$3,995
30	48 dB/octave	6 in, 4 out	682 ms	Full	24/48	110 dB	\$1,899
60	48 dB/octave	3 in, 6 out	582 ms	Zero-attack	24/96	113 dB	\$439
60	48 dB/octave	37 total	635 ms	2-stage	24/48	108 dB	\$1,500
50	52 dB/octave	50 total	2,624 ms	Dual	24/96	112 dB*	\$3,799
25u + 25	24 dB/octave	GEQ in, 3 out	0 ms	PkStop+	24/48	107 dB	\$750
25u + 25	48 dB/octave	9 in**, 4 out	1,000 ms	PkStop+	24/48	110 dB	\$1,000
20u + 20	48 dB/octave	9 in**, 4 out	682 ms	PkStop+	24/48	112 dB	\$3,400
4	300 dB/octave	10 out	n/a	n/a	24/96	110 dB	\$3,500
30u + 50	24 dB/octave	5 in, 4 out	900 ms	Full	24/48	115 dB	\$1,798
60	48 dB/octave	30 total	635 ms	2-stage	24/48	108 dB	\$2,149
6u + 32	48 dB/octave	96 total	1,000 ms	LookAhead	24/48	114 dB	\$4,665
unlimited	brick wall	unlimited	2,000 ms	RMS+SC	24/96	109 dB	\$4,900
50	36 dB/octave	11 in**, 3 out	1,000 ms	2-stage	24/96	110 dBA	\$1,950
64	24 dB/octave	8 in, 6 out	500 ms	Full	24/48	115 dB	\$1,350
40	24 dB/octave	8 in, 5 out	650 ms	Fast	24/48	110 dB	\$3,995
4FP (40)	24 dB/octave	8 in, 5 out	650 ms	Fast	24/48	110 dB	\$2,795
						**or GEQ, *plus GEQ	*117 AES

New Sound Reinforcement Products

MIDAS HERITAGE 4000

The Midas (www.midasconsoles.com) Heritage 4000 console builds on the foundation of its TEC Award-winning Heritage 3000 and takes it to a new level. Designed for FOH or monitor duties, or both, the H4000 adds eight more stereo auxes for a total of 40 aux sends. It's available with 48, 56 or 64 inputs, which can be loaded with any combination of stereo/mono modules. Inputs feature the XL4 Preamp and the H3K EQ; all inputs have direct outs, and eight matrix outputs can be picked up from any bus output. For familiarity, the H4000 shares all of the automation, muting and VCA functions of the H3000. There are 10 VCAs, 10 mute groups and virtual fader automation on all input and VCA group faders. Mutes are also under automated control, and scene storage is split into Act and Scene—a useful designation for theater users. The H4000 uses the same power supplies as the H3000, with dual supplies for redundancy. Rental companies will appreciate that the H4000 modules can be used in H3000s (although not vice versa).



OPTICORE FIBER-OPTIC SNAKE

Now distributed in the United States by Group One (www.g1limited.com), Opticore's LX4 Optical Digital Multicore Network System converts digital and analog audio signals for long-distance transmission over a scalable (up to 196 audio channels), dual-redundant ring structure with 24-bit/96kHz clarity. The LX4A stage box has 16 return channels and 48 mic/line inputs, with all gain adjustments storable in memory. A video input (for stage monitoring) is also provided, along with RS-232 and RS-485 data buses. Connected via two fiber-optic lines, the LX4B FOH box has multipin analog breakouts for the 48 audio outs and 16 sends. Also available are a digital I/O box with 64 AES3 or 32 DMX/RS-422 lines and a Windows software patching utility to speed setups.

L-ACOUSTICS V-DOSC UPDATES

New presets for use with approved BSS or XTA processors and L-Acoustics V-DOSC speakers are available at www.l-acoustics.com. The new V7 Preset Library optimizes the loudspeaker system's power resources, providing smoother mid/high response based on detailed spatial averaging, as well as revised low-section processing (including improved LF shelving EQ), resulting in a 2dB increase in overall efficiency and output.



A-T WIRELESS ACCESSORIES

Audio-Technica (www.audio-technica.com) announces new accessories to enhance wireless reception in difficult environments for its Artist Elite 3000/4000 Series. The 1-in/4-out AEW-DA660D (\$959) is an active, unity-gain UHF antenna distribution system for connecting a pair of antennas to up to four diversity receivers. The single-rackspace unit features a cascade output for driving additional distribution amps, detachable IEC power cable (with pass-through for daisy-chain AC hookups), 10 RF cables, front-mount antenna cables and DC power cables to power up to four A-T 3000 Series receivers. Also new is the \$398 ATW-A49 Log Periodic Dipole Array (LPDA), a wideband UHF (440-900MHz) directional paddle antenna with 6 dB of gain and enhanced signal pickup.

CERWIN VEGA PROSTAX

The new ProStax™ line from Cerwin Vega (www.cerwinvega.com) offers three-way systems at two-way prices, with 2-inch HF compression drivers and cast-frame 6-inch cone mids mounted on a horn/proprietary waveguide, combined with cast-frame 12/15/dual-15 woofers. The enclosures feature all-plywood construction with polyurethane finish, integrated Vega-Grip™ handles and both Speakon and ¼-inch inputs. The line includes the 86-pound, dual-15 PSX-253 with 38-17k Hz response, 1,500W peak handling and 100dB (1W/1m) sensitivity; the 1,000W, single-15 PSX-153 (45-17k Hz); the 750W, single-12 PSX-123 (55-17k Hz); an optional 1,000W PSX-36 subwoofer; and the PSX-122, a compact 12-inch coaxial system (127dB SPL peaks, 42-20k Hz response) that can be used as a stage wedge or as a pole-mount MF/HF box with the PSX-36.



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13 Over/Under LED's let you know at a glance if you're expanding or gating.

14 Vary the Ratio to select anywhere from gentle down-ward expansion to gating.

15 Detented controls and soft-touch knobs assure precision adjustments.

16 dbx's patented 3-segment precision LED OverEasy® indicator helps you precisely dial in just the right amount of compression.

17 Adjusts from mild compression to ∞ : 1 limiting.

18 Add make-up gain or match levels over a 40 dB range.

19 Patented peak-reading meter allows easy setting of optimum input and output levels.

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22 Easily accessible fuse—you'll probably never need to find out how easy.

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24 Ensure signal path integrity with gold plated locking Neutrik® XLR connectors.

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26 Servo-balanced outputs drive up to +22dBu

27 Separate sidechain send and return jacks—no special "insert Y-cables" required.

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The Sound of Silence

Quieting Down That Noisy Computer

Last month, I discussed an Open Source DAW, so this month, let's take a look at some hardware aspects of that DIY DAW by taking what is a *free computer*—or nearly so—and shutting up everything that creates so much darn acoustical noise. In a word or three: a silent PC. Heads up all you underpaid musicians and engineers! It's fairly easy to find an older computer for free, or less than \$50 at least, that someone has in their closet gathering dust. The price is right, but you probably wouldn't want it sitting next to you when you're working, because the noise it makes will ruin your day.

DEALING WITH NOISE AT THE SOURCE

There are actually two things to consider in this whole effort to quiet down a garden-variety PC, one being electrical and the other acoustical. Let's start with electrical or RFI noise within the box making its way into your sound card. Suffice to say that you want both directions of analog conversion *outside* the case, otherwise you're asking for a less-than-ideal noise floor in your signal paths. Granted, with careful grounding and shielding, it's possible to convince an analog converter to make nice in such a hostile environment, but why fight it? Better to simply take an electrical digital audio signal—either AES/EBU Type I or Type II unbalanced, MADI, USB or FireWire—out of the computer and convert it externally. Notice I didn't say optical. Plastic Optical Fiber (POF) is high-loss and thus jitter-prone, so unless cable lengths are kept short, it's crap. Once the data's outside the case, convert it to analog using the best that your budget can afford and—boom!—you're there, wherever "there" is for you.

As to RFI/EMI escaping the box, one has to assume that the *entire* case is conductive and grounded, and that all air gaps in the case are gasketed. Though I can't imagine not having one already included inside your PC, an inline filter on the incoming AC goes a long way at keeping the power cord—all three prongs intact, please—from becoming a noise-radiating antenna.

TURNING DOWN THE HEAT

Okay, so we've got the radio spectrum noise dealt with, now let's take a look at the three horsemen of the acoustical apocalypse: motors, turbulence-induced noise and mechanical resonances. The Number One problem is motors. They cause the other two problems, so if we could eliminate them entirely, we'd be way ahead of the game. This is possible to do as long as the high-current drawing parts,



like the CPU, are cooled in some unconventional manner.

Cooling a CPU the old-school way entails increasing the surface area of a passive heat sink, which is great if you're not using a modern hot-running Intel part. Another approach is water cooling, quite common in overclocking circles, while a third method, waste heat removal, is to heat pipes; both require coupling to oversized heat sinks, a viable, if not visually pleasing and space-saving choice. Heat pipes distribute the unwanted heat to the furthest reaches of the heat sink and, from there, convection transfers the heat to the surrounding air. A fourth option, which seems to have fallen somewhat out of favor due to efficiency and design limitations, not to mention reliability issues, is to use yet more electrical current to run a Peltier (solid-state cooling) device, usually in conjunction with water cooling or heat pipes. Despite the drawbacks of earlier designs, modern Peltier coolers lend themselves nicely to a silent PC outcome. By the way, water cooling is basically an active alternative to passive heat pipes that uses forced cool water instead of a volatile working fluid. See the "Pedant" sidebar for more on cooling devices.

Let's assume that we've cooled down the CPU, graphics card, disk drive and any other toasty thing in the case.



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BITSTREAM!

How about reducing the waste heat itself rather than simply (re)moving it? Power factor correction in the power supply is one answer. Without getting into the gory details of power factor correction and having everyone's eye balls roll back in their head from dweeb overload, better-quality power supplies incorporate additional electronics that greatly improve the unit's efficiency. This means less waste heat to remove from the case, so look out for that feature if your budget permits.

On to turbulence: If you must incorporate a fan, run it as slowly as possible to reduce chaotic air flow. Smoothly flowing air makes little or no noise as long as the velocity isn't too high. Most fans make a racket because they create turbulent flow on their blades or through the surrounding housing. Thermostatically controlled fans reduce the blade speed unless more cooling is needed and sophisticated blade and venturi housing designs smooth the air flow, re-

Pedant In a Box

Heat Pipe: a sealed tube that contains a wick and a liquid that vaporizes at a relatively low temperature. If you heat up one end of the pipe, then the liquid at that end vaporizes, which dries out the wick. Cool liquid moves—wicks, actually—into the hot end of the tube while the newly created vapor condenses back into liquid at the cold end, replenishing the supply of liquid for the wick to suck up, and the whole process goes 'round and 'round. The result is that heat is drawn away from the hot end, raising the temperature of the cold end, all without any external power requirements, save the heat source itself.

Peltier Device: named after Monsieur Jean Charles Athanase Peltier, who demonstrated the thermoelectric effect that bears his name way back in 1834. Peltier devices are solid-state, thermoelectric heat pumps that, in response to an applied electrical current, move heat from one physical side of the device (the "cold" side) to the other (the "hot" side) in direct proportion to the current applied. If the polarity is reversed, then the "pumping" changes direction.

Modern Peltier coolers use such exotic semiconductors as bismuth telluride doped with selenium and antimony. The Sharper Image, that bastion of questionable exotica, sells a "trim, discreet" personal "climate-control system" using a Peltier device. Now that's dope!

—Omas

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Phil O'Keefe, Sound Sanctuary Recording, Riverside CA

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ducing a fan's operating noise. As an example, Apple chose an inexpensive, proven forced-air cooling design for its new G5 Tower, but also chose to employ nine independent, thermostatically controlled fans in four separate chambers with a perforated metal front and rear fascia to keep everything cool *and* quiet. Each fan runs at optimal speed and the large 35-percent perforated surface area ensures low turbulence while preventing RFI leakage.

We're closing in on our ephemeral goal, but wait—I haven't talked about resonances. Whether it's cheap sheet-metal cases or thin metal grilles, "ya gets whats ya pay for" and what you get are buzz and rattle. There are many materials that damp vibration, and they all work by adding mass to the offending part. Whether it's strategically placed lumps of Mortite or carefully applied sheets of Dynamat, you can bet that adding a pound of prevention is worth far more than an ounce of cure.

OUT OF SIGHT, OUT OF MIND?

We've gotten rid of every source of noise that we can, but somehow, it's still not quiet enough. Once you've exhausted all other options, your only choices are to fall back onto the old tried-and-true: Stick the whole 'puter in an enclosure or remote it with a KVM, a device that remotely provides keyboard, monitor and mouse functions to one or more computers. Recent innovations in enclosure design from AcoustiLock include heat pipes to transport heat from the noisy and hot interior to the quiet and cool exterior.

Other than that, a basic acoustic labyrinth concept, either actively cooled or passive, remains the most effective and inexpensive choice. It was June of 2000 when I last visited the subject of KVMs. These days, the latest thang is an embedded Web server with IP connectivity, which replaces the old hard-wired style with an Ethernet connection and any Web browser. It is simple and cost-effective if you already have a run of unshielded twisted pair.

That's about all for this month's "Bit-stream." I hope you find this little survey useful and that this new year brings renewed health, happiness and prosperity to you all. See you next month! ■

Between a bevy of phone consults and a bout of GPS madness, Omas took time to soak in the unalloyed mayhem of Sergio Leone's The Good, the Bad and the Ugly and the bright, sophisticated boop of McCoy Tyner's The Real McCoy. Drop by www.seneschal.net for links on this month's subject.



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Tools of the Trade



TC ELECTRONIC VOLTRONICS FOR POWERCORE

Guitar tweakers (or anyone looking for that special effect) will be interested in TC Electronic's Voltronics guitar amp simulator plug-in, the tenth virtual processor to be included with the PowerCore card. Voltronics includes three tube stages that model classic 12AX7s; individual "tubes" can be independently adjusted for a variety of tones. A speaker simulator is derived from the impulse measurements of a 2x12 cabinet, and a virtual microphone placement control simulates tonal variations resulting from different mic techniques. Voltronics includes a fingerprint-based noise-reduction filter that allows settings to be saved independently from the amp settings. An expander is also built in. PowerCore users can download Voltronics as part of a free 1.8 update at www.tcelectronic.com.

SONY C-38B

The Sony C-38B (www.sony.com/ professional) mic is now available in the U.S. When it was first introduced in 1965, the original C-38 was the world's first Field Effects Transistor (FET) microphone. The mic was then updated in 1969 to the model C-38A with a change in the windscreen design, and again in



1971 to the C-38B by adding phantom power (9-volt battery or external DC 24V to 48V). The C-38B features 30-18k Hz frequency response, selectable pattern (cardioid or omni) and a dynamic range of 116 dB. Price: \$2,200.

SMART LOOPS PHAT TO PHREAKY

Smart Loops (www.smartloops.com), the Acid-format loop-based music content and creation tools company, has released the Phat to Phreaky collection of hip hop loops. The new collection features urban beats, breakdowns and fills created by a number of award-winning producers and musicians, with more than 800 grooves in a wide array of styles. Price: \$69.

HERCULES 16/12 FW

In a bundle sure to please the gods, Hercules Technologies (www.hercules.com) released the Hercules 16/12 FW, a 24-bit 96kHz, 16-in/12-out FireWire audio and MIDI interface for PC and Mac. The single-space rack-unit allows up to 16-in/12-out simultaneous multitrack recording and is compatible with most popular audio software apps. Inputs include 12 analog inputs, one coaxial input (stereo) and one optical input (stereo). Outputs comprise eight analog outputs, one coaxial output (stereo) and one optical output (stereo). There are two mic/instrument pre's with switchable 48-volt phantom power on Neutrik XLR/TRS combo connectors, as well as hi-Z instrument inputs. MIDI I/O comes on two dual DIN jacks for a total of



PENDULUM AUDIO QUARTET II

New from Pendulum Audio (www.pendulumaudio.com) is Quartet II which supplants the company's popular Quartet, offering a new unit with "attitude." Offered in a Mercenary Edition (with feedback from Mercenary's Fletcher), this all-tube recording channel combines an enhanced tube mic/DI preamp from the MDP-1; delta-mu (Fairchild 660/670 sounding) tube comp/limiter from the ES-8 (with more sidechain modes); a three-band, passive tube EQ (with selectable active "aggressive" mode) HF peak/MF cut/LF cut-boost; and switchable JFET/MOSFET brickwall analog limiter—all of which can be patched in/out for independent use.

32 channels in/out. Drivers are available for Mac OS X (Core Audio) and Windows (ASIO 2.0, GSIF, .WAV, DirectSound). The 16/12 is bundled with Arturia STORM Special Edition Version 2.0 and Ableton Live Special Edition, both for Mac or PC. Both packages come with 900 MB of sounds. Price: \$599.

CREAMWARE PRODISSEY

In what it claims is an "absolutely accurate" model of the ARP Odyssey III, CreamWare (www.creamware.com) has traveled back in time to model a timeless



piece of synthesizer history in the form of a plug-in. The Prodsysey is available for the various systems of the SCOPE Fusion Platform, as well as for the new Noah hardware synthesizer. CreamWare took some liberties and improved on the original by allowing the synth to be played polyphonically and integrating a multi-effects section. Price: \$225.

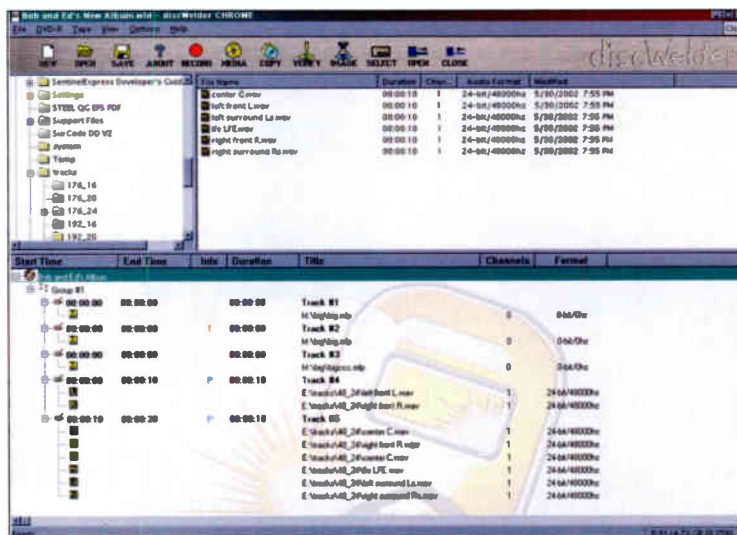
NEUMANN BCM 104

Neumann (www.neumannusa.com) launched a new line of broadcast microphones with the BCM 104. The K 104 large-diaphragm condenser capsule used in the BCM 104 has a cardioid directional pattern with switchable proximity-effect compensation, and includes a highpass filter that reduces frequencies below 100 Hz by 12 dB/octave. A second pre-attenuation switch reduces sensitivity by 14 dB to optimize for circuits designed for dynamic microphones. Both switches are internally mounted. Price: \$999.



GREAT RIVER EQ-2NV

Great River Electronics (www.greatriverelectronics.com) released the EQ-2NV, a



Great River's NV Series microphone amplifiers' patch loop, providing greater headroom at one end and a lower overall noise floor. When connected via the MP-2NV's patch point, the mic and DI inputs are fully functional, as are the level control and metering. The equalizer also features a discrete Class-A balanced output stage, allowing it to function as a complete stand-alone device. It is available in either single- or dual-channel models. Price: \$3,495.

MINNETONKA DISCWELDER VERSION 2

Minnetonka Audio Software (www.minnetonkaaudio.com) announced Version 2 of its flagship DVD-A authoring application, discWelder CHROME. New features include the ability to create a universal DVD-A/V disc, DSD import and conversion, the ability to play back video from the audio menu and more. Upgrades from V. 1 will be available

eight endless high-res rotary pots, full-size transport switches and jog/shuttle wheel. Also included are dedicated mute and solo switches, an eight-character SMPTE time-code display, 80-character backlit display to view various functions and a dedicated monitor section. Motor Mate can be expanded by adding any number of CM's Motor Mix fader modules and will also act as a remote command station for CM's 64 studio router. Price: \$1,499.95.

SMC EZ CONNECT ETHERNET KIT

Perfect for those home studio situations where running CAT-5 is an impossibility, the SMC Networks (www.smc.com) Ethernet Starter Kit connects to an available LAN port and then into a power outlet, enabling all of the power outlets in a home to act as network connection points. The kit includes two HomePlug-to-Ethernet desktop adapters; both adapters are HomePlug 1.0-certified to ensure compatibility with various types of



companion equalizer to the Mercenary Edition series of products. The EQ-2NV is loosely based on the topology of vintage 1081/1083 models and features a transformer-coupled bridging-type line input with sensitivity options ranging from elevated line-level (+8 dBm) down to keyboard and semi-pro levels (-20 dBm). The equalizer is designed to work with

from dealers or from the discWelder Website (www.discwelder.com) for \$500, or new for \$2,495.

CM LABS MOTOR MATE

Motor Mate, the newest controller from CM Labs (www.cmlabs.net), is supported by most popular DAW apps and features eight touch-sensitive, 100mm motorized faders,

home wiring. According to the manufacturer, data transfer speeds of up to 14 Mbps are possible. The kit also includes the EZ Configuration Manager utility (Mac and PC) that lets users view connection status, monitor throughput and manage the system via a naming function for each HomePlug device in the network. Price: \$149.99.



CYCLING '74 PLUGGO 3.1 FOR MAC OS X

Cycling '74's (www.cycling74.com) Pluggo 3.1 is the newest version of its popular native audio processing plug-in software. Pluggo 3.1 is compatible with Mac OS X and adds Audio Units to the list of supported plug-in formats. The introduction of Audio Units to the existing VST and RTAS support allows Pluggo to work with Emagic Logic Audio, MOTU Digital Performer 4, and Apple Final Cut Pro and Soundtrack. Pluggo 3.1 is also compatible with multiple processors. A free runtime plug-in environment installer can be downloaded from the Cycling '74 Website.

TERRATEC PHASE 22

Terratec's Phase 22 (www.terratec.com) is a dual-channel PCI I/O that allows recording at up to 24 bits/96 kHz via 1/4-inch TRS jacks (balanced). Drivers are available for Windows 98SE/ME/2000 and XP, with Core Audio and Core MIDI support for Mac OS X. Windows users can also expect support for ASIO 2.0, GigaStudio, WDM Kernel Streaming (Sonar) and MME DirectSound. Up to four units can be cascaded, providing a scalable I/O solution. Price: \$99.

E-MU X-LEAD V2

E-mu Systems (www.emu.com) introduced the X-Lead V2 Expansion ROM for its Proteus line of sound modules, Command Stations and keyboards. The X-Lead V2 ROM delivers all of the sounds and presets of the legendary Xtreme Lead-1 sound module, plus an additional bank of 127 presets originally only available in the XL-7 Com-

mand Station and XK-6 keyboard. The 32MB soundset delivers 640 dance presets that include leads, pads, analog synths, deep basses and drum kits—all optimized for E-mu's synthesis engine and mapped to a host of real-time controllers. Price: \$129.

THERMIONIC EFFECTS BOXES

Thermionic Culture (www.thermioniculture.com) of the UK announced stateside availability of the Phoenix (\$3,750) stereo tube compressor and the Culture Vulture (\$1,695) stereo tube distortion unit. The 2-channel "vari-mu" Phoenix compressor features a variable ratio that starts low and gradually increases, designed to create subtle and natural compression effects. The unit also features continuously variable controls for

gain, attack (0.004 to 0.12 seconds), release (0.06 to 2.2 seconds), threshold and output level, along with stereo-linking capability. With the Culture Vulture, users can add from 0.2% to 99.9% of distortion to the signal path. The unit features 4kHz and 7kHz filters, overdrive and bypass switches, and the ability to change distortion from even to odd harmonics at the flip of a switch.

RIOT ACT DOWNLOADS

Through an affiliation with the UK's Tape Gallery, Riot Act now offers more than 200,000 sound effects, samples and loops from 55 world-famous libraries. All sounds can be auditioned for free at www.riotact.com/riotactdownloads.htm. In addition, each library may be auditioned in its entirety by going to www.riotact.com/affiliates.htm. All sounds are available in 16-bit, 44.1- and 48kHz sample rates, and may be downloaded in .WAV and .AIFF stereo formats.



A DESIGNS ATTY

Usually, an Atty means legal trouble, but in this case, it's a low-cost compact device designed for in-line level controller for mono/stereo audio signals. I/O is provided for on two Neutrik combo input



jacks (¼-inch XLRs) and two balanced output XLRs. Simple in design, the Atty offers a level control knob and a "panic button" mute switch that will short the signal until full control is regained. Price: \$95. Visit www.acdesignsaudio.com.

TASCAM GIGAPULSE

GigaPulse, the first VST plug-in from Tascam (Windows only), uses convolving technology to sample a room or acoustic body. Through this process, GigaPulse can emulate any room, vintage EQ or microphone. Impulse libraries will be available from Tascam, or users can download numerous freeware impulses at www.tascam.com. Price: \$299.



SELCO SOFT TOUCH BULLET KNOBS

Selco Products (www.selcoproducts.com) introduced the Soft Touch Bullet Knob Series. The rotary knobs feature a built-in

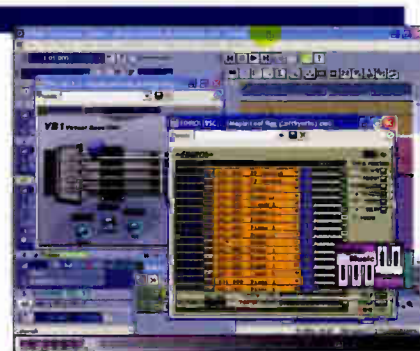
pointer for easy and quick reference, and are available in a variety of diameters that fit spline shafts or industry-standard "D" shafts. Knobs include a choice of ei-

ther thermoplastic elastomer material that provides a rubberized, soft-touch feel, or a polypropylene material for a hard-finish feel. Price: \$0.43 (quantities of 1,000).

Upgrades and Updates

PreSonus (www.presonus.com) offers its FIREstation interface for a limited time at a special price of \$499. The FireWire-compatible unit features eight channels of balanced/unbalanced analog and ADAT I/O, as well as S/PDIF and MIDI I/O. Also, PreSonus is now shipping Eureka, a single-channel Class-A transformer-coupled mic preamp, compressor and equalizer...KRK (www.krksys.com) is now shipping the new magnetically shielded, passive ST6 (\$199) and ST8 (\$249) monitors. The ST Series is an all-new design that incorporates the latest in driver and crossover technology that KRK claims offers exceptionally accurate, smooth response and high power handling, without producing ear fatigue...MOTU (www.motu.com) posted Mac OS X 10.3 (Panther) updates for all MOTU FireWire and PCI audio interfaces. New features include input and output names and control surface support for CueMix DSP. DP 4 Version 4.11, also available, brings the flagship app up to Panther speed...Event (www.event1.com) announced that its newest monitor, the Studio Precision 6, is now shipping. The self-powered, bi-amplified monitor features a 6.5-inch low-frequency driver and a 1-inch high-frequency tweeter and sells for \$1,299 per pair...M-Audio announced that the Audiophile 2496, Delta 1010, Delta 44, Delta 66 and Delta 1010LT

are being upgraded for G5 3.3V PCI-X compatibility, and the Revolution 7.1 consumer surround sound card is already PCI-X-compatible. All revised M-Audio cards will also be compatible with current and next-generation Windows machines. The upgrade program works as follows: For those who purchased a Delta card on or after August 1, 2003, there is no charge to upgrade. For users who purchased their Delta cards prior to August 1, the price is \$50 plus \$5 shipping. Get more info at www.m-audio.com...Although RME recently announced that all currently sold RME interface cards are fully compatible with Apple's new G5 computers, older cards can cause severe damage to both the card and the G5. The following cards cannot be updated and/or contain PCB errors, making them incompatible and fatal if used: Hammerfall (DIGI9636 and DIGI9652) revision 1.1, manufactured from 1999 to April 2001; Hammerfall (DIGI9636 and DIGI9652) revision 1.5/1.6, shipped since June 2000 until the end of 2002; and the DIGI96 series. The revision is printed on the PCB, and the date and time of manufacture is coded as week/year on the back of the cards within the copper area. For more info, visit www.rme-audio.com...Digital Music Doctor's SONAR 3—Know It All! CD-ROM tutorial, based on the SONAR 3 Producer Edition, con-



tains almost two hours of screen videos and sample projects covering all aspects of audio and MIDI recording, editing and mixing in Cakewalk SONAR. For more information, visit www.digitalmusicdoctor.com...Tascam (www.tascam.com) released a major software upgrade to the SX-1 and SX-1LE Digital Production Workstations, adding more than 100 new features and enhancements. Included is a new FTP feature, which allows the SX-1 to act as an FTP server, facilitating file sharing with other computers through an Ethernet connection...Sonic Studio LLC announced the availability of its first major software revision since taking over the Sonic Studio workstation products from Sonic Solutions. Version 1.9 is the culmination of more than a year of development and resolves numerous longstanding issues with stability, synchronization and CD imaging. The upgrade is available to all Sonic Studio HD owners at no charge as a download from the support section of Sonic Studio's Website, www.sonicstudio.com. ■

Lake Technology Contour

The Engineer's All-In-One Loudspeaker Controller

In 1997, representatives from Clair Brothers, along with a team of heavy-hitters in the digital world, joined forces to design the Clair iO, which ushered in the next generation of digital processors. Until now, the processor remained under the exclusive domain of Clair and Showco, and has become one of the most widely used processors in the high-end live sound market. Under the guise of Lake Technology, the processor, called the Lake Contour, is now available to the general public.

The Lake Contour is a crossover, delay, dynamics processor, equalizer and a DSP-based speaker controller. But the hardware and software set Contour apart from other processors. It features completely new filter concepts, high-quality components, an exceptionally clean signal path, a simple graphic interface and wireless control. While it is designed for live sound applications, Contour will also find a welcome home in the studio monitor market.

This 2-in/6-out box can be set up as two two- or three-way crossovers or as a single four-way. All internal processing is performed at 40-bit precision, and converters are 24-bit/96 kHz. Multiple boxes are linkable via Ethernet cables for total system control via one computer. This is handy when using two Contours for a stereo four-way system or three



Lake Contour includes a WiFi touch screen tablet controller with many useful drag-and-drop functions.

tour without conversion. Contour's Iso-Float technology incorporates the benefits of transformer-coupled ground isolation while maintaining the advantages of clean, direct-coupled I/Os. The audio converters are galvanically isolated and not connected to the main ground. This technique uses high-speed transformers and opto isolators to create a barrier between the device and any grounding aberrations from the outside elec-

and link capabilities is really nice. Eight mute switches beneath the LED I/O level meters and status LEDs (for power, Ethernet communication and external control) complete the picture.

COMPUTER CONTROL

The control program runs on Windows 98, 2000 and XP, or you can use the tablet controller that Lake provides with the system.



Contours on a two- or three-way 5.1 system. Parameters are stored in nonvolatile memory so if the Contour loses power during operation, then it returns to its exact pre-power-loss state. If a network communication problem occurs, then the sound output from Contour's processors continues without interruption.

HARDWARE RUNDOWN

The rear panel has balanced I/Os, an AC power socket (internal auto-ranging power supply) and a 3-position ground switch. At the October AES show, Lake Technology debuted a digital input version; users with digital desks or DAWs can now get into Con-

trical environment. Two RJ-45s and an RS-232 data port handle PC-to-Contour communications and can link multiple Contours.

As the PC controller does most of the work, the front panel is simple, with a power switch and Select switch that identifies the unit on a network. Four alphanumeric characters show status information and let users name and quickly identify the individual units in a system. Also on the front panel are two co-ax connectors for 10Base2 (a 10MHz Ethernet system running over thin 50-ohm baseband cable) to link units together, along with another RJ-45 jack for quick computer connections. Having front and back access

Lake recommends at least a 600MHz Pentium III (or equivalent), but a faster PC will let you feel the power and speed of the WiFi controller interface with speeds of up to 10 Mbps. While you would do well to use a touch screen tablet with WiFi to work with optimum ease and speed, it would be an expensive luxury for a studio install. The touch screen tablet is light weight, can be held in one hand while tapping out commands with a pen-style pointer and has many cool drag-and-drop-style functions. I also found that I could do everything I needed with a mouse-based computer. Sound system information is presented in col-

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or on the computer's screen display. The controls are mostly intuitive, easy to learn and easy to understand. Not only can adjustments be made to any parameter of any Contour on the network, but they can also be made to selected "groups" of processors. A speaker can be a member of more than one group. Adjustments can be made in real time, giving the responsiveness of an analog unit. After extensively testing available wireless networking solutions, Lake found that performance varied significantly among 802.11b wireless vendors, so the company provides its own wireless networking package so that everything works right out of the box. Lake will also fully support users

setting up their own wireless system.

There are many options when creating preferences, including storing, saving and recalling system configurations. Whether in a fixed sound system or studio, setup procedures need to be kept separate and safe by the installer, so two unique operating modes are provided. In the password-protected Designer mode, the installer adjusts all parameters and then limits access to system functions. In the User mode, the house engineer uses a streamlined interface where setup parameters are safely out of reach. A room could be calibrated and those controls locked out. Then, an X-Curve overlay could be cre-

ated for film mixing or a personality curve could be implemented for a specific producer/engineer, application or event. These curves can be quickly recalled as needed. There is virtually no limit to the number of setups that can be stored and recalled.

Many live sound companies use SIA Software's Smaart system to tune their sound systems. Lake has collaborated with SIA that results in a plug-in that will integrate with SmaartLive's real-time analyzer, dual-channel impulse response (delay locator) and transfer function (frequency response) measurement capabilities. Smaart can run on the same computer as the Contour software or on another PC over the network. Just plug the Smaart computer into the Contour network with an Ethernet connection and Smaart will transmit its results to the Contour Controller computer.

FILTERS AND EQ

Contour synthesizes filters in real time, so it's perfect for live performance, implementing a room setup with all of a sound system's delay, EQ, crossovers and dynamics. A personality curve can be layered over

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Contour in Concert

A Monitor Engineer's Perspective
By Peter J. Franco

I just got off the road mixing monitors for Paul Williams and Melissa Manchester. My FX rack included four Lake Contour units with the wireless pad remote PC controller. I configured each Contour Module to EQ-Only mode and inserted the Contours on eight of my groups on my console. The beauty of having wireless control in a live situation is that you can stand where the artist stands and not have to run back and forth. The Contour gives you a visual connection of what's going on with each of your mixes, and you can monitor all your mixes at once or select the one you want to work on. I zero'ed in on frequencies quickly and efficiently by simply sweeping the pen across the screen. In Manchester's vocal mix, I cut everything out below 500 Hz with the low-cut filter and got rid of a nasty 2.7kHz frequency by stacking two 0.1dB/octave filters on top of each other, giving me 30 dB of cut. Try that with a regular graph! I will never mix another act without the Lake Contour. It makes my job a lot easier and on top of that, it makes me look cool!

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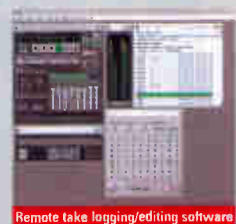


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8 channels of single wire 192kHz recording and playback - 8 channels of DSD recording and playback - Twin removable drive bays with disk mirroring - Seamless DSD punch in/out - Bidirectional PCM (any sample rate) to DSD conversion - PCM sample rate conversion up to 192kHz - AES31 file format - DSD IFF file format - Genex linear file format - High speed SCSI and FireWire interfaces - Options: Take logging / editing software - MADI card - Analog / DSD / AES3id card - DSD / AES3id card - AES3 / AES3id card

Once again, Genex sets the standard for digital audio recording. The new GX9000 and GX9048 are the first and only recorders to combine both single wire 24-bit / 192kHz PCM and DSD recording in a single unit. Data is written simultaneously to twin removable drives saving valuable post-session copy time, while recording in industry-standard AES31 and DSD IFF file formats enables instant interchange



Remote take logging/editing software

with popular workstations. Seamless DSD punch in / out (another Genex first) delivers all the post production flexibility you're used to with conventional formats and both recorders feature bidirectional sample rate conversion between PCM and DSD. So no matter how you work now – or in the future – only one manufacturer gives you the best of both worlds. Genex.



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World Radio History

that, later, additional filters can be imposed during a show to keep the system in trim. There is almost no limit to the number of EQ curves that may be generated, although the undereducated could potentially get into deep trouble with this kind of power. Lake is the first company to introduce an EQ overlay using a tabbed user interface. Each overlay has a vast number of parametric or graphic filters that contribute to the composite EQ curve.

The Contour Controller offers simultaneous parametric and graphic EQ overlays. Significant improvements have been achieved in both graphic and parametric filter design.

EQ resolution is at $\frac{1}{2}$ th octave—more sophisticated than any existing hardware-based system. Lake's "flat sum" Ideal Graphic EQs do not interact like traditional equalizers. As the name implies, adjacent bands sum flat, something that traditional $\frac{1}{2}$ -octave EQ cannot do. Lake uses raised cosine functions as opposed to traditionally implemented filters. This results in higher selectivity than traditional filters or, in other words, less bleeding into adjacent frequency bands. Examples of the advantages are shown in the figure.

Intended to supersede the traditional parametric, Lake's proprietary Mesa Filter is a significant advance in EQ technology.

Whereas other processors provide standard symmetrical boost/cut functions, the Mesa filter offers asymmetric filtering with the ability to separate the sides of a parametric section, change center frequencies and adjust slopes independently. This faster, more effective optimization tool is one that can truly match the loudspeakers' asymmetrical response. It's certainly a more elegant way to approach the X-Curve's high-frequency roll-off. There have been occasions where I could have used a Mesa-style filter and added a small dip or boost in the middle of the "Mesa" through overlaying filters. To get a desired curve, the ability to adjust slopes independently means that there's less chance of generating out-of-band boosts—which are typical of traditional parametrics—that can result in speaker distortion and overexcursion. This is also a great creative tool, giving engineers added levels of EQ sophistication.

CROSSOVERS

Contour offers an extensive selection of linear phase, traditional and nontraditional crossover filters. I liked having the vast array of traditional crossovers available while I worked on a four-way system that needed a lot of experimentation to get the crossovers right. The ability to quickly change slopes, crossover types and crossover frequencies makes Contour useful, even to speaker designers who build analog crossovers. In addition to a wide array of traditional filters, Lake introduces linear phase, brick wall crossovers with transition slopes exceeding 100 dB/octave. For the linear phase brick wall crossovers, the user can choose from four amounts of "alignment delay": 3.15 ms, 6.29 ms, 12.58 ms or 25.17 ms. By choosing a lower value for the alignment delay, the steepness of the crossover is reduced. For example, you can get 100dB per octave slopes at 1 kHz with an alignment delay of 6.29 ms.

LIMITERS AND MORE

Contour offers true RMS and soft-clamp limiting with threshold and corner adjustments on each output. By calculating the true RMS value of every sample, the system produces acoustically transparent results, even under extreme limiting conditions. The soft-clamp limiter removes the possibility of clipping by gently removing audio peaks that would otherwise drive an amplifier to distort. The Levels screen includes other adjustable parameters, such as A/D input headroom, input/output gain and input/output delay. High-resolution, fast updating meters simultaneously show true RMS and peak levels with peak hold. Users can choose to meter

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Michael Ross
Home Recording - Dec 2002

"For disciples of that elusive Recto sound, this is a serious tool that provides that tone (and a few others, as well) in a convenient recording package."

George Petersen
MIX Magazine - May 2003

"the Recto's value lies in its uncanny ability to reproduce the authentic timbres of a tube based guitar amp in a direct recording environment. If that's the sound you want, the Rectifier Recording Preamp delivers in spades."

Michael Cooper
Electronic Musician



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from several points in the signal path. The faders have fine and coarse modes and most parameters can be adjusted within $\frac{1}{100}$ dB. I would prefer a different graphic for the delay control, because it looks just like the level faders and thus differentiating the two can be confusing.

USE IT OR LOSE IT

I found Contour's capabilities deep but straightforward to use once I was familiar with them. Navigating around the controller is made easier due to the use of color-coded buttons. One Contour is considered a "frame" that has two "modules" representing inputs A and B. Modules and frames may be labeled and give the user a variety of setting information at a glance. Adjustments to the system can be made online or offline. Most of the adjustments are simply activated via a tap or drag-and-drop methods. Block diagrams ensure that you don't lose your way through the complex signal path you design. Once I got used to the idea of using many layers, system setup went quickly.

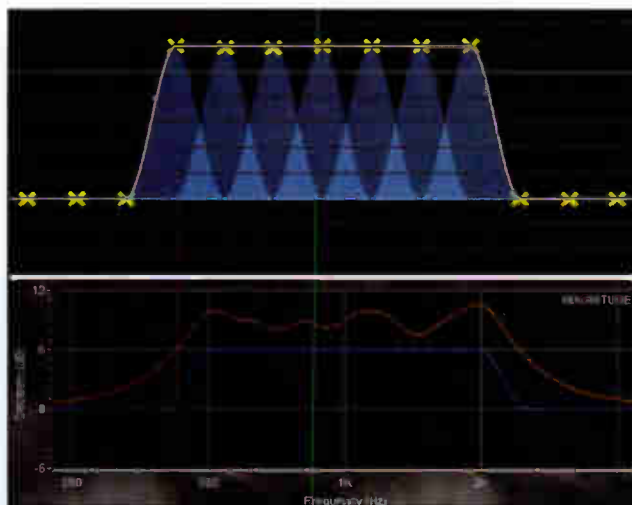


Figure: (top) adjusting flat-sum EQ. Bottom: flat sum (blue) vs. normal $\frac{1}{2}$ -octave (orange)

Accessing crossovers and EQ was fast and made simple with the extraordinary graphic interface. My one complaint is that it is too much fun to mess around with all of the parameters. It's a good thing there wasn't a client staring over my shoulder!

The Lake Contour is an excellent-sounding piece of gear and handles large and varied amounts of processing without apparent

sonic problems. Just remember that, as with any digital processor, you are adding A/D and D/A conversion to your listening chain. Good graphics help guide you through the controls, but the system is a bit weak on how to get from point A to point B. The thorough manual is well-thought-out and does a pretty good job at teaching the box's complexities. Lake now provides demo videos on the newest contour software CD-ROMs; contact Lake to get a copy. This is a very complex tool and certainly one that will add value and control to most sound systems. Be sure to give yourself some time to practice with the Contour in advance of

your installation so that you can full advantage of its power.

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Bob Hodas is a San Francisco Bay Area-based recording engineer and acoustical consultant.

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MOTU Digital Performer 4

Keeping Pace With OS and Hardware Evolution

Mark of the Unicorn's Digital Performer is based on a very robust and full-featured MIDI sequencer that has become much more sophisticated during the years, letting users record, play and manipulate MIDI data in numerous and tremendously creative ways. Digital Performer's audio component allows for recording, editing and mixing as many audio tracks as your CPU bandwidth allows. The newest upgrade, Digital Performer 4, was introduced last January.

NEW IN VERSION 4

The big news with DP 4 is Macintosh OS X compatibility. The total revamp of Apple's operating system, not to mention its hardware, required developers to drastically alter, if not completely rewrite, programs to port them over to the platform. DP 4 fully capitalizes on CoreAudio and is optimized for multiprocessor Macs. Similarly, it takes full advantage of CoreMIDI, which unifies MIDI for all applications and interfaces on your Mac. The bottom line is, OS X simply makes everything compatible and DP 4 grants you access to all of this power.

DP 4 also adds track freezing, which allows you to render any given track on a temporary basis to save CPU overhead and easily "thaw" the track to make changes as you see fit—another clever convention to help the application use the computer efficiently.

If you're like me and you've spent countless hours configuring FreeMIDI to reflect all of the subtle nuances in your MIDI rig, then you don't want to have to start all over. DP 4 takes advantage of CoreMIDI's new XML patchlist format by installing hundreds of factory default patch lists and drum note name lists. All of the patch name lists that were represented in FreeMIDI are still here, along with quite a number of new devices. Your original FreeMIDI setup is very easily remapped to CoreMIDI, as well. Interapplication MIDI is also a snap with DP 4's ability to publish an unlimited number of MIDI connections with other applications. The setup of MIDI and audio I/O between DP 4 and Reason is truly effortless now, thanks to ReWire 2.0 support. As much as I love the "virtual synth rack" of Reason, I'm not that keen on its sequencer. I simply use Reason

like a rack of physical hardware in my studio, driven by DP 4.

Digital Performer 4 features a revamped menu structure, including new Project and Studio menu headings. As a seasoned DP user, I was thrown a bit at first, but ultimately became very comfortable. The Project window contains commands that pertain to the way the project is handled, including the ability to add tracks to the project and arrange DP's traditional Clippings and Consoles windows. New to Version 3, but worth mentioning here, are that the establishment and modification of track groups come under a major menu item. In the Studio menu, I found most of the stuff I used to find in the Basics menu. This menu contains commands for opening windows, specifically, the ones that pertain to the layout of DP's "virtual studio," including audio and MIDI monitoring, the eminently important Audio Bundles window, and MIDI recording-oriented items like Click and MIDI Patch Thru. The division of commands between these two new menus does indeed make more sense. DP's QuickScribe notation system has some very nice enhancements and creates very readable notation.

Last July, MOTU announced an online update from DP 4 to 4.1. This revision added some pretty stupendous features. First and foremost is DAE support, enabling DP 4.1 to serve as a front end for Pro Tools systems, including Mix, HD and HD Accel systems at up to 192kHz sample rate. This is quite significant, because it enables the marriage of DP 4's high-powered MIDI with the high-powered audio of Pro Tools.

The second major feature in 4.1 is Audio Units support for both DSP and virtual instruments. Love it or hate it, AU is the wave of the future, and you will use it. It's worthwhile because AU is much more efficient and enables cross-application use of plug-ins. For those of you who, like me, have come to rely heavily on certain "vintage" plug-ins, a VST-to-Audio-Unit-Adapter plug-in from FXpansion allows



Digital Performer 4 takes full advantage of Apple's OS X operating system.

you to load carbonized plug-ins in DP 4. A related new feature of 4.1 is virtual instrument tracks. You can add an instrument track from the Add Tracks menu, enabling the usage of AU and MAS virtual instruments. This supersedes the traditional method of "inserting" the instrument in an audio track.

Among more pedestrian (but very useful) features in 4.1 are Document Template and Recent Document. The template facilitates the setup and storage of frequently used audio/MIDI configurations. When creating a new project, it's nice to be able to immediately and easily have the project configured the way I like to work. The recent document feature presents the 10 most recent projects in the File menu. Shift to Marker and Snap to Marker are two other handy new features. Any selected material can be "shifted" to any user-defined marker. Likewise, dragged objects can be made to "snap" to the nearest marker.

I love 4.1's input/output display feature in the Mixing Board window because I can choose to have any mixer channel's I/O displayed below the track name. I have no idea why anyone would ever turn this off. As an analogy, on an analog console, I can look to see which buttons are depressed in the input section, output matrix or busing. Making this I/O visible is a natural and obvious enhancement to a virtual interface. One final new feature is enhanced OMF file import and export. Compatibility with Pro Tools is important and MOTU takes it seriously.

Version 4.11 adds some notable features.



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ALWAYS A SOUND DECISION

First, Panther (OS X 10.3) compatibility has been added. Also, a new utility simplifies configuration and the use of patch names for expansion cards in hardware synths. Pro Tools hardware users can now see TDM plug-in presets in categorized submenus. Hardware drivers have been upgraded with some significant enhancements: Users can rename inputs and outputs at the machine level so that no matter which software front end is used, the I/O names will appear as named by the user. Additionally, this update enables the usage of any pair of inputs or outputs for Macintosh system sound, including iTunes, iMovie or QuickTime. Moreover, multiple MOTU

FireWire interfaces can now be resolved with each other in terms of synchronization without external word clock connections. This update also allows one or more MOTU audio FireWire interfaces to resolve to third-party CoreAudio-compatible hardware.

IN SESSION WITH DP

I chose a handful of different projects to test-drive DP 4, including a vocal overdubbing session, a significantly large stereo music mix and a moderately large 5.1 mix. I also spent quite a bit of time just tinkering with the application's various features, particularly with Audio Units synthesizers and plug-

ins. Part of this field test happened on a dual-processor 1GHz G4 with 1 GB of RAM. My interface is an original MOTU 828. Later in the review process, I used a dual 2GHz G5 (see sidebar). All of MOTU's drivers are current up through Panther (OS 10.3).

My vocal session comprised an ORTF recording of three vocalists, with doubling and tripling of some parts. The DP 4 interface is intuitive, which made the session simple to set up. I had a stereo bounce of the music tracks, and I initially set up the tracks for the vocals with a reverb send. I used MOTU's eVerb reverb plug-in, which sounded quite nice. At one point, it became apparent that I would need more tracks, and it was simple to add them to the session, configure the I/O and set up auxiliaries. One particularly hip capability here was that I was actually able to pull off some comp editing during the session.

I wanted to push the envelope of the system with a large stereo mix and so I pulled out some tracks my friend gave me to mix. There were a total of 35 mono tracks and one stereo track (a vocal comp). I had compression and 4-band EQ on most tracks, MOTU's Pre-Amp-1 distortion plug-in on four guitar tracks and two reverbs. This required a bit more than half of my CPU's overhead. I've never been this spoiled with native processing horsepower.

My surround mix had 28 mono tracks, quite a bit of dynamics and EQ, and three reverbs. Mixing this in 5.1 with DP 3 (and, admittedly, on a single-processor 400MHz G4) was very taxing. In DP 4.11 on the

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The G5 Test

I test-drove DP 4 on a dual 2.0GHz G5, and wow! MOTU has always been at the bleeding edge to optimize its products for new computers and the G5 is no exception. I developed a sequence using MOTU's MachFive sampler. Using two iterations, I had nine polyphonic instruments up and running, with polyphony occasionally spilling over 100 notes simultaneously. There was also a stereo drum loop, and the mix included six reverbs, four resonant filters, three phasers, two delays, two choruses, one EQ and MOTU's powerful MasterWorks multi-band compression. My performance meter showed less than 50-percent CPU headroom in use. More importantly, operation was glass-smooth, with not even so much as a hiccup. It's safe to say that native DAWs have caught up with the capabilities of the hardware-oriented DAWs.

—John McJunkin

dual 1GHz G4, I still had overhead to spare. DP's surround panning schemes still remain among its most appealing features.

I toyed with a ReWire-connected session using Reason 2.5 and had no difficulties driving numerous synthesizers, samplers and drum machines with DP's sequencer. Digital Performer 4's mixing capabilities far surpass those of Reason, and I love working this way. I also spent time with MOTU's powerful MachFive sampler, which really goes hand-in-hand with DP. MachFive is comprehensively universal, namely by virtue of its compatibility with Mac and PC and all major Mac plug-in formats, including Audio Units, VST, RTAS, HTDM and, of course, MAS. MachFive imports all major audio file, sample and soundbank types, including those from Akai, Kurzweil, Roland, E-mu and CreamWare, as well as Giga, SampleCell, EXS24, .WAV, ACID, .AIFF, SDII, REX and others. MachFive also includes UVI-Xtract, a utility that enables extraction of patches and samples from virtually every major format, even if the CD-ROM is not normally mountable on the Mac desktop. Another major feature that stands out is MachFive's ability to handle 5.1 samples. I was able to easily make things happen quickly with MachFive. I also downloaded the Crystal freeware AU synth from Green Oak, and it integrated successfully into DP.

THE SKINNY

Digital Performer 4.11 (\$795 new; \$395 crossgrade; \$149 upgrade) is a powerful, mature application that very efficiently capitalizes on the huge forward strides of the latest Apple hardware and operating system. Its audio tracking, editing and mixing conventions are on par with or exceed those of any other application available today, particularly in the surround domain. If the audio capabilities were separated from the MIDI (which, in fact, they are in MOTU's Audio Desk) the result is an application that rivals any other audio-only tracking/editing/mixing suite available. Likewise, the MIDI component of DP 4 alone is reason enough to laud this product. Due to its lineage, DP 4 stands at the top of the MIDI sequencing world. It's an excellent creative tool for composers who need a comprehensive MIDI sequencer and high-quality audio capabilities wrapped together—a quantum leap in the evolution of this great audio production tool.

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John McJunkin is the principal of Avalon Audio Services (Phoenix).

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Oram GMS Al Schmitt Pro-Channel

Compressor, EQ and Two Stellar Preamps in One Box

When British pro audio manufacturer Oram set out to build the GMS (Grand Master Series) Al Schmitt Pro-Channel compressor/EQ/preamps, mass-market appeal was not at the top of its list of design criteria. Renowned analog designer John Oram was intent on following Grammy™-winner engineer Al Schmitt's exact specs for the I/O and controls for the mic/line preamps, compressor and 6-band quasi-parametric equalizer comprising the Pro-Channel. But as great minds often think alike, critical engineers should find a lot to savor in this high-end, solid-state channel tailored for recording and mixing.

LAY OF THE LAND

The six-rackspace-high Pro-Channel is currently available only in a single-channel configuration, although Oram promises a stereo version will soon follow. The unit's sculpted front panel is gorgeous, and the layout is thoughtful. The preamp and compressor sections are situated to the left and right, respectively, of the unit's VU meter, with the equalizer's controls stretching across the width of the front panel below.

The Pro-Channel's rear panel features three alternate mic/line inputs on XLRs, a single XLR audio output and a multipin connector to link to the unit's external power supply. You'll also find control-voltage I/O jacks here; these TRS connectors provide sidechain access to the compressor section and can also be used to link two (or more using parallel wiring) Pro-Channel compressors together. (The tip connection carries the analog signal for sidechain applications, and the ring connection carries the DC control voltage for linking.) A two-position switch alternately calibrates the front panel VU meter's 0VU reading to +4 or +14 dBu to better accommodate the system's +28dBu headroom. (The +14dBu setting only affects the meter's post-EQ reading and not other meter source points, which I'll discuss later.)

The rackmount unit connects to its beefy external power supply unit using the included 9-foot multipin cable. The power supply unit provides two multipin connectors for powering up to two Pro-Channels, although the supply delivers enough juice



to drive at least five units. The power supply unit also features a detachable AC cord, a power switch and status LEDs for the power rails.

THE PREAMP SECTION

The Pro-Channel allows you to toggle between two preamps (you can't use both simultaneously): one, transformerless and the other, transformer-balanced. Either of these preamps can receive a single mic or line input from any one of the three rear panel XLR connectors. You can connect three different mics, for example, to the XLRs and then choose each mic input in turn via a three-position rotary switch on the front panel. This would allow quick and easy A/B/C mic comparisons or switching between alternate vocal mics on verses and choruses. Unfortunately, the XLR inputs are nonlatching, inviting a cable to be inadvertently yanked out with phantom power applied. (Clients occasionally trip over cables in the control room!)

A 23-position, stepped gain control provides up to 70 dB of gain for either preamp. Minimum gain for the transformerless pre is unity (0 dB) and 20 dB for the transformer-balanced pre. (The lowest five settings on the gain knob, which step you through the first 20 dB of gain, have no effect on the transformer-balanced preamp.) Three red buttons independently activate phantom power for their respective XLR inputs, and a temporary Mute button kills audio output while switching phantom power on/off or switching among mic inputs or preamps. Another button inverts the phase of any XLR-input signal.

The Pro-Channel doesn't offer a DI input for instruments, but I don't see this as a neg-

ative. In my experience, such add-ons rarely, if ever, sound quite as good as dedicated high-end DI boxes due to compromises in impedance matching that result from users trying to adapt a DI input to circuitry that is optimized for mic input.

COMPRESSOR AND EQ SECTIONS

The Pro-Channel's optical compressor follows the preamp section and can be switched to be either pre- or post-EQ or completely bypassed. A continuously variable threshold control joins 11-step attack, release and ratio controls. Attack times range from 1 to 50 ms, and release times from 0.05 to 4 seconds, with smaller increments of change occurring at the bottom of each range, as they should. Likewise, the ratio control's steps cover a 1.4:1 to 30:1 range with smaller jumps in value at the bottom of its range, allowing for subtle tweaks. A separate 23-position control provides 0 to 22 dB of makeup gain, in 1dB increments.

The Pro-Channel's equalizer is a 6-band, quasi-parametric affair, with each band sporting its own frequency, boost/cut and bypass controls (the latter with status LEDs). A global bypass switch is also provided for the entire EQ section. Sub (bass-frequency), Lo-Mid, Hi-Mid and Air (high-frequency) bell-response bands each offer a choice of 23 center frequencies and up to 12 dB of boost/cut by way of 23-position stepped controls. A black button for each of these bands toggles the bell-curve response between 1/3-octave and 1-octave bandwidths. Separate low- and high-shelving filters are also provided, each offering a choice of 11 corner frequencies and the same (23-position, ±12dB) boost/cut

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controls as the bell-curve filters.

The equalizer's four bell-curve bands each provide a plethora of frequency choices but only minimal overlap between adjacent bands. Center frequencies range from 5 to 160 Hz for the Sub band, from 150 to 2k Hz for the Lo-Mid, from 1 to 12 kHz for the Hi-Mid, and from 10 to 32 kHz for the Air band. The low-shelving filter offers corner frequencies from 40 to 300 Hz, and the high-shelving filter from 6 to 18 kHz. I wish the shelving filters offered slightly greater extremes in their frequency choices, but they should serve most applications exceedingly well.

Each of the six equalizer bands features a blue LED that glows brighter as in-band energy increases, or not at all if the energy falls short of the LED's fixed threshold. Together, these LEDs serve as a simple spectrum analyzer that provides a visual aid in making EQ decisions. The LEDs light even when their associated bands and the entire equalizer section are taken out of circuit. Apparently, the LEDs are also influenced by each band's filter controls, as they vary in brightness as you change gain and frequency settings. Nice!

The only major omission for the equalizer section is a master output level control. Lacking this feature, A/B (i.e., EQ In/Out) comparisons are difficult to make and final gain-stage adjustments (when the compressor is placed pre-EQ) are problematic. I also occasionally missed having lowpass and high-pass filters to work with in the EQ section while recording vocals and bass guitar.

The Pro-Channel's VU meter can be alternately switched to show the audio signal's level at the preamp output, compressor input, compressor output or main (post-EQ) output. Alternatively, the meter can be switched to show the compressor's gain reduction. An In-set Trim control, located just below the meter, provides ± 2 dB of meter adjustment to recalibrate the gain-reduction readout to 0 dB when no signal is present.

IN USE

The Pro-Channel's knurled control knobs have a great feel and their detents oblige repeatable settings, but their hash marks are difficult to see when viewed at an angle or in low light. Tiling for incremental frequency and gain settings (the latter for both the EQ and mic pre) are spaced close together, making it difficult to ascertain what position the associated control knobs are set to. I often found myself counting the number of detent clicks when setting these controls to repeat former settings. That said, the controls' wide range and plentiful adjustments are precisely what make them so useful for exacting tracking and mixing applications.

In an A/B test recording acoustic guitar

with a spaced pair of DPA 4011 mics and Apogee Rosetta A/Ds, the Pro-Channel's transformerless preamp sounded virtually identical to my Millennia HV-3D/8. The sound was open and detailed, and the track exhibited an ultrasmooth spectral balance and outstanding depth. In comparison, the Pro-Channel's transformer-balanced preamp brought upper mids and low highs more forward. I loved the added presence and subtle saturation that the Pro-Channel's transformer-balanced preamp lent to vocals and drums. For recording delicate acoustic instruments, I preferred using the transformerless pre.

The Pro-Channel's optical compressor sounded warm, completely transparent and fluid on vocals and bass guitar. With moderate attack and release times employed, it even handled steel- and nylon-string guitars without pumping. Considering its optical design, I was also surprised by how much the Pro-Channel's compressor could make a snare drum track pop. Another plus: The unit's VU meter shows would-be gain reduction even with the compressor bypassed, allowing you to dial in reasonable settings in front of clients *before* activating the compressor.

The Pro-Channel's EQ allows only broad tonal shaping and not the surgical notching that a true parametric design affords. That said, I always found it to be very responsive, musical and sweet-sounding.

CONCLUSIONS

Besides the omission of a master output-level control for the EQ section, my main complaint about the Pro-Channel's feature set is that there are no direct inputs or outputs for the compressor and equalizer. As it is, if you want to use an alternative preamp with the Pro-Channel's compressor or EQ, then you'll have to suffer the additional amplifier at the Pro-Channel's input. At a list price of \$8,525 (\$16,430 for the stereo unit), I'd like to see more flexibility. Of far less concern is the cursory nature of the owner's manual, which is vague on some points of operation.

On the plus side, the Pro-Channel sounds truly excellent. And service-oriented Oram goes the extra mile for its customers, keeping its office open throughout both European and U.S. business hours. The Pro-Channel's price tag puts it out of reach of most small studios, but the unit's impressive sound and superior build quality make it very worthy of consideration by those who can afford it.

Oram, 011-44-1474-815300, www.oram.co.uk. ■

Mix contributing editor Michael Cooper is the owner of Michael Cooper Recording, located in beautiful Sisters, Ore.

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Vaughn Shaw, Audio Producer,
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Rod Mitchell, Front of House,
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"I have mixed dozens of bands at recent bluesgrass festivals with just one mic—the SCX-25. The band's response is always the same—they can't believe the tremendous sound that comes out of a microphone with such a small footprint."

Paul Knight,
Knight Sound Systems

"I honestly think the SCX-25 is one of the best mics available, and destined to become a classic."

Dennis Leonard, Supervising
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"I put a pair of SCX-25 mics in Diana's piano in July 2001 and they haven't come out since. These are the best piano mics I have ever heard—Brilliant!"

Tony Romano,
Front of House, Diana Krall

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Lou Bradley, Engineer/Producer,
Merle Haggard

"I essentially just set the mics up, bring up the fader... and just sit back and enjoy the mix!"

Pete Horne, Horne Audio

"It behaves like a mic twice its size, a condenser with solid highs but no excessive top, and with a robust midrange and upper bass range that belie its visual appearance."

Marty Peters,
RECORDING MAGAZINE

"Having played the roles of artist, engineer, and producer, there is a fine balance between the technical and the artistic side of music. I find that the SCX-25 has really helped to bridge that gap as it faithfully reproduces vocals and acoustic guitar regardless of the style or content of the music."

Phil Keaggy, legendary guitarist

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ANDREW GILCHRIST, ENGINEER, ANI DiFRANCO

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Dennis Leonard, Supervising Sound Editor, Skywalker Sound

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Universal Audio Model 2192

Interface with Conversion, Routing and More

Universal Audio's Model 2192 Master Digital Audio Interface combines feature-rich design with impeccable audio quality. Priced at \$2,795, the 2192 offers two channels of AD/DA conversion, flexible routing and a word clock generator/distributor. Universal Audio's traditional commitment to audiophile analog sound is reflected in the analog signal path, which features DC-coupled, fully dual-differential, matched-FET and all-discrete Class-A circuitry. To avoid phase distortion and image instability, no capacitors or DC servos are used in the signal path.

The 2192's A/D conversion is always 24-bit with support for 44.1/48/88.2/96/176.4/192kHz sampling rates. Digital audio appears at all outputs, with 176.4/192kHz audio carried on AES/EBU single- or dual-wire (or ADAT optical with S-MUX interleaving). S/PDIF is fully implemented, including 24-bit, 192 kHz. You can route signal straight through the 2192 to monitor the signal at the inputs.

overclock (2x and 4x) synchronization are supported for converting at submultiples and multiples of the sample rate. Super clock is not supported.

The Sample Rate knob selects from 44.1/48/88.2/96/176.4/192 kHz. Locked to external clock, the 2192 supports a $\pm 12.5\%$ varispeed lock at all sample rates. The unit's sample rate is determined by the clock and Sample Rate knob selections, except when the clock source is set to AES-S/PDIF. In this case, the sample rate is automatically detected and the sample rate knob has no effect. The 2192 does not support sample rate conversion and won't sync unrelated clock rates; for example, a 44.1kHz digital clock with 48kHz digital audio.

An Analog Output/DAC Source Select knob specifies the digital source (AES-S/PDIF, ADAT or ADC) for the D/A converters and the analog outs. The AES-S/PDIF setting is further controlled by the AES-S/PDIF switch to the right of the knob. When ADAT In is selected, the ADAT opti-

The knob is generally left at ADC except during transcoding, and any source that is selected is automatically routed to all digital outputs simultaneously.

I/O ROUTING

The back panel AC input leads to an internal auto-sensing, filtered, multistage power supply that supports 100 to 240 VAC and 50 to 60Hz power. There are four transformer-coupled balanced XLRs for digital I/Os. The left pair, AES "B," handles one channel of I/O when the 2192 is in dual-wire mode, and it replicates AES "A" output in single-wire mode. (AES input B is used only in dual-wire mode.) AES A handles up to 192kHz stereo I/O or one channel of I/O when the unit is in dual-wire mode. Input bits (SCMS, pre-emphasis, pro/consumer, etc.) are ignored. SCMS and pre-emphasis bits are not set on output, but pro/consumer is set to professional.

There are eight balanced connectors, including analog and AES/EBU digital I/O, and



A RANGE OF CONVERSION CHOICES

Digital audio from any of the unit's inputs (AES/EBU, S/PDIF or ADAT S-MUX) can be converted to analog. Clock source can be internal from a digital audio source or from a separate external clock. A front panel lamp indicates lock status. An internal clock conditioner keeps external source jitter from affecting the internal clock. There are two word clock inputs and four word clock outputs. The unit can also lock to AES/EBU, S/PDIF or ADAT S-MUX, so the 2192 can serve as a handy clock distributor for the small studio or mastering setup. It also supports subclock and overclock, so, for example, you can use a 48k clock while the unit is converting at 192 kHz.

A Clock knob specifies the master clock source: Internal, Word 1, Word 2, AES-S/PDIF and ADAT. Subclock ($\frac{1}{2}x$ or $\frac{1}{4}x$) and

cal input is routed to the D/A converters and to the analog outputs; S-MUX mode is determined by the sample rate knob. When ADC is selected, the digitally converted signal at the analog inputs is routed to the D/A converters and analog outputs for "true confidence" monitoring.

The Single/Dual switch specifies whether AES/EBU single- or dual-wire mode is used. For our needs, this switch is one of the 2192's most attractive features. We often have to route audio to Pro Tools, which uses dual-wire mode for 176.4 and 192 kHz. This switch does not affect S/PDIF input, but in dual-wire mode, the S/PDIF output will transmit the same signal as the AES/EBU "A" output.

The Digital Outputs Source Select knob specifies the signal that is routed to the digital outputs, with the same selections as the Analog Outputs DAC Source Select knob.

they can individually isolate Pin 1 from ground via an internal jumper block. The 2192 adheres to the universal Pin 2 Hot standard.

Dual-stacked RCA connectors handle S/PDIF with unbalanced, transformer-driven output and AC-coupled input. Input/output bitstreams are set the same as AES/EBU. When the clock knob is set to AES-S/PDIF and the digital outputs knob is *not* set to AES-S/PDIF, the S/PDIF signal is used for clocking only.

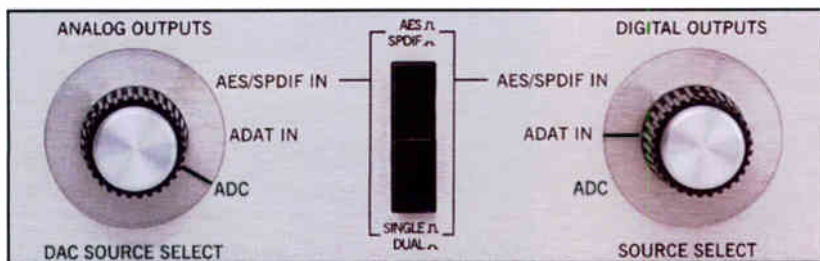
Six BNC connectors handle word clock. The first four are 75-ohm, 5-volt CMOS drive outputs; the second two are AC-coupled, 75-ohm inputs. Clock delay from input to output is 50 nanoseconds maximum and is negative-edge-aligned when synchronized at a multiple or submultiple rate.

ADAT optical I/O comprises two Toslink connectors with dual in-line reinforced optical TX/RX. Channel usage varies from two

for 44.1/48 kHz to all eight for 176.4/192 kHz. Like S/PDIF, the ADAT input can be used for clock only.

IN THE STUDIO WITH THE 2192

Connected to any piece of my digital gear, I was pleased when the 2192 accepted the signal and could route it elsewhere. The excellent manual contains "recipes" for routing, as well as diagrams for mastering and DAW setups, including Pro Tools|HD. I could use it for dual-wire 192kHz projects with my Pro Tools Accel system and easily switch it over to ADAT S-MUX or S/PDIF



Detail of the 2192's source selection controls

from my RME Hammerfall 9652 Nuendo system. I ran into S/PDIF failure with another converter when routing it from the RME, so I was glad to see that the 2192 locked immediately and performed flawlessly. As you can transfer audio between AES/EBU, S/PDIF and ADAT-SMUX in real time, the 2192 is great for transcoding.

The 2192 is hot—literally. In rackmount installs, leave space above and below the unit. When stacked in open air and separated by 1/2-inch spacers, the top was much cooler than when it simply rested on a flat surface.

Ten-segment LEDs monitor stereo input and output. They are tied to the converters, not the analog trims. The red clip segments are driven by digital circuitry; the other nine segments are driven by analog metering circuitry and calibrated to reflect digital signal. The unit is factory calibrated at 0 dBFS = +22 dBu (and -18 dBFS = +4 dBu), but this is adjustable using rear panel analog line trims next to each I/O XLR. I've long been an advocate of adjustable trims for calibration. It's a must for critical mastering situations and for times when engineers need to have converters set at maximum sensitivity to capture low-level detail in the analog source. Still, I wish the trims were located on the front. For those who calibrate early and often (rather than "set and forget"), it would make life easier.

I'll hate to send this box back to Universal Audio. We had some great sessions with it. For recording a guitar directly into Pro Tools, the 2192 mated wonderfully with my Millennia Origin STT-1. Jazz chords were rich and creamy, while chicken pickin' chits

were snappy without being overbearing. All sample rates sounded great, but I found that the more I use 192 kHz, the more that "something extra I can't describe" hooks me into using loads and loads of disk space.

The *crème de la crème* example of the accuracy and beauty of the 2192's conversion capabilities was when I used an AKG C426B dual-capsule condenser mic in X-Y mode with figure-8s. I ran this through John Hardy M-1 preamps. JamSync, which I co-own, has a room upstairs for recording guitars and drums. It's moderately reflective with plaster walls and various movable

acoustic "room shapers." I tracked using my old Fender Princeton and favorite hot-rodded Strat, experimenting with amp positions, as well as checking the system with vocals. I also recorded some drum tracks with the mic in various positions.

As I listened back, several things caught my ear: the clarity of the instruments, the depth and breadth of space, and the richness of detail. At 192 kHz, I was amazed at the results. You could practically hear the ridges of the cymbal as the stick was slowly scraped along it to produce a shimmer of sound—gorgeous. It was one of those moments that reminded me of the reason I became an audio engineer: for the sheer joy of being able to hear the stark beauty of sound.

Another telling moment came when my partner, Joel, walked in the room and was shocked to find out that I wasn't playing, but listening back.

Universal Audio enters the converter market with a clear-cut winner, the Model 2192 Master Digital Audio Interface. The 2192 provides routing flexibility with exquisite sound. Needless to say, I'd be very happy if Universal Audio would bring out an 8-channel version of the 2192. Until then, we'll have to drive four of the units via word clock for surround sound, a small sacrifice to make for achieving such excellent results.

Universal Audio, 831/466-3737, www.uaudio.com. ■

K. K. Proffitt is the chief engineer at JamSync, a Nashville-based studio specializing in surround sound production.



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Event Electronics ASP8 Studio Precision Monitors

Flagship Powered Direct-Fields Feature Complete Redesign

Event Electronics made a big splash years ago when it introduced the 20/20 Series of powered, direct-field monitors, which brought the price of bi-amplified, powered monitor technology to a level practically everybody could afford. During the years, Event launched several permutations of the original 20/20 monitors, all based on a similar design and technology. But while the 20/20 Series' price-to-performance ratio couldn't be beat, even Event could admit that there was room for sonic improvement.

Enter Event's new Studio Precision monitor series (\$1,499/pair), featuring a completely new cabinet, transducer and amplification system design. The series comprises both active and passive models: the ASP8 and PSP8 8-inch two-way and the ASP6 and PSP6 6.5-inch two-way, respectively. For this field test, we ran a pair of ASP8 monitors through their paces.

ANATOMY OF A SPEAKER

The attractive Precision monitors' face features a mirrored obsidian black surface and sides finished in a black gloss. The cabinet is internally insulated and constructed of ¾-inch vinyl-laminate MDF. The ASP8 weighs in at a reasonable 32.5 pounds. The front-mounted green LED is part of a feature introduced with the 20/20bas: It doubles as both a power indicator and an "approaching clip" indicator, which blinks when signal comes within 3 dB of clipping. The blinking is a bit odd, especially because most clip indicators are multi-colored LEDs that flash red when a clip is encountered. However, the blinking does accomplish its purpose: It gets your attention.

Input connections are XLR and ¼-inch balanced. Event opted not to employ a combo jack; instead, the speakers feature a straight-wire pass-through circuit. This setup lets you pass a signal coming in one jack and back out the other jack for patching to a variety of other inputs, such as a head-phone distribution system or second monitors in another room. A variable Input Sensitivity control is located on the rear panel, giving ample control over input gain structure from -20 dB to max (defined as full output, as produced by a 1.1-volt input signal). There's no denying this control's usefulness, but setting it precisely is tricky be-

cause there is only one detent, at -5 dB. Power is supplied via a standard IEC Type II cable.

Both transducers are shielded, and the high-frequency driver is a soft-dome radiator with a ferrofluid-cooled voice coil. The low-frequency driver is a mineral-filled polypropylene cone featuring a neodymium magnet, high-temperature voice coil and damped rubber surround. Dual "low air restriction" ports are located on the face, allowing you to place the speakers against a wall or in an enclosure without affecting bass output. Frequency response for the ASP8 is an impressive 35 to 20k Hz, ± 3 dB, referenced at 500 Hz.

Both the ASP8 and the ASP6 pack a whopping 280 watts of power per speaker:

That's 200 watts to the low-frequency driver and 80 watts for the high-frequency driver. The ASP8 and ASP6 both use 2.6kHz, fourth-order asymmetrical crossovers. (Passive models use a 2.5kHz second-order crossover.) Best of all, there are several controls on the rear panel that allow you to tailor the monitor's output to match your listening environment. HF and LF Trim knobs provide ± 3 dB of control. However, these controls were not detented. (Event says these, like the Input Sensitivity controls, are deliberately not indented so the user can make fine adjustments.) A High-Pass 80Hz Roll-off control, calibrated to the industry-standard Dolby spec, is available via a push-button, the perfect complement to a system with subs and/or bass management systems.

SET UP AND TESTING

The ASP8s sat on 12-inch, freestanding speaker stands, which, in turn, sat atop a Nigel B workstation. They were placed upright in the traditional stereo speaker position, where the listener makes up one corner of an equilateral triangle. Each speaker was on a plane level with the listener's head



and approximately 10 inches from the wall. The studio is 30x30 feet, with a working ceiling height of 10 feet. A dummy ceiling hangs down two feet to hide wiring and air-conditioning ducts. A combination of Sonex acoustic foam (egg carton and multiband diffuser styles) and ½-inch acoustic dampening tiles are placed strategically about the room to knock out reflections and standing waves. On a scale of one to 10, where 10 is a totally "dead" environment, my room is a five. Digidesign's 888/24 interface provided the main stereo outputs, which connects to the ASP8 inputs. All connections were balanced, XLR to ¼-inch. Input sensitivity on both monitors was set at 75 percent.

I begin every monitor field test by checking out commercially available CD releases (Madonna, Sting, Dave Matthews, etc.) to get a feel for the speakers' general tone. I was immediately impressed by how even the ASP8s sounded: not too flat, not too hyped up, but just right. Next, I ran a series of tones through the system at a variety of levels to hear if the frequency response specs are accurately reflected in a real-world listening environment. For the low end, I started with

a 20Hz tone and worked my way up to 100 Hz. Response pops in around 35 Hz, as the specs report. Cranking out 40 Hz, the ports output an amazingly tame column of air. I've heard some speakers that sound like an acrylic jacket held out of a car window at 60 mph in this frequency range, but that was not the case here. Any noise made by air coming through the ports smoothly tapers to a whisper by 60 to 80 Hz. The midrange sounded smooth, with no particularly noticeable bumps. The high mids, at around 11 kHz, are particularly clean-sounding without being harsh or brittle. I was especially amazed (as were all of the dogs in the neighborhood) by the clarity of the extreme high end. Even at 20 kHz, the ASP8s pumped out crystal-clear sound.

Material that I know well, both multitrack and final stereo masters, all sounded good, with almost every frequency sitting in a familiar spot. The final master of a track that I had assiduously mixed on a Pro Tools|24 MIX system to sound warm and round—it was originally recorded on "blackface" ADAT machines—sounded true to the original mix, which was done over Hafler TRM8 monitors. Working exclusively with the ASP8 monitors, I completed a mix for a blues artist on 24-track Pro Tools|24 MIX, recorded live at 48 kHz, 20 bits. The unmastered mixes translated well to different systems in the outside world, with no unexpected frequency bumps or dips. The monitors have a pretty wide sweet spot, making them easy to work between. The high end is accurate without causing ear fatigue too quickly. Comparing the sound of the ASP8 monitors to competing models, I'd say that they are a nice cross between the high- to mid-frequency response of the Mackie HR824, but with a low-end response and a flatter overall tone that resembles the JBL LSR28P.

The Studio Precision monitors are excellent near-field monitors, with plenty of quality power to drive their speakers and then some. They have an admirable frequency response, and the High-Pass 80Hz Roll-off feature makes them compatible with just about any sub system. It's obvious that these monitors offer a great value in a professional speaker. Whether you're in the market for new monitors or not, the Studio Precision speakers are worth a listen, and maybe even a trip with you back to the studio.

Event Electronics, 805/566-7777, www.event1.com.

Visit Erik Hawkins' indie label at www.muzicali.com to hear music made with today's hottest studio gizmos and check out his virtual studio recording book, *Studio-in-a-Box* (Artist Pro/Hal Leonard).

SIMPLY THE BEST!



Simon Systems four-channel RDB-400 Integrated Direct Box is simply the best direct box you can buy. This AC powered unit boasts a totally active (transformerless) audio path design with no insertion loss. With features like variable line level output, variable attenuation trim, unbelievable headroom, speaker-level input pad, active unbalanced/balanced outputs, front/rear inputs and output connectors, and much more, it's easy to see why so many professionals insist on it in the studio as well as on the road.



The portable single channel version DB-1A Active Direct Box also features line-level output with no insertion loss. A three-way independent power scheme facilitates rechargeable battery capability and automatic system power check (optional PS-1 Power Supply is recommended).



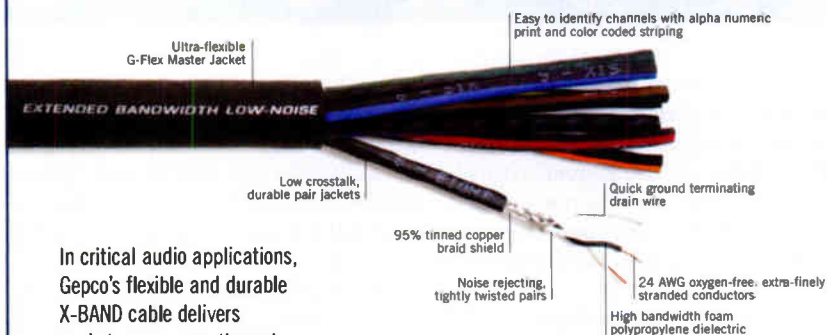
For the ultimate in headphone distribution systems there is the CB-4 Headphone Cue Box. The CB-4 features four headphone outputs independently controlled by conductive plastic stereo power controls. The XLR input/output connectors allow numerous boxes and headphones to be connected to the same amplifier with headroom, clarity, and flexibility that cannot be achieved with active headphone cue amplifiers. A three-position switch selects left mono, right mono, or stereo mix, allowing for additional cue mixes. Whenever you think signal processing, think like the pros; Simon Systems - Simply the Best!



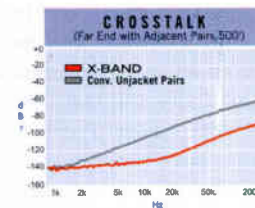
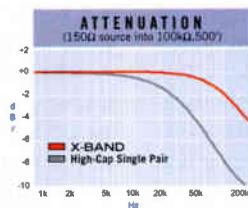
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Geoffrey Daking MicPreEQ

Vintage Sound With High-End Specs

In the early 1990s, when Geoffrey Daking heard that many engineers were growing increasingly dissatisfied with newer audio gear, he decided to find out why. Most new equipment, he deduced, missed some of the basic ingredients that gave "vintage" gear its character, and with this in mind, Daking went to work on a line of products aimed at the high-end market. The theme behind his brainchildren became "Good design will not be overruled by bookkeeping," and in the years since, there's been no looking back. I reviewed the newest member of the product family, the MicPreEQ.

INSIDE AND OUT

The MicPreEQ packs a lot of good, clean signal path into a single-rackspace unit. Inside, the box is all-discrete and Class-A, utilizing top-quality transformers, precision capacitors and low-distortion inductors. All switches and pots are PC board-mounted and have a tight, solid feel; Daking uses hefty anodized, engraved aluminum knobs of his

designed in 5dB steps. I much prefer this layout rather than having the attenuator to the far right. Mic gain is from -15 to -60 dB, while line gain is from +1 to -35 dB. The EQ section has four adjustable bands, each providing ± 15 dB of boost/cut. High-shelving EQ is notched at 8k, 10k, 12k, 15k and 20k with a switchable lowpass filter fixed at 20k (6 dB per octave). The choices for the high-mid section are 1.5k, 3k, 5k, 7k and 9k, while the low-mids can be set to 125, 250, 500, 1k and 2k Hz. At the very bottom, the lows can be set to 30, 50, 80, 100 or 150 Hz with a switchable highpass filter set at 25 Hz and a -12dB/octave slope. Each EQ band can be individually bypassed, or the whole section can be bypassed using the lighted switch to the unit's far right. Above that, a lighted Mute switch quiets everything.

THE PROOF IS IN THE TEST

I had two units for my test and used them extensively during a recording project. I used the preamp by itself with a variety of mics and it was remarkable. The MicPreEQ

adding bits and touches, which in my book is a good thing. Finally, I used the box as a back-end analog sweetener for my mixes. I found myself adding just a touch of top and bottom for the last audio glance before I burned my mixes to an Alesis MasterLink. This application sold me on the idea that Dakings should always travel in pairs. Although it's not a true mastering EQ, it's a great way to give your mixes a final finish.

THE FINISH LINE

It's amazing that a product of this quality can come in at \$1,995, and although Daking has found a new fan in me, I do have a few beefs about the MicPreEQ. There is no power "On" light on the unit. When troubleshooting, I had to reach over to pop on the lighted mute or bypass switch to eliminate the possibility that the unit wasn't powered. It's a minor issue, but a confidence LED designating power would make things easier for the user. The other item I missed was a direct instrument input on the front of



own design. The board uses through-hole construction rather than surface-mount, and is housed in a stainless-steel chassis, providing maximum shielding from external nasties. True to form, no audio runs through the mute, phase, pad or bypass switches; those functions are performed through relays using gold contacts.

Frequency response is an impressive ± 1 dB from 10 Hz to 42 kHz and is down -3 dB at 56 kHz. Both mic and line inputs are transformer-balanced, with the mic side's impedance set at 1,200 ohms, while the line side runs above 15k ohms. Even the faceplate screams quality: There's a 10mm polycarbonate layer between the printing and the operator's fingers, ensuring long-lasting labels.

A continuously variable output attenuator is located on the front-left, right next to a 10-position mic/line gain switch incre-

especially shined when used with an AEA R84 ribbon mic, delivering all of the clean gain I needed, even on the quietest instruments. I used the unit on two different acoustic guitars and found that the highpass filter and low EQ section deftly pulled out any boom, leaving a nice, clean top that didn't need extra help. Upright bass was beautiful, percussion was perfect (especially with a touch of top from the EQ section) and vocals were vibrant. Time and time again, the Daking delivered.

What I liked most was that the preamp side was so clean, I didn't feel the need to use EQ as a fix. Mic placement solved a lot of problems, which is as it should be. When I did use the EQ, I noticed that a little goes a long way. I was surprised at how even a small adjustment made a large addition to any frequency I boosted or cut. I found myself backing it off a little and

the box. I would have loved to use the Daking as a quick bass DI/preamp box when tracking, but in the heat of the session, I found myself going with other more convenient options rather than climbing behind the unit to connect a freestanding DI.

All that aside, the MicPreEQ is a fine audio tool. The preamp sounded good everywhere I put it, offering lots of clean gain. Equally as nice was the absolutely sweet EQ section, which delivered tons of transparent top, bushels of big bottom and everything in between. I found that a pair of these on the front and/or back end of a DAW is to audio as Beluga is to caviar—truly first class.

Geoffrey Daking & Co. Inc., dist. by Transamerica Audio Group, 702/365-5155, www.transaudiogroup.com, www.daking.com.

Kevin Becka is Mix's technical editor.

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Don't Throw Away That Amp!

Guitar Sounds, Mods and Tweaks

It might be January for you, but I'm writing this in October, still recovering from the AES show and already thinking about NAMM. Simultaneously living in the past, present and future is not exclusive to the publishing biz. We of the audio persuasion embrace tubes, transistors and DSP almost without dropping a frame.

Nothing is more varied than electric guitar technology and, like any analog system with a loudspeaker, it interacts with its surroundings. The large difference that exists between an amp's sound pressure level during Record mode and its playback level on the control room monitors is enough to raise Fletcher and Munson from the dead.

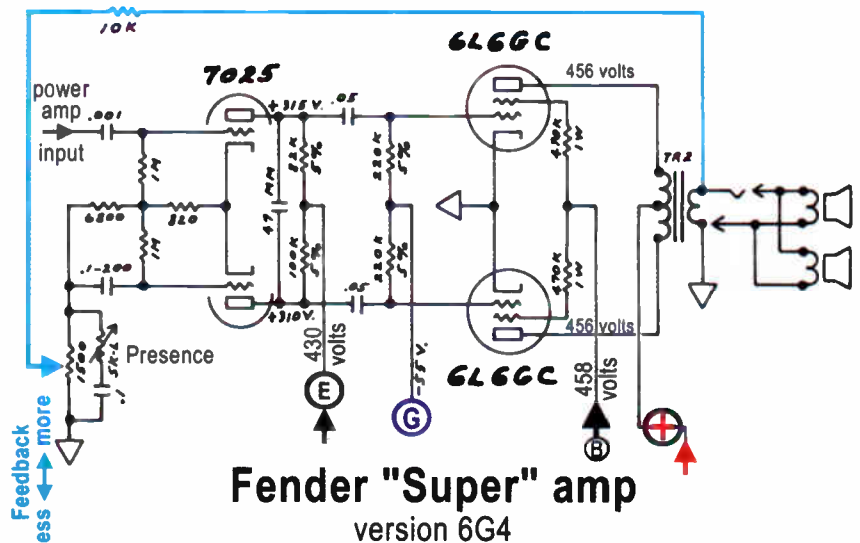
Think about the simple difference between what a guitar player hears from "way up high" and a mic's interpretation of the speaker cabinet on the floor. For any engineer who's ever heard the playback comment, "It's much brighter than it was in the studio," I highly recommend trying any ribbon mic on the amp. Royer ribbons are nice, but the original Sennheiser MD409 and e609 dynamics are also similarly smooth in the midrange. Sennheiser's new silver version of the e609 has a pronounced midrange boost similar to that of a Shure SM57.

DIFFERENT STRIPES

Guitar sounds are a personal issue, bringing forth a matter of deep religious conviction and highly subjective opinions. Some guitarists prefer diode clipping, along with the gain required for ultimate sustain. I recently loaned a Tweed-era Gibson amp to some local high school kids who reported that the amp didn't distort, and by their standards, I guess it didn't!

When I first heard Jack White of the White Stripes play, my finger was poised to change channels. But his radical guitar sound changes at each section of the tune were both sonically impressive and sensitive, demonstrating a need for dynamics around the vocals. Some of the most abysmal guitar sounds I ever heard were broadcast on the recent Grammy Awards. Were these crimes of audio committed by veteran players or "our own people"?

My biggest beef with electric guitar sounds of the rock persuasion is the lack of dynamics. Rock 'n' roll



A Fender "Super" amp schematic (blue line at top) indicates negative feedback loop. The "circles" at the bottom are power supply connections.

arrangement is at times like digital logic—on or off—although the latter is better than plowing through a vocal with power chords. The guitar work on The Divinyls classic self-titled album, which includes the single "I Touch Myself," is but one example of tasteful and creative playing. A good player trumps all technology. Just listen to the albums Chet Atkins performed on with Les Paul and Mark Knopfler.

ABUSE REDUCTION

A "bad" guitar sound is an invitation for modifications. Overdesigned amps combined with "operator error" lead to common misadjustments. Some guitar amps and processors fall into a similar category as recording consoles: fast food aimed to please many people in a hurry, but with few gourmet morsels worth savoring.

I have a short list of mods designed to "reduce the abuse." Only a geek would suggest that guitar amps indicate a "flat" location. Last year, I modified a Fender Champ so that its bass knob was flat at maximum and the treble control was flat at minimum. It wasn't a huge change, but it did provide a reference point and a good place for the player to start. That, along with another top-secret mod, has made it the studio's most popular amp. All it needs now is an effects loop.

Granted, a 12-inch speaker, guitar or otherwise, is incapable of flat full-range response, yet when all is in harmony, an overdriven amp will add harmonics to the fundamental. However, applying *all* of the possi-

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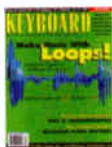


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World Radio History

ble treble-boosting options at once can often create harmonic distortion of upper-string harmonics. That's my impression of what can make a Marshall sound bad.

TAP TEST

Next on the list is the power amp section. The earliest guitar amps from the Tweed era did not have negative feedback, a simplicity that yielded higher distortion and allowed the speaker to emote more character. Feedback reduces distortion, extends frequency response and increases "damping factor."

Damping factor is the speaker imped-

ance divided by output amp impedance. A larger number implies greater dominance by the amp over the speaker. Alternately connect and disconnect any nonpowered monitor (while the amp is powered but with no signal) while tapping on the woofer. The woofer will be warm when disconnected from the amp and tight or dry when connected. The lack of a significant damping factor is one reason vintage amps sounded so rich on the bottom and so relaxed when overdriven.

The figure shows the power amp section from a Fender Super that Marshall basically

copied for its amplifiers. The blue line indicates the feedback path. My blue arrow mod replaces the 1,500-ohm resistor with a pot to dial the feedback in or out. To the right, the Presence control adds treble by reducing the amount of high frequencies in the feedback loop. For some applications and players, this may be fine, but considering the number of ways some amps allow users to boost treble, why not just add a tweeter?

REVERSE FAN

At last year's AES Convention, I met guitar ace Lee Roy Parnell. He reads this column, plays guitar effortlessly and likes to talk about music and gear. We hit it off instantly. The difference between the AES and NAMM shows is that I listened to him play on headphones at the Ultrasonic booth rather than compete with a cacophony of sonic blasts, respectively. We did some mutual brain-picking. I asked about his favorite amps and settings, intonation, chord inversions and, specifically, about how to communicate with young guitar players. What was truly cool was that Lee Roy responded as if we had picked up threads from previous conversations.

Recording engineers generally scrutinize guitar sounds differently than guitar players. You might say engineers are from Mars and guitar players are from Venus. Mostly, it is a matter of perspective, because being a recording engineer is kind of like putting on the most sound-blocking earplugs you can find and shoving your head into a jet engine. My guitar amp distortion preference requires the least amount of power: 7 to 15 watts, tops. When Lee Roy told me one of his favorite amps was a Marshall, I asked him if he had any use for the Presence control. He prefers the counterclockwise position.

HEARING CLAMS?

I recently built a small FM transmitter kit with a wall wart power supply. Moving the power cable minimized or maximized the hum and buzz being transmitted, which suggested an idea to help all those guitar pedals and other units with external supplies. The next time you experience hum, buzz, radio or television interference, attach a snap-on ferrite clamshell to the cable where it goes into a device. No guarantees, but definitely worth a few bucks and moments of your time. It might be the easiest of all possible fixes! ■

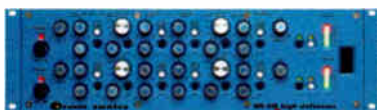
Thinking about the new year in October allowed Eddie to audition a few 2004 resolutions. Visit www.tangible-technology.com to see which one he found most practical.

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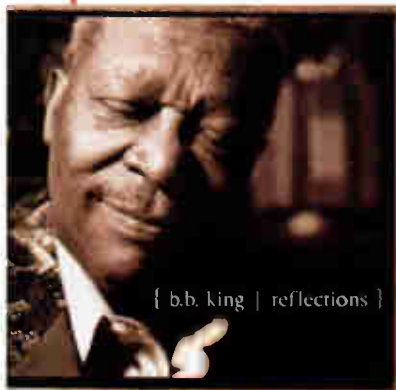
B.B. KING

HE'S THE KING OF BALLADS, TOO

By Chris J. Walker

If 2003 was "The Year of the Blues," it's appropriate that the undisputed modern master of the genre, B.B. King, put out a fine album in the fall to cap the celebration. King has been enthraling audiences and listeners with his distinctive vocals, ripping guitar work and captivating storytelling since the 1940s. His career has reached a pinnacle that few have achieved, particularly in blues. With dignity, perseverance, optimism and an occasional spot of good fortune, King has definitely paid his dues to become one of the most respected performers in the music industry.

Most amazingly, at 78, the veteran bluesman doesn't understand the concept of slowing down or resting on his laurels. Instead, his is a rich life of relentless touring, recording sessions and vigilant administration of his business enterprises. He's made more than 100 albums in nearly every setting imaginable and touching on many, many genres—from the twist to jazz—yet until recently, he'd never devoted an entire project to one of his greatest strengths: ballads. Now he has. With the mellow *Reflections* album, King has fulfilled a long-held dream.



"I've wanted to do it, but I never do more than a few ballads," he says, "so I thought it might be good to try a whole CD for once and see if people would like it. Two of the songs—'Tomorrow Night' and 'A Mother's Love'—I think I did years ago, but nothing like what we did on this record."

King's supporting cast for the album are all versatile players, including keyboardists Joe Sample (of the Jazz Crusaders fame) and Tim Carmon, bassist Nathan East, drummer Abe Laboriel Jr. and guitarist Doyle Bramhall II. All of them, along with additional symphonic touches added later by Nick Ingman, were employed under the guidance of Simon Climie, a regular Eric Clapton collaborator. Not coincidentally, this is some of the same cast that made Clapton and King's acclaimed *Riding With the King* CD, recorded in 2000.

"I think B.B. has always wanted to do this [kind of album] and wasn't sure if his record company would go for it because he's a blues guy," comments producer Climie from a studio in London where he was working on Clapton's upcoming record. "But the thing about him is that he's one of those singers that just makes the words come to life. Even with a great song you've heard so many times that you're really not even listening anymore, somehow when he delivers it, it's totally unconditional."

"Having over 50 years in the business," King adds, "I've heard many songs that I would like to do. Sometimes I think I like them because of the person that did them prior to me was so good with

—CONTINUED ON PAGE 130

THE NAKED TRUTH ABOUT THE BEATLES' "LET IT BE... NAKED"

By Matt Hurwitz

Ever wondered what The Beatles' *Let It Be* album would have sounded like had it been properly completed instead of released as a companion disc to their 1970 fly-on-the-wall motion picture of the same name? Such was the charge given to EMI's Abbey Road Studios by the group's Apple Corps Ltd. The result is the recently released *Let It Be... Naked* (Apple/Capitol-EMI).

After the tumultuous sessions for the 1968 album *The Beatles* (aka, *The White Album*), the Fab's regrouped at Twickenham Film Studios in London in January 1969 to make a TV special showing the group rehearsing and recording an album. The concept was a "warts and all" view of the band with no overdubs; everything was as live as possible. After those sessions broke down, the production moved to the basement studio of The Beatles' own Apple offices, where recording continued through the month. The sessions culminated in a historic live performance (The Beatles' last) on the office's rooftop on January 30 of the same year with their new temporary "fifth Beatle," keyboardist Billy Preston (himself an Apple recording artist by the end of the sessions), who played on the studio recordings, as well.

Glyn Johns, who had recorded the sessions, was given the task of mixing and com-

piling the recordings into an LP (originally titled *Get Back*) in May of that year, though the group chose not to release it. Johns tried a second compilation in January 1970, though that version also failed to see the light of day. John Lennon, on new manager Allen Klein's advice, brought in legendary producer Phil Spector to revamp the album in March 1970, which he did, adding orchestration to three tracks and editing others. The result—with studio chatter and quips intact—was the May 1970 Apple release *Let It Be*, The Beatles' last original album (although *Abbey Road*, which came out in 1969, was actually recorded after *Let It Be*).

In February 2002, following a chance meeting of Paul McCartney and the film's original director, Michael Lindsay-Hogg, Abbey Road veteran Allan Rouse received a call from Apple's Neil Aspinall asking him to take a stab at remixing the album. Rouse had acted as project coordinator for a number of Beatles remix projects, among them

The Beatles Anthology, *Yellow Submarine Songtrack* and Lennon's *Imagine*. While the task for those projects had always been to recreate the original mixes known to millions of fans using current technology, the charge for the *Let It Be* project was different.

"This was not an attempt to remaster an existing album," Rouse says. "We were asked to make it sound the way the band had believed the finished album was going to sound." This meant, for the most part, producing mixes that reflected only what

the four bandmembers (or five, including Preston) could play live: no overdubbed guitars or vocals, and certainly no orchestras.

In addition, all of the between-song chatter, breakdowns, jokes and ditties—including "Maggie Mae" and the "Dig It" jam—were dropped. Says Rouse, "They just didn't really fit in with an album of 11 songs and neither did the dialog. Those little bits were fine for a soundtrack album, which Glyn's was, but they didn't fit comfortably with the concept of a straight album."

Rouse tapped two young staff engineers, Paul Hicks and Guy Massey, for the job. Both had worked on prior Beatles projects (and had, coincidentally, started at the studio on the same day in 1994), including the 5.1 surround mixes for the recently released *The Beatles Anthology* DVD set.

The group took a team approach, making decisions democratically, each chipping in suggestions but deciding with one voice. During a two-week period, the three listened to all 30 reels of 1-inch 8-track session tapes, which had been recorded through a pair of borrowed 4-track consoles onto a 3M 8-track machine. As a reference, the producer/engineers also studied the released Spector album and both of Johns' versions. "We mainly listened to identify the takes they used," says Rouse. They also noted where Spector had made any edits, deciding if there was a good reason to either keep or discard those edits. "As it turns out, Glyn and Phil had done most of the legwork. We ended up using the vast majority of their takes."

But because the group's mission was to

—CONTINUED ON PAGE 131



In session with engineer Guy Massey



NEIL SEDAKA'S "BREAKING UP IS HARD TO DO"

By Gary Eskow

The Brill Building, 1619 Broadway, New York, New York, circa 1962. Under the glass, that one spot reveals more about the history of pop/rock than almost any other place on the globe. Heir to the fabled Tin Pan Alley that spawned Irving Berlin and The Gershwins, the still-standing Brill Building was the home of a crew of young songwriters, singers and at least one producer, Don Kirshner, who would change the face of popular culture. One of the building's other notable habitués was a fresh-faced kid from Brooklyn with a glossy tenor, a clever harmonic sense and tons of ambition.

Born in Brooklyn in 1939, Neil Sedaka was a gifted pianist once lauded by none other than Arthur Rubinstein as one of New York's best young players. Sedaka was on course to become a classical musician and even enrolled at the famous Julliard School, but a collaboration that he and neighbor Howie Greenfield began several years earlier would pull him in a different direction. A slew of hit records, including the Number One worldwide smash, "Breaking Up Is Hard to Do," would come from their creative partnership.

"Howie, God rest his soul, was a wonderful man and a brilliant lyricist," says Sedaka of his writing partner, who died of AIDS on his 50th birthday. "In two-and-a-half minutes, he could tell an entire story. His words almost felt like a novellette." It would take several years for the pair to pen their first hit, "Stupid Cupid," which Connie Francis recorded in 1958. She later had a colossal hit with "Where the Boys Are," written by Sedaka and Greenfield for the movie of the same name. They were only 13 when they began working together.

Sedaka was nothing if not precocious. He formed The Tokens in 1954 when he was just 15. "I was sitting in math class one day at Lincoln High School and I heard a kid humming in a quiet falsetto voice next to me," the singer recalls. "His name was Jay Siegel and his voice was extraordinary. I asked him if he wanted to be in a group with me, and that's how The Tokens were born." Alas, by the time the group, led by Siegel's soaring falsetto, hit it big with "The Lion Sleeps Tonight," Sedaka had moved on and hit the big time on his own.

Sedaka and Greenfield were well-established hit-makers by the time "Breaking Up Is Hard to Do" was released, having scored a number of Top 20 singles, many of which were recorded by Sedaka. "The Diary," "I Go Ape" and "Oh! Carol" had catapulted the pair into the upper echelon of pop partnerships at a time when Carole King and Gerry Goffin, and Barry Mann and Cynthia Weil were also making a name for themselves.

"We'd all get together on a daily basis and play our new material for each other," Sedaka says. "No one was impressed with 'Breaking Up Is Hard to Do.'" In fact, Sedaka says he had to prod Greenfield to supply lyrics to the tune.



"Howie wasn't impressed either! I put it aside for several months, but I was persistent and eventually convinced him to write words for it."

Despite the lukewarm reception the song had engendered from his colleagues, Sedaka had a strong feeling about it and pushed Al Nevins—his manager, producer and engineer—to track the song. A session was booked in the spring of 1962 at RCA Victor on East 24th Street in Manhattan. Sedaka's memories of the date are vivid.

"All we had to work with were four tracks, so we had to be very careful in the recording process," he says. "I used to love the sound Les Paul and Mary Ford got from overdubbing, and I copied it a bit; in fact, I was one of the first singers to multitrack my own harmonies."

The self-described "King of the Tra-la-la's and Doo-be-doo's," Sedaka recalls, "Every time I ran out of lyrics, I'd throw in a 'doo-be-doo,' and it became a trademark. In fact, the night before we tracked 'Breaking Up Is Hard to Do,' I called up our arranger, Alan Lorber, and told him I wanted to incorporate 'down dooby doo down down' as a prominent part of the vocal arrangement. The record came to be known as the sandwich song. There's a piece of bread to begin with—the syllabization—then the meat and finally another piece of bread. All of my hits in the '50s and '60s used this same technique."

On his way into Manhattan the following day, Sedaka picked up The Cookies, the three background singers who lent their talents to the record. The Cookies, who went on to record some hits of their own, had the naughty sound and attitude that was popular at the time. Sedaka taught them their parts on the trip into town. "I remember that the band thought I was nuts when we started adding background vocals

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Joss Stone: *The Soul Sessions* (S-Curve)

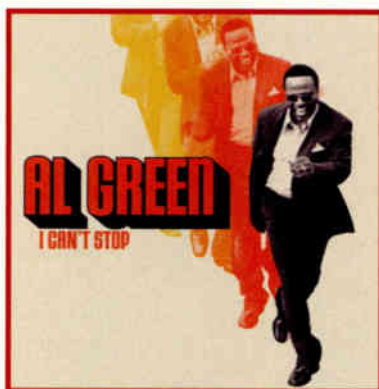
You wouldn't think that such soulful sounds could come out of a 16-year-old from the UK, but newcomer Joss Stone smashes all stereotypes with her freshman effort, *The Soul Sessions*. The talented teen breathes pure emotion into a collection of 10 great songs, ranging from the Isley Brothers' "For the Love of You" and Aretha Franklin's "All the King's Horses" to the absolutely delicious (but obscure) "Dirty Man" by Laura Lee. The production of *The Soul Sessions* is a collaboration between S-Curve founder Steve Greenburg, '60s/'70s songstress/producer/writer Betty Wright and engineer/producer Mike Mangini. The tracks are tight and dry, and showcase both Stone and her backup musicians, many of whom shaped some of the soul hits of the '70s themselves: keyboardist Benny Lattimore, guitarist Willie "Little Beaver" Hale, Timmy Thomas on organ and Cindy Blackman on drums. One notable cut that strays from the vintage soul scenario is "Fell in Love With a Boy," a cover of a White Stripes tune ("Fell in Love With a Girl") featuring The Roots.

Producers: Steve Greenburg, Betty Wright and Mike Mangini. Studio: The Hit Factory/Criteria, Miami. Engineer: Steve Greenwell. Mastering: Chris Gehringer/Sterling Sound. —Kevin Becka

Al Green: *I Can't Stop* (Blue Note)

I Can't Stop is the first secular album Al Green has made with legendary producer Willie Mitchell since the mid-'70s. It's a clear and totally successful attempt to recapture the sound of Green's most beloved recordings. Green's voice might not be as effortlessly limber as it was when he first sang

"Tired of Being Alone," but he sounds just as sexy, just as soulful, and his songwriting talent remains undiminished. (Green wrote all of the songs on the album; eight were co-written with Mitchell.) To help re-create that Al Green magic, Green and Mitchell brought in many of the musicians who appeared on Green's '70s hits: guitarist Mabon "Teenie" Hodges, bassist Leroy Hodges, the Royal Horns (Scott Thompson, Jack Hale, Andrew Love, Lannie McMillan and Jim Spake), and backing singers Donna Rhodes, Charlie Chalmers and Sandra Rhodes. Same



grooves, same punchy horns, same heavenly voices. It's nothing new—just another Al Green masterpiece.

Producer: Willie Mitchell. Associate producers: Archie Mitchell, Lawrence Mitchell, Jason Hohenberg. Engineers: Archie Mitchell and Willie Mitchell. Studio: Royal Studios (Memphis). Mastering engineer: Bernie Grundman. —Barbara Schultz

Sarah McLachlan: *Afterglow* (Arista)

The wait is finally over. Sarah McLachlan has returned to the pop spotlight after she seemingly disappeared from the music world altogether in '99, following the last date of the final Lilith Fair tour. With *Afterglow*, it is evident that not much has changed in McLachlan's artistic leanings during the past four years. The album is firmly planted in her signature sound: the tuneful, dominating piano (on many tracks); the strong sense of self in her songwriting; the quiet, subtle power of her vocal style; and the spare use of effects. Teaming up once again with longtime producer Pierre

—CONTINUED ON PAGE 133

throughout the entire song prior to recording my lead vocal," he notes. "But Al Nevins, whose contribution to my recordings was very important, was extremely patient with me. Al was an excellent guitarist who had had a hit in the '50s called 'Twilight Time' with his group the Three Suns.

"I was a real *kvetch*, and I wanted to be involved every step of the way. Because there was so much bouncing done in those days, mixing was a part of the recording process, and I made sure that the tracks went down properly, listening on small speakers to be sure that all of the vocals—the lead in particular—cut through. I wanted the high end to cut through, because my voice had a lot of treble and I was a bit of an egomaniac. I wanted to bury everyone else!"

The completed background tracks—comprising three tracks of Sedaka throughout the song and The Cookies, who entered in the release and executed three-part harmony on the fade—were bounced along with the musical parts as a stereo pair, leaving two tracks for Sedaka's lead vocal. In those days, records were mixed and put on the air in short order. Released in June 1962, "Breaking Up Is Hard to Do" entered the charts at Number 62 and quickly made its way to the pinnacle.

"Imagine! I was just a *pisher*—a 22-year-old kid from Brooklyn—and my record was on top!" he marvels today. True, no one ever got more mileage out of a 1-4-2-5 verse progression, and the lead vocal glues a release whose harmony elides surprisingly, but what does Sedaka view as the principal attraction of "Breaking Up Is Hard to Do"? "I think the song is unusual because it coupled a sad lyric with a happy tune. My success has always had some pathos, a bit of a Chaplin-esque quality about it."

Fourteen years after its original release, Sedaka re-recorded "Breaking Up Is Hard to Do" for Elton John's Rocket Records. Slowing down the tempo and delivering the song as a gin mill ballad, Sedaka once again topped the chart with the song, making him the only artist ever to have two Number One records of a song at two different tempos.

These days, the 64-year-old Sedaka is still hard at work. He performs two weeks out of every month; has a new CD, *The Show Goes On*, which can be purchased through his Website (www.neilsedaka.com); and has just finished work on an album of Yiddish material, which he recorded in Los Angeles with John Ross at the board. "It's time for me to go back to my roots," Sedaka says simply.



Platinum Series World Tour

Thank you to all panelists who participated in SAE's second annual **Platinum Series World Tour**. This exciting event, held during the AES Convention, was web cast LIVE from SAE New York's lavish new location in Manhattan's Herald Square. Pictured below, this year's Platinum Panel featured a sampling of the best and brightest professionals who work in audio today. You can view archives of the event by visiting www.sae.edu.

THANK YOU!



Standing left to right: Mauricio Irragori (Dr. Dre, Mary J. Blige), Steve Baughman (Eminem, Michael Jackson), Trina Shoemaker (Sheryl Crow, Blues Traveler), Tom Misner (President of SAE Institute Worldwide), Mark Martin (VP of Marketing, US). Seated left to right: Jimmy Douglass (Rolling Stones, Aaliyah), and Serban Ghenea (Britney Spears, R. Kelly). Not Pictured: Don Was who joined the panel live from Los Angeles, and Alan Parsons who called into the panel while on tour in Mexico.

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B.B. KING

FROM PAGE 124

them. And in my case, after you try them, they don't sound too good [Laughs]. One of my favorites is 'Always on My Mind,' but I can't do it like Willie Nelson does." Nat King Cole was another King favorite that he wouldn't have dreamed of trying his songs earlier in his career. But early on, King and Climie decided not to limit the scope of the ballads on *Reflections*. According to the producer, the initial list for the project encompassed 2,500 songs, which King and Climie first whittled down to just 60. Twenty were recorded and eventually 13 were selected.

With B.B., it's a totally emotionally driven thing. He loves the feeling in a song. Suddenly, you'd get this incredible performance and you have to be in 'record.'

—Simon Climie

The tracking sessions for *Reflections* took place at Record One in Los Angeles—the same facility used for *Riding With the King*—10 days before Christmas in 2002. Since his first recording dates in the 1940s, King's sessions have always been about performance above all; he likes to get in there with the whole group and lay it down live as much as possible. "It's always fun for me to see what everyone else is doing and be able to feel them," King says. "I do a better job then."

"B.B.'s approach to recording is, 'Here I am,'" Climie says, "so we just went through it, track by track. He did his thing and that's what it was, and when it was great, he just moved on and didn't question it. There are a lot of people who like the rather more indulgent recording process where you try every possibility. And I do those types of records, too. It just depends on what kind of thing you're doing. With B.B., it's a totally emotionally driven thing. He loves the feeling in a song, and we spent more time focusing everyone, changing the key and working on tempo. Suddenly, you'd get this incredible performance and you have to be in 'record.' If you missed it, you wouldn't get it again."

However, like most modern mortals, King does vocal and guitar overdubs when needed. King insists that he's not very technical and leaves matters pertaining to technology and sonics to his engineers and producers. Instead, he says, "I study the guitar." Still, Climie notes, "You'd be surprised. He came in at the beginning of the album with a lot of his favorite songs all on an MP3 player with all the lyrics. And he's got kind of a Palm Pilot thing that connects to the Internet when he's on the road. He'd come over when we were sequencing and ask if it was Cubase or Logic Audio we were using. We'd be scratching our heads thinking, 'Surely he's not asking us that.' But he is. Watch out for him!"

Engineer Don Murray enjoyed King's inquisitiveness while keeping a watchful set of eyes and ears on the technical aspects of the tracking and vocal sessions. He recorded the project to Pro Tools|HD, which he terms "a great system. Now I'm exclusively working and mixing on it."

The Los Angeles-based engineer had worked with King back around 1974, when Murray was an assistant engineer at Sigma Sound in Philadelphia. Both he and King were fuzzy about the exact recording and date, but nevertheless, had fun reminiscing about the old days. Murray and Climie have now been working together for a little more than a year, doing a Michael McDonald project and a single that Eric Clapton recorded for a Motown tribute to Stevie Wonder. Murray says that he was greatly impressed by King's endearing personality and vitality.

"He would sing [live] all day long and just not lose energy," Murray recalls. "I guess he's used to it because he's on the road a lot. He didn't really play guitar live; he did that later as overdubs. He really wanted to concentrate on his vocals and we set a mic [a Sony C12] in the studio with the rhythm section. There was no isolation. He was in the middle of the band, literally 10 feet from the drums [which were screened off]. It produced a nice ambient sound that went well for this record. For this type of music and for B.B., I think it's more exciting to hear the songs as if you were in a club, rather than having everything isolated and pristine. I also set up a couple of room mics [also C12s] to capture even more ambience." Murray also used C12s for piano, while he employed Neumann U67 tubes or Shure SM57s for guitars, and Neumann U67s for the Hammond B3.

"I try to use the best-quality equipment I can going into Pro Tools," the engineer says. "With an SSL 9000 for monitoring, I used Neve 1073s, 1081s with EQ on them, the Avalon stuff, API and Tube-Tech. Also,

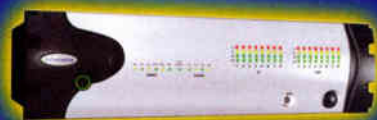


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I used Teletronix LA-2As and dbx gear for compression, along with Pultecs and LA-2As on B.B.'s and Doyle's guitar." As would be expected, King doesn't care for any effects added to his guitar, "Lucille." "One CD years ago," he remembers, "I used something called a Cry-Baby, but since then, I never have used anything else on my guitar. It seemed like it made things sound so good, it was like cheating."

Once all of the tracking and overdub sessions were completed, Climie reviewed the tracks and did preliminary edits. From there, he went to London and worked with an arranger to record accompanying orchestration. Then, several months later, renowned mixer Mick Guzauski, who also worked on *Riding With the King*, worked with Climie to fuse the vocal and band tracks with the strings and brass into the soothing finished selections. "I would usually mix two to three tracks a day," Guzauski recalls. "Then Simon would come in and we'd work on them together. He'd make comments and look at notes he got from B.B. and then we would do it again. Sometimes, Simon would do some editing after he heard the first mix. I love working like that, because everybody has their input and nobody gets burned out from working really, really long hours on one thing."

In the end, everyone involved with *Reflections*—from the musicians to the tech team—seemed to be satisfied with the finished album, yet another landmark in a career filled with them. Climie speaks for many when he notes, "It's a real joy to work with B.B., and kind of educational at the same time. There's not a lot of phenomenal music around at the moment, and we did get to choose from the best songs in the last 50 years. That's got to be a great inspiration for anyone."

But King is still looking forward: "I still have a lot more songs I'd like to try." ■

"LET IT BE... NAKED"

FROM PAGE 125

make the best possible album, they didn't limit themselves to what had been done previously. "Once we started, we would A/B against the Spector disc to see if what we were doing was an improvement," says Massey.

Upon listening to the tapes in Rouse's room at the studio, they were transferred into Pro Tools 5.2 using a Prism Sound Dream ADA 8 A/D converter. And, as part of the improvement process, once the

recordings were in the digital world, the engineers began researching which takes were the best performances, and, if more than one take of a song had strong attributes, trial edits were made to see what combination would make the best overall performance. "Once we had the building blocks in the digital domain," says Massey, "we'd delve into a bit more detail. If there were fluffed lines or pops, etc., if there was another take without the errors, we'd try inserting that part from the other take."

Adds Hicks, "Sometimes we did the tiniest little things. If something wasn't quite right—if there was a bend in a note or something—we did actually replace it with a slightly better one. Again, our main theme was to make it as strong as possible."

The live rooftop recordings offered their own special challenges, given that the band was playing on a blustery winter day. Because the group was being filmed, the film crew had chosen an unobtrusive vocal microphone during the sessions, the Neumann KM84i, which features a small capsule on the end of an extension tube, with the mic's preamp located at the bottom near the floor. (The mic was commonly used for TV talk shows and awards programs.) The same mics were brought upstairs to the roof, where second engineer Alan Parsons simply tied clippings of pantyhose over the capsules to act as windscreens. "The wind noise was actually quite manageable," says Hicks. "It was really only when they weren't singing that you could hear it." For the inevitable hard consonants and mic pops, "We mainly handled that with a combination of filtering and EQ," notes Hicks. A small amount of de-noising was done using an analog Behringer dynamic filter.

The following is a breakdown of what was done to each *Let It Be... Naked* track (in running order, along with the mix engineer's name in parentheses):

"Get Back" (Hicks): While Johns and Martin used a master recorded on January 28, 1969, for the aborted LP and released single, Spector had used a recording from the day before, and the same master is used on this album. Notably absent is the song's coda, which appeared on the single. "It turns out that the coda had been recorded as an edit piece four or five reels later," explains Hicks. "Since it wasn't on the original session recording for the song, it wouldn't have represented what actually took place in the studio during that take, so it was decided to leave it off."

"Dig a Pony" (Massey): Those who've heard bootlegs of Johns' mixes know the song originally featured an "All I Want Is

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You” intro and outro, which Spector removed for his LP. “The tuning is particularly bad in the beginning,” says Massey, prompting the decision to eliminate them in the new version, as well.

“For You Blue” (Hicks): Using the same master as Spector used, Hicks mainly focused on keeping the sounds bright and clear. What was interesting, he says, was learning about the unique sound McCartney got out of his piano. “It’s a fuzzy, metallic sound, which he did by putting a piece of paper in the piano strings, causing them to vibrate against the paper when struck. You can hear on the session tape Paul’s fiddling around, trying to get the right sound.” And because McCartney is playing piano, he does not play bass on the song. “The bass comes from the piano,” says Hicks, with McCartney playing a bass line on the keys. George Harrison’s vocal, it turns out, was one of the few overdubs used. “We took out his live vocal, which was basically a guide vocal. It wasn’t a complete take, really, and I don’t think it was ever intended to be used.”

“The Long and Winding Road” (Hicks): Perhaps the greatest achievement on the album is the improvement to this track, easily accomplished by removing Spector’s overblown orchestra. Actually, though, the master on *Let It Be...Naked* is not even the one used by Spector; it’s the only take on the album that was changed in its entirety. The group returned to the Apple basement the day after their rooftop show to record three more songs, this one among them. Says Rouse, “Spector had used one take recorded five days earlier.” “This version, recorded on January 31, we felt was a stronger basic performance,” says Hicks. “There’s also a slight lyric change,” adds Rouse, who suggests that, this being the later recording, it represents McCartney’s final lyric choice.

As a listening experience, it’s a first for Beatles fans to hear them play the song instead of an orchestra. The recording features McCartney on piano, Harrison playing lead guitar through a Leslie speaker, Lennon on a newly acquired Fender Bass VI and Ringo Starr keeping light time with his hi-hat.

“Two of Us” (Massey): The same master used by Spector, also from January 31, 1969, features Lennon and McCartney on acoustic guitars, Harrison on electric and Starr providing a simple bass drum/snare/tom beat. By the way, Starr’s drums were typically recorded onto a single track, precluding mixing them into stereo. Small amounts of de-essing and rumble filtering were also performed.

“I’ve Got a Feeling” (Massey/Hicks): A

rooftop recording, this song was edited by Massey before being mixed by his colleague. Massey used the best of each of two rooftop takes of the song, creating a version, Hicks says, with the most energy. And while Johns had opted for a studio recording of the song for his version of the album, there was no beating the live performances. Notes Hicks, “I don’t know if it was just the



Engineer Paul Hicks’ goal was to make the recordings as bright, clear and energetic as possible.

fact that they were playing live and knew it or just because they were so cold, but there was just so much more energy in the live recordings.” Sonically, he notes, the live recordings—minus the wind and pops—are not much different from their studio counterparts, making a surprisingly good match when listening to the album.

“One After 909” (Hicks): Another rooftop performance, though, interestingly, the team did consider using a studio version. “We did research to see if there was another version,” says Hicks. “But it was just much slower, and it had a completely different feel. There was no contest, really. It’s one of the more up-tempo numbers, so we went with the live one.” Hicks is proudest of his drum sound, bringing Starr out to the fore. “We found so many details we wanted to bring out, which we tried our best to do. Everything is a lot more focused.”

“Don’t Let Me Down” (Hicks/Massey): Though not included on Spector’s album, this song was a product of those sessions. A studio version from January 28, 1969, was released as the B-side to the “Get Back” single. This version, however, is an edit of the two rooftop versions. The Beatles recorded a second take because Lennon forgot the lyrics during the first take.

“I Me Mine” (Massey): This song was not originally recorded at Apple in January 1969, though Harrison is seen in the film playing it briefly at Twickenham. In January 1970, Harrison, McCartney and Starr recorded a studio version of the song, with Harrison

playing acoustic guitar and singing a guide vocal, McCartney on bass and Starr on drums for the master take. Electric piano, electric guitar, lead vocal, backing vocals, organ and a second acoustic guitar were added as overdubs. The recording was a brief 1:34 in length, so before adding his orchestra, Spector lengthened it by repeating one of the verses, resulting in a 2:25 final master. The *Naked* team decided to leave in the overdubs—which made the recording complete as The Beatles had envisioned it—and Spector’s edit. “We were originally going to do it unedited,” says Massey, “but if you listen to it at that length, it’s just far too short.” Jokes Rouse, “That was our one concession to Mr. Spector.” Massey also built up the mix as the song progressed by adding elements of the mix as the song enters the second verse.

“Across the Universe” (Massey): Again, while no studio recordings of this song were made at Apple, Lennon is seen playing the song at Twickenham in the film. “Across the Universe” was actually recorded a year earlier, in February 1968, at the same Abbey Road sessions that produced “Lady Madonna” and “Hey Bulldog.” The basic track featured Lennon on acoustic guitar, his vocal and a tom-tom (all recorded onto one track), with Harrison playing a tamboura. At the time, George Martin had added background vocals and animal sound effects. Spector’s version removed the latter two parts, as well as the tamboura, replacing them with an orchestra and a choir.

The new mix features Lennon’s guitar and vocal, Starr’s drums and the tamboura. “Again, because the concept was whatever the guys could play live onstage, we took everything else away,” says Rouse. The ending has been given a spiritual touch, with a building echo (via real Abbey Road tape delay) added.

“Let It Be” (Massey): another recording from January 31, 1969, the day after rooftop, with McCartney on piano, Lennon on Fender Bass VI, Harrison on lead guitar (through a Leslie), Starr on drums and Preston on organ. Three months later in April, Martin added a new electric guitar lead from Harrison, and in January 1970, added backing vocals from McCartney and Harrison, brass and cellos and yet another pass at a Harrison lead. Martin produced the single release of the song, issued in March 1970 (pre-Spector), featuring the April 1969 guitar solo. Upon Spector’s arrival, the song was lengthened by repeating a chorus and issued featuring the January 1970 guitar lead.

The new version features the same master and uses a few edits from other takes,

most notably the Harrison guitar solo that came from the take of the song that appears in the film. "We'd always thought that the guitar lead in the version in the film was just really soaring," says Massey. "We edited it in, just as a trial take, and we all thought it sounded great."

The album comes with a 22-minute companion "fly-on-the-wall" dialog/music disc put together by the BBC's Kevin Howlett and engineer Brian Thompson. Howlett listened to more than 80 hours of tapes, recorded in mono by the film crew during both the Twickenham and Apple sessions, discovering a number of previously unknown Lennon/McCartney tunes (which are included on the disc), as well as some other surprises. "I had expected to hear the kind of disagreements and arguing we've all heard about," Howlett tells *Mix*. "Instead, I heard the bandmembers actually having a good time. By the end, they were, in fact, quite excited about what they were doing."

Remixing an album by the greatest rock band of all time can be, well, *daunting*. "It's hard to make it as up-to-date as stuff nowadays, because it wasn't recorded these days," says Massey. "From that point of view, it was a challenge to make it sound as punchy and as present as possible. But it's a good representation of what they were like then."

Adds Hicks, "We all collectively felt that we wanted it to stand along all the other Beatles albums, and hopefully, we've achieved that." ■

Cool Spins, FROM PAGE 128

Marchande (who has worked with the songstress on the majority of her albums), *Afterglow* burns with a sweet simplicity ("World is on Fire," "Drifting," "Answer") that is reminiscent of her previous smash outing, *Surfacing*. While *Afterglow* doesn't break much new ground and might not attract many new followers, it should comfortably please McLachlan fans.



Producer: Pierre Marchand. Engineers: Pierre Marchand, Chris Potter, Roman Klun, John Oliviera, Linda Strawwoery, Yanick Dunais, Brian Hogue, Pete Caigan. Mixing engineer: Chris Potter. Mastering: Bob Ludwig (Gateway Mastering). Studios: Marchand's and McLachlan's home studios. —Sarah Benzuly

Hot Club of Cowtown: *Continental Stomp* (Hightone Records)

Hot Club of Cowtown have garnered critical acclaim and attracted a continually swelling fan base from their festive live shows, which take place everywhere from large outdoor festivals, to smoky music clubs, to city street corners. Donning hip '40s-style attire and playing vintage instruments, the adaptable Austin, Texas-based



trio plays a sizzling Django Reinhardt-Bob Wills hybrid, complete with spirited, virtuosic solos and lively melodies capable of transporting listeners from a sawdust dance floor to a high-falutin' jazz club within the space of a few measures. The trio's new live album, therefore, comes as a welcome addition to the Hot Club catalog, delivering 12 tracks recorded at Austin's famed Continental Club, along with two studio tracks: the jazzy Gaskill/McHugh classic "I Can't Believe You're in Love With Me" and one eyebrow-raising hidden cut. Fiddler/vocalist Elana Fremerman, guitarist/vocalist Whit Smith and upright bassist Jake Erwin blaze through nostalgic pop and country numbers such as "Pennies From Heaven" and "My Window Faces the South," as well as Hot Club rearrangements of western swing and jazz standards. Standouts include a smoking "Diga Diga Do," a feisty "Chinatown" and a dancehall-ready "Crazy 'Cause I Love You." Producer Lloyd Maines tones down the crowd noise to make room for the trio's engaging onstage banter and occasional yelps and hollers. The disc certainly captures the band's onstage enthusiasm, something that hasn't fully translated yet on the group's studio recordings.

Producer: Lloyd Maines. Engineers: Lloyd Maines, Adam Odor. Assistant engineers: John Silva, John Moore. Studio: Cedar Creek Recording. Mastering: Fred R Emmert/Cedar Creek Recording. —Heather Johnson ■

Ross says



"I've used my Royer's on every recording I've done since 1998. These mics have made a huge difference to me in my quest for real sounding records. From blues to heavy metal, I keep finding new and effective ways to use the mics and by far they have become my main electric guitar mic. I just finished producing and engineering Ziggy Marley's new record and single and the Royers are everywhere. I used them on the drums, organ, percussion, the four piece horn section and of course the guitars. I brought in my old friend David Lindley to play his arsenal of stringed instruments and he was very impressed with the size and detail translated from the mics. 'Irie!' I don't look back now, only forward and the bottom line is, I won't ever make a record again without these mics."

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62 in c series

L.A. GRAPEVINE

by Maureen Droney

The DVD-Audio bandwagon is finally starting to roll. Inexpensive DVD surround sound systems are in the stores, automotive manufacturers are installing them in cars and labels—both major and indie—are ramping up releases. The format is poised

Queen, Herbie Hancock and Foo Fighters, along with soundtrack mixes for films including *Moulin Rouge*, *How to Lose a Guy in 10 Days* and *Charlie's Angels II*. 5.1 Entertainment was also responsible for production of one of the biggest-selling DVD titles to date: Norah Jones' *Live From New Orleans*.

The wall of DVD jewel cases that grace the 5.1 Entertainment conference room



Dreaming of 5.1—(L-R) Gary Lux, Jeff Dean and Bob Michaels consider Silverline's growing body of work

for mainstream acceptance and nobody has a bigger leg up on that bandwagon than West Los Angeles-based Silverline Records/5.1 Entertainment. Silverline has been in the forefront of high-resolution, multichannel audio since the company opened in 1999. The first-ever label to release a commercial DVD-Audio title (the Grammy™-nominated *Swinging for the Fences* by Gordon Goodwin's Big Phat Band), it now boasts a catalog of more than 200. Sister company 5.1 Production Services has under its belt not only Silverline's releases, but numerous other high-profile discs from artists such as Fleetwood Mac, Sting,

bears witness to the company's dedication to the format. Genres run the gamut from punk to classical, and there's a lot more in the pipeline. Under an agreement made this year with Britain's Sanctuary Records, Silverline will be releasing approximately 140 more titles, including work from Bob Marley, the Sex Pistols, Joey Ramone and The Kinks.

"Silverline is a DVD-Audio label," explains company president Jeff Dean. "For the most part, we license from a variety of sources repertoire that already exists. When we develop a title, we have to ensure that

—CONTINUED ON PAGE 138

NASHVILLE SKYLINE

by Rick Clark

I recently got a call from Jim Jordan, who manages Starstruck Studios, Reba McEntire and Narvel Blackstock's entertainment industry compound that offers world-class recording and broadcasting services. One of the things that always struck me about Starstruck was how it was so self-contained with its studios and office space, which houses publishing, management and even a record label—Tim Dubois and Tony Brown's Universal South.

The last time Jim and I hooked up was when he generously offered space at Starstruck for many of us in the community to hold a wake in memory of our friend and mastering legend Denny Purcell. BMI also pitched in to supply food and drinks. It was a special night and a statement of how so many in this community really pull together. I'll never forget it.

Jim recently gave me a buzz to catch me up on what was going on at Starstruck. It was evident that so much was going on, I had to head down and see what was happening. Upon arriving, I caught up with Dolly Parton and John Guess, who were checking out Guess' mix of a duet that Parton had penned and just recorded with Kenny Rogers called "Undercover." It was the first time they had recorded together since their huge '80s hit, "Islands In the Stream." "Undercover," which was recorded at the Sound Kitchen, was mixed at Starstruck's room The Pond.

"I don't even know that they'll release it as a single; I'd imagine they will! Kenny's clawing at my door everyday saying we are!" Parton says with a laugh. "But anyhow, 'Undercover' is about undercover lovers. Just risqué enough to be playful and cute. It was good to sing and work with Kenny again, and, of course, John engineered and co-produced it."

Guess had also just worked with Parton, mixing her patriotic album produced by Tony Smith and Kent Wells, *For God and Country*. "I'm sick of John now! I want a divorce!" Parton jokes. "We've been together

night and day now for weeks! But seriously though, John's great."

Before we parted, we also talked about Parton's tribute album called *Just Because I'm a Woman: Songs of Dolly Parton*, which features contributions by a number of female artists, including Alison Krauss, Melissa Etheridge, Norah Jones, Joan Osborne, Shelby Lynne, Mindy Smith, Emmylou Harris, Shania Twain with Alison Krauss and Union Station, Kasey Chambers, Sinéad O'Connor, Allison Moorer and Me'Shell NdejéOcello, as well as a new recording of the title track by Parton. The album features fresh, new versions of many of Parton's all-time classics ("Coat of Many Colors," "9 to 5," "Jolene," "Two Doors Down," etc.), as well as interpretations of some of her best recent material, including "The Grass Is Blue," "Little Sparrow" and "Dagger Through the Heart."

"A lot of the girls produced their own tracks and just brought 'em in," says Parton.

—CONTINUED ON PAGE 140

NEW YORK METRO

by David Weiss

If getting your picture in *People* magazine is a huge priority, then making music for TV probably isn't for you. On the other hand, if getting paid for your chops and having your sounds heard by millions on a daily basis is appealing, recording for the small screen may be your thing.

In New York City, there's a broadcast or cable network on every other block in Midtown, and sure as shootin' there must be 50 music houses that cater to their exacting, high-pressure needs. The competition is fierce, but finding the formula for a winning TV theme or two can be the foundation of a fruitful music production career.

Nowhere does that success story apply more than at OSI Music (www.osimusic.com), a facility on New York City's West Side hand-built by composers Phil Garrod and Reed Hays. The two became a writing team 10 years ago when a Fox network executive couldn't decide between their competing submissions for the *NFL on Fox* theme. Rather than go head-to-head any further, Garrod and Hays combined them into one song, and they've been joined at the eardrum ever since, making huge volumes of music for clients like Fox News, ABC, CBS, ESPN and more.

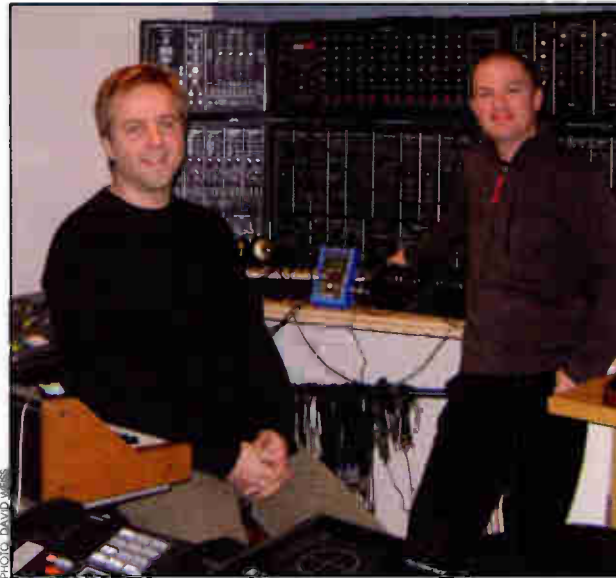
"Our style of working together," explains Hays, "is that we sit at a keyboard and do stuff back and forth. The rest of our workday is whoever's near the mixer works

it, whoever's near the synths works those, then we hit a crash and a timpani. It's one of those fluid things, and at the end of the day, we're not sure who did what."

While individual credits may not be that important to OSI, fast workflow and a high-quality signal path unquestionably are. Their spacious control/creative room is built in a circular form, designed to allow the multi-instrumentalists to roll around quickly from their amazing collection of synths and vintage effects to their circa 1980. Dan Zellman—modified SSL 4000E. "To create a good piece of music, there has to be some kind of real-time element to keep the spark going," Garrod says. "Having all the instruments within arm's reach really helps. Sometimes we'll start on an analog keyboard or a cello. It can be plucking out four notes on a piano to putting an instrument in a delay and getting a cool groove. Anything that strikes we have at our fingertips."

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—CONTINUED ON PAGE 142



OSI Music's Phil Garrod (L) and Reed Hays with their Roland System 700.



John Guess and Dolly Parton take a break in *Starstruck's The Pond*.

SESSIONS & STUDIO NEWS

NORTHEAST

Rock N Roll, Ryan Adams' newest release, was recently completed at Stratosphere Sound (NYC) with James Barber producing and Jamie Candiloro engineering. Currently tracking their sophomore album in the studio's A room is alt-country artist Hem with Gary Maurer (engineer/producer) and Dan Messe (producer)...The Cutting Room (NYC) hosted Latino rapper Fat Joe in studio B; meanwhile, Mos Def worked with engineer Joe Nardone on recording his performance poetry for the Chance Films documentary *Juvsies*...Angel Mountain Productions (Bethlehem, PA) announced sessions with Ludacris, who were in remixing *Chicken & Beer* with producer Jeff Glixman and engineer Carl Cadden-James, and Negative Space, who were in tracking their latest, courtesy of producer/engineer Kirk Kelsey, and engineers Phil Newlan and Julie Miller...Dae Bennett of Bennett Studios (Englewood, NJ) engineered Cyndi Lauper's *At Last*, while jazz saxophonist Joshua Redman tracked in the North Studio with engineers Bennett and Brian Dozoretz.

MIDWEST

Queens of the Stone Age lead vocalist/guitarist Josh Homme was at The Lodge (Indianapolis) doing a remix of U.N.K.L.E.'s tune "Eye for an Eye" with Brody Armstrong (The Distillers) assisting on vocal overdubs. Alain Johanus produced and engineered the session; Corey Miller and Damian Souder assisted...The Studio M (St. Paul, MN) engineering team, Tom Mudge and Craig Thor-

son, led a tour through the studio's facilities for the region's Audio Engineering Society members. On hand to demonstrate the facilities' acoustics were the Baroque Trio (featuring flute, violin and cello).

NORTHWEST

It was a busy month at Nettleingham Studios' (Vancouver, WA): Engineer Kevin Nettleingham worked on the latest tracks for Portland-area artists Crack City Rockers (Paisley Pop), the Al Perez Band, Monn Tanno Mondo, Nonoy Alovera, THIRTY3 and Sumara. Also on the roster was a compilation for KTHX-FM (Reno, NV) that boasted rare performances by Los Lobos, Mumbo Gumbo, Howie Day, Robert Cray, Dishwalla, Robben Ford, Joe Craven, Jesse Colin Young, Pete Yorn and John Hiatt...Studio 880 (Oakland, CA) announced fall sessions and upgrades including its latest addition to Studio B, which now features a 12-channel Neve Melbourne. Glass Jaw (Warner Bros. Records) was in-studio to track, with DJ Dan the Automator producing, Reto Peter engineering, and Hector Cerezo and Steve Beacham assisting.

SOUTHEAST

Doppler Studios (Atlanta) had Grammy Award™-nominee india.arie in to track vocals with producer Jimmy Jam; Ralph Cacciurri engineered and Roger Moody assisted. Also in the studio, Whitney Houston recorded vocals for her upcoming Christmas release for Arista; sessions were engineered by Thom "TK" Kidd and assisted by Moody, and production was handled by Mervyn Warren...Engineer Ray Seay has been busy at Circle House Studios (North Miami) mixing Lil' John on his latest, "Get Low"; Jacky-O (Po Boy records) and Wyclef Jean for "Nuckie"; and Jermaine Dupri's debut single "Dance Floor,"



Impromptu rhythm wizardry: Rapper Q-Tip steps in to master a new album at Bernie Grundman Mastering (Hollywood). Pictured (L-R): recording engineer/mixer Blair Wells, Q-Tip and mastering Brian "Big Bass" Gardner

featuring Pastor Troy...Engineers Tom Solomon and Nathan Lawson wrapped up stereo and 5.1 mixes at Studio 288 (Albany, GA) for ProvidencePraiseMusic's first live praise and worship CD/DVD-A release for band Worship 288.

SOUTHERN CALIFORNIA

New Jersey's Hit District studio owner Roy Hamilton was in at West Lake Audio Studios (Santa Monica) with Britney Spears, collaborating on and mixing her new single and recent release, *In the Zone*...The Darkness was in at Scream Studios (Studio City) mixing a holiday track "Don't Let the Bells End" with producer Bob Ezrin and engineer Brian Virtue; rap-rock artists Chronic Future, Chris Shaw (engineer) and Sean Beavan (producer) mixed songs for their upcoming release on Interscope...DNA Mastering (Studio City) owner/engineer Dave Donnelly took to the board to mix Warner's Jazz Classic Album Series in addition to the soundtrack for the upcoming film *Something's Got to Give* with Jack Nicholson.

SOUTHWEST

SugarHill Recording (Houston) proudly hosted award-winning Houston-based artist John Evans, who was tracking a variety of projects in Studio A and B, including his fourth release. Senior staff engineer Steve Christensen and Evans share co-production credits for the yet-to-be-titled album. ■

Send your session news to blingle@prime-diabusiness.com. High-resolution photos encouraged!



Cutting up at the Cutting Room (NYC): Pop-punks Count the Stars put on a show, even in the studio. (L-R) Singer Chris Kasarjian, assistant engineer Anthony Gallo, drummer Dave Shapiro, guitarist Adam Manning, engineer Steve Schopp and bassist Clarke Foley

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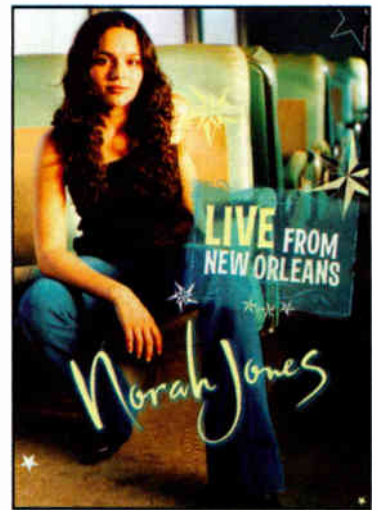
World Radio History

L.A. GRAPEVINE FROM PAGE 134

the artist approves of the mix, the visuals—the whole package. In the case of Sanctuary, we have a sweeping deal that covers all kinds of things from their catalog. In other cases, we've gone after one record or one artist. Having a wide variety of choices benefits both our label and the format. The format is still getting going. We want people to go to the DVD section of the store and have a lot of selections. Obviously, what we choose to release has to be commercially viable. I try to pick things that people who are

currently buying DVD titles will be interested in, but I also pick away at the fringes of that and push the envelope a little."

As a separate division of 5.1 Entertainment Group, Production Services is an integrated DVD-Audio and -Video production company servicing both Silverline and outside clients. Housed in the 10,000-square-foot facility are three digital audio studios operated under the auspices of veteran mixer Gary Lux, along with all of the mastering, authoring and graphics entities required to ready a DVD for manufacturing. Lux, who also recently finished 5.1 mixes for OutKast, Usher, Aaron Neville and Blues Traveler, as



well as stereo projects for Shania Twain, points out that he and the company also do work—including commercials and film soundtracks—in other formats. "We're known for our 5.1 mixing," he says, "but we're an overall production business. A lot of times, I'll do both the stereo and the 5.1 mix for a project."

As mainstream labels seek to get DVD-A titles to market, they come up against the unique intricacy of the process, something that 5.1 Entertainment has had plenty of time to streamline. "The amount of work we do for other companies has really escalated," comments Dean. "That's good news for our production guys, but it's also good news for the format. The complexity of creating music DVDs is daunting for those new to it. Visuals are an almost obligatory part of the package. That puts a lot of pressure on the content provider to come up with material. It's also necessary to locate original multi-track masters to provide the elements for surround remixing. Generally, we get the origi-



nal packaging art from whatever label our deal is with photos, lyrics, etc. But on almost every project, we go further. If a video or an EPK (electronic press kit) exists, we'll get it and we license photographs from all over the world. If an artist is in town, we'll often go out and shoot our own content. It's a lot of

Chris Shepard and the **TRUE Precision8**

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Chris Shepard's engineering, mixing and production credits include The Flaming Lips, Wilco, Buddy Guy, Smashing Pumpkins, and KMFDM.

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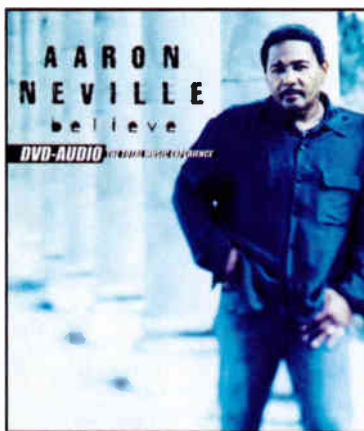
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COAST TO COAST

work, but it's worth it when we see how excited the artists get about the package."

"Most music labels are a bit shell-shocked with what it takes to produce DVDs," notes 5.1 Production Services presi-



dent Bob Michaels. "It's an immense amount of information and asset gathering. We have an advantage, not only because of our experience, but also because of the synergy between our divisions. Our multimedia effort isn't linear. We don't just mix a project and then hand it off to graphics. When we start, we talk about what's envisioned for the project and then it fans out into five or six departments and runs parallel. That's how we're able to achieve such high quality in



such a short time. People are becoming aware of that, and also that we're not just a studio for our own label."

Jones' *Live in New Orleans* was an example of 5.1's fast turnaround time; from concept to DVD was a remarkable five days. Just weeks before the 2003 Grammy Awards, executives at Blue Note/EMI decided that Jones' chances of winning a Grammy were strong enough to warrant a new release to be ready immediately after the

broadcast. The concert, recorded at House of Blues in New Orleans by Crawford Communications, had to be remixed from the original 48 Tascam DA-98 tracks to 5.1, then locked to the edited video. Lux handled the mixing, and other departments at 5.1 Production Services coordinated conforming to video, graphics design and authoring. Jones was vacationing in Australia; mixes were shipped via Internet to a studio in Australia where a reference disc was burned and then delivered to her for approval. The finished product was released on the Tuesday after the Grammys and, according to the RIAA, has shipped 2 million copies to date.

"We're really proud of what we do here," says Lux. "We have a kind of creativity that we think is akin to other labels in the past, like Stax and Motown, that excelled in their genre. They had house producers and a core team, and they were standouts in what they did. We're in a parallel universe in that we're a format-driven label. We've got terrific mixers, and our graphics people are great; they're the guts behind the look and feel of our discs."

Upcoming DVD-As from Silverline include, along with the Sanctuary roster, the Artemis Classics catalog, which comprises 35 master recordings originally recorded in the '60s and '70s for the Vanguard label.

"The DVD brand itself is synonymous with quality. I think a lot of people get that," concludes Dean. "That's one of the main reasons why DVD-Audio is catching on. But it's moving away from the audiophile mentality and becoming a very general consumer-friendly format. There are home-theater-systems-in-a-box that give a credible surround experience for \$300. And the coolest dorm room on the planet has to be the one that's got the Creative Labs system on a PC playing DVD-Audio. It doesn't get more compact than that. In the space of a dorm room, that can really be rocking! The point is, DVD-Audio has come down to a level where it's available to pretty much everybody. But the best news, for us, is that we're not doing this by ourselves anymore!" ■

Got an L.A. story? E-mail MsMDK@aol.com.

NASHVILLE SKYLINE FROM PAGE 135

"There is a new artist named Mindy Smith whose version of 'Jolene' is spectacular, and that's gonna be the first single off of it. And then they're releasing my single, 'Just Because I'm a Woman' because a lot of the girls sing toward the end of that. So that's a lot goin' on, which is fine. You know me, I've always got a lot goin' on!"

While I was there, I got to hang with



Kenny Chesney (standing) flanked by engineer Billy Sherrill (L) and producer Buddy Cannon at Starstruck

Buddy Cannon and some of the studio players (John Hobbs, keyboards; Eddie Bayers, drums) who were taking a break from working on Kenny Chesney's next album. Cannon also produced (with Norro Wilson) Reba McEntire's latest Universal album at Starstruck, *Room to Breathe*. "We cut the whole album in three days," says Cannon, adding that they tacked on an extra session for a duet with Vince Gill called "It Just Has to Be This Way." Other tracks that Cannon, Beyer and Hobbs pointed out as session highlights were "If I Had Any Sense Left At All," "Senses" and "Moving Oleta," which Hobbs says was, "an incredibly emotional song. We were all sitting around sobbing. It was that sad. It is really great."

Of McEntire's song-selecting, Cannon adds, "I think that she picks songs that move her emotionally. Even though she's listened to the songs probably 100 times each or more, the lyrics still get her when she listens to them. She really connects with the song emotionally, and you know when you hear her singing, she's there. You know, the players can feel it and we can feel it in the control room."

Concerning McEntire's vocal performances, Cannon says that "She got in there and nailed all the vocals on the tracking days, no vocal overdub days—not one! A few of the songs are scratch vocals, and a couple of them she didn't even sing any additional passes on 'em. I told her she screwed our whole plan up," Cannon says with a laugh. "She got us five days off schedule by not having to do any vocal overdubs! I had to move everything up a week!"

The session team enjoyed the production

chemistry between Wilson and Cannon. "They have a really great, really balanced relationship that works great," enthuses Hobbs. "Norro's an old piano player and a really fine musician in his own right. He hangs with the musicians. He has a set of headphones and his own station on the floor out during the sessions and he keeps the excitement up. He's the roaming ambassador of goodwill and keeps everybody loose and makes his musical suggestions. Buddy's the nuts-and-bolts guy. He's in the control room listening hard and deciding if we need to go for another take, and doing the fix-its when we select a take."

Cannon was also producing the next Chesney album at Starstruck. While I was there, I spent some time listening to a new track with Chesney, Cannon and engineer Billy Sherrill in The Gallery control room.

"We've cut about seven songs," says Cannon. "We're just trying to take it a step further from where we were and keep it geared toward his audience. Kenny is so connected with his audience and it's something to see when you see him playing for them. It's a pretty big audience these days."

After hanging out with Cannon, I spent some time with Jim Jordan who took me around the studio. Both of Starstruck's recording studios—The Gallery (which is the primary tracking room) and The Pond (the main mixing room)—share a common machine room that houses two 32-input/64-output Pro Tools HD systems, two Sony 3348 digital multitracks, two Mitsubishi 880 digital multitracks and two Studer A827 analog multitracks with Dolby SR. Comprehensive audio and machine control patching allow easy access to any of these formats.

The Pond control room is virtually identical to The Gallery control room in design, dimension and technology. Featuring an SSL 9072 J Series console and the same complement of outboard equipment, The Pond differs only in decor and design of the studio space. One feature of Starstruck concerns the facility's impressive machine room, which offers an assortment of well-maintained analog and the latest digital gear. The machine room also contains the SSL power supplies and computers, and the air is cooled and filtered by three separate air-conditioning systems. Audio Precision test equipment is used for calibration and alignment, ensuring that all of the studio's gear is performing to its maxi-

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mum potential.

While we were checking out the machine room, we began discussing surround and the need for labels to stay on top of their multitrack assets. "When I first came here, it was all 3348, 2-inch and a little bit of Mitsubishi 32-track digital and we haven't gotten rid of anything, so we still have a complete machine complement," say Jordan. "Having everything centralized in the machine room makes it really easy to do transfers. I'm hoping down the line the labels will wise up and realize that there are masters here that are core assets, and anything on 1-inch dig, you're gonna be lucky in five years to find a machine that'll run well enough to play it back.

"I'm seeing more and more [masters] released for SACD or DVD-A surround, and for that you're going to have to go back to the multitracks," says Jordan. "I think the sooner the labels can migrate their data off the dead formats into Pro Tools or something—broadcast .WAV or whatever they decide they want to be the standard—I think it'd be smart to get it off before all the machines disappear! We have two of everything, it's like Noah's Ark: two 9Ks, two Pro Tools rigs, two Mitsubishi x880s, two 3348s, two Studer 827s. So we're in a pretty good position to do the transfers."

One of the marks of a good studio, though, isn't its gear, but the awareness that you have to have personnel who are committed to making the experience a problem-free and creative one. "This is a great facility, but I think the staff is key. We've done a lot to try to retain people rather than run on interns," says Jordan. "I think a lot of places see an intern as a free warm body, which I don't think is what internships should be about. You're supposed to be mentoring; people did it for me, so I'd like to do it for people. But on the other hand, having a staff that doesn't change every couple of months and that knows the drill is something that our clients really appreciate. There isn't a new face every time they walk in the door."

"Gear minus talent equals zero. Just because you have an 02R or a Pro Tools rig doesn't make you a recording studio! It's always been *people* and we're very pleased with ours. Recording studios are a service business, so we always try to keep that in mind. I mean, that's the deal: just try to make the clients feel at home, and have a staff who knows what they're doing—people they can trust so they don't leave at night and worry about what's happening with their files.

"We like to get a good feel goin', and

people come in with the goal of getting two songs on a given day and they'll walk out with four. With Reba, I think we did about 11 songs in three days, and they were just killer tracks," enthuses Jordan. "I always like it when they get more than they came in to get. That's a nice feeling, when everyone's smiling and leaves early. Then we know everything was cool." ■

Send your Nashville news to MrBlurge@mac.com.

NEW YORK METRO FROM PAGE 135

and minimoog™, to Roland System 700 and Roland 100m analog synths that take up one whole wall apiece, plus a large iso room filled with drums, strings and guitar amps, Garrod and Hays have plenty of great sound sources to jam out on. Once the composition takes shape, they and any session musicians they may need are used to laying it down at high speed. "That's very important in our business because there's very little time to turn around," says Hays. "That's also why you need a good working environment, so that when someone says at 9:00 a.m., 'That was great. Can we go on the air at 5:30 [p.m.]?' you can make any necessary changes and get it in."

Garrod and Hays aren't the only ones who have to work quickly; their stirring, often anthemic, compositions do, too. "The fundamental thing is, whatever you write, there has to be the ability to pull out three seconds, do that to a commercial and stick it in someone's head," says Hays. "Generally, we'll write a piece of music that's a minute long, but we know at the end of the day, the first three seconds has to be memorable. One week you can write 18 pieces of music start to finish, and the next week it's one piece with revisions, and you're just as busy."

Noticeably absent from the OSI studio is any sort of DAW. Garrod and Hays simply go through a mic pre to the SSL and direct to their recorder, a Tascam MX-2424 hard disk multitrack. "If something isn't right, we'll punch in rather than moving the blobs around on the screen. It's a better flow," Garrod notes. "We really wanted to build a place that upped the level from just the MIDI studio and make it more like a real recording studio, which is why we went to a traditional mixing console.

"Composition is the main focus but we like to obsess on the sound quality, as well, and if it takes an extra second to patch in a Neve preamp, we'll do it. In an arrangement or production, it's a lot easier to do something with a few really good-quality sounds."

Go uptown about 20 blocks, hang a right, and walk five avenues over and you'll



Hothead's big three (l-r): Laki Fotopoulos, Jim Stauffer and John Terelle

arrive at Hothead (www.hothead.tv), where things couldn't be more different. The heavy emphasis on a network TV clientele remains, with clients that include Spike TV, Comedy Central, Nickelodeon, a hard-hitting VH1 "NFL Blitz" package and many more. The three principals here—Laki Fotopoulos, Jim Stauffer and John Terelle—operate in their own custom-tailored rooms to perform arresting sound design, mixing and editing functions geared toward the notoriously hard-to-please youth market.

While all three are fully networked to each other and ready to trade off duties at any time, they each have their specialties: Stauffer excels in using guitars, Foley and his mouth to create insane sound combinations; Terelle gets off on creating electronic loops; and Fotopoulos enjoys taking existing sounds and bending them to his own devious desires. What it all adds up to is audio that matches up extremely well with short-attention-span visuals.

"A lot of our clients come to us and they're visually based," Terelle points out. "They know what colors and shots they'll use, but they're not sure what they want audio-wise. But I visualize sound; I can see the waveform in my head, and I know what I want to do. That's why they use us: They know we'll fill in the blanks."

While each of their Pro Tools-equipped studios has outboard dynamics and effects on hand, the Hothead creators admit that for their specific purpose, their boxes are less and less useful, while their plug-ins are increasingly essential. "We're handing projects off a lot, and we need to be efficient, quick and maintain the quality," Fotopoulos says. "I don't have time to figure out what setting Jim had on his Eventide. There are too many variables. If you're plug-in-based, you can automate the plug-ins and make them do much more than the outboard. Now I would say the most

valuable pieces of outboard we have are the quality preamps, since it's the beginning of your audio chain."

Capable of turning out sound designs that are at turns wild, electronica-injected, spooky, six-string trashy or otherwise stimulating, Hothead has a theory about making promos that appeal to youth, from preschool toddlers to college seniors. "The main thing for younger kids is you really don't want to talk down to them," observes Stauffer. "I like to

take it further and make it interesting for them, and I also try to make it fun. Kids are the first ones to say, 'There's an adult behind this, and they're cramming it down my throat.' If they think it's from their peers, they'll like it more."

"I think organic, real sounds work for the young kids: ukulele plucks, even the classic slide whistles," Fotopoulos adds. "Whereas the older kids in their teens and 20s, you go with more electronic, synthesized mystery noises. You wouldn't use an organic sound because it's not reflected in the music they listen to. Take a glass being smashed, pitch it upward and play it backward. A guitar is good, but you'll probably process the hell out of it and make it sound like a buzzsaw."

For Terelle, the fun is in transforming thick sounds with a "fairy dust" sprinkling of imaginative processing or never-fail instruments like chimes. "Take a cymbal roll, pitch it way up, throw it through a reverb and you've got this shimmery wash," he suggests. "Then take the attack off of it, start looping it around on itself and roll off the high end. Turn it into a sound you couldn't create naturally, but has an edge to it—something that doesn't happen in real life, but happens in your mind."

Despite all of the pressure for TV houses to constantly scan the airwaves and stay current, Fotopoulos points out that relaxing your ears can be the best way to monitor the competition. "Sometimes, I have to be able to sit back and listen like the average person," he says. "When I go home, I don't want to analyze; if something jumps out at me, if it's really good or bad, I'll notice. People say to me, 'When you watch a film, don't you just tune into the sound design?' No. I want to watch the film and enjoy it." ■

Send your Metro news to david@dwords.com.

I would like to acknowledge the following for their contributions to the DVD-A versions of Santana's "Supernatural" and "Shaman":

Thom Cadley

Sony Music Studios: transfers and advise.

Vincent Caro

Blink Digital: conforming source material to cd mixes.

Diana Reid Haig

Digital editing and mixing.

Stephen Hart

Fantasy Studios: tape research, transfers and advise.

Nathan Rosenberg

editing

Matt Boynton

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Elliot Mazer

—FROM PAGE 24, HIT THE ROAD, JACK

and divided them into two categories. Over the years I did evolve better approaches that yielded reliable productive results in much less time. But I also realized that the more stress there was, the more I reverted and allowed myself to be caught in frustrating patterns, in nonproductive exercises. This revelation is significant.

So I advocate reclaiming lost time. Streamline these stupid tasks, get better at them. Maybe even train an apprentice to do them for you. Regain control of the balance—minimize the grunt work and maximize the glamour work. And watch yourself under heavy load. If your efficiency crumbles, you are sabotaging yourself.

So what the hell does this actually mean in real-world terms?

I see two areas of potential improvement: how actual maintenance is handled, and ways to streamline the parts of each session that use up time in noncreative ways.

Stop chasing hum and buzz the same way you always have. There is new low-cost gear to do that for you now. Learn about it, master it. Stop and friggin' fix oxidized grounds and bays that you fight with daily. Get your house guitar amp shielded

and replace your dimmers with DC units. Have someone go through and replace every snapping op amp in the place. *Replace* every noisy pot you have. Don't clean them.

Hell, replace every manually controlled analog box you can with new digital toys that remember, so you can call up that compressor that worked so well last month in three seconds. Keep your LA-2 and your ancient Neumann and other beautiful classic gear, and let all your B time be spent keeping these beauties alive.

Today's digital technologies can all but eliminate the drudgery that was once part of our lives. Let it. It costs one-tenth what it did five years ago. Maybe you should even master a good DAW and throw out the 15 pieces of gear it replaces.

My suspicion is, because I've watched my colleagues and friends, that most of you have already thought of all this and have already made improvements. But if you stop and ask yourself how much garbage you have cleaned up in your life, what's your answer? Could you do more? Is it worth it? Are you as efficient with the annoying little crap under full load as you are in lighter sessions?

I guess this might sound like I think I've been through so much and know so much more than you, my readers, that I feel superior. Nope. View it like this—there's a bunch of lemmings in a line up on a cliff at two in the morning. There's no moon, it's pitch black. I'm number 23, you're number 47. I walk off the cliff and on my way down, I turn around and yell, "Whoa, dudes, wait a minute, this ain't right." That's all it is. I got here before you got here. I had a career-ending experience before you did.

I was living the life. I structured my life to be what I wanted it to be. It was everything I wanted. There were some flaws, there were some regrets, but most were masked by the sheer velocity of my life. I had to step off this cliff and end up lying here on my back on the rocks, looking up at all of you to see it. I'm willing to look a little stupid if 10 or 15 of you will actually look over the edge of the cliff, look at me and decide that while you're still up there, still in the game, you might listen to a couple of points that could best be seen from the other side. ■


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—FROM PAGE 28, *BUNGLING IN THE JUNGLE*

how to mike him: put him at one end of the room in the vocal sweet spot, then put a co-incident pair of 414s in figure-8 mode as far away from him as possible.

The studio was in a huge concrete building with corrugated steel walls 40 feet high, surrounded by several acres of asphalt, which was surrounded by jungle. It was on the site of a U.S. Navy tracking station that had been built during World War II and given back to the local government in the 1970s. For the dozens of pans we were trying to record, there was only one solution:

Go outside. We had a 150-foot, 24-channel snake for film work, so getting lines out the door was no problem.

The session was scheduled for late afternoon, as most of the players had day jobs. Boogie drew up a plot of where the different sections (with names like “double tenors,” “guitar pans,” “cellos” and “quadrophonics”) should be. I marked it up with the mic model and cable numbers, handed it off to one of my eager new assistants and set off to find dinner.

An hour later, I came back to find the mics in place and the whole orchestra ready

to go. The only problem was, the assistants had placed the band right up against one of the steel walls. We tried a take and the resulting slapback would have sent Sam Phillips running into the jungle. I asked the guys where they got the insane idea to put the pans so close to the building, and the owner stepped in and said he was the one who ordered it; the last time they recorded steel pans, they did it there. It was mono, for a film and “I kind of liked the echo.” Needless to say, the track was useless.

So for the next hour, we moved every-one 20 yards over and then reset the mics and the levels. By now, the sun was setting, and in that part of the world, the temperature and humidity can change very rapidly as day turns into night. We tried another take, and during the final fade, I started to hear strange popping sounds and then some shouting, first on one channel, then another, and within a few seconds on all 24 tracks. I rushed outside and found that the players (and my trusty assistants) had all dived inside the building or into their cars to take refuge—leaving two dozen brand-new AKGs, Shures, Electro-Voices and Neumanns to soak in the tropical downpour.

One more story. The studio had hired some local carpenters to build the control room furniture. They did some fine-looking work, but as most of their previous experience was in the domestic sphere, they were not terribly familiar with the concept of ventilation. The Dolby rack, for example, was built into a lovely hand-rubbed, completely sealed hardwood cabinet. By the time I was able to convince the boss to let me cut some holes in the back, we had lost several of the “Cat-22” channel cards. We wired the folks at Dolby UK, and they were very nice and promised to send us replacements right away.

Two months later, we were still waiting, while we tried to convince clients that they didn't really need Dolby on *all* their tracks. Someone went downtown to the main customs office and found that, yes, the cards had arrived some time ago, but customs was waiting for us to give them a “classification.” (Our pointing out that they hadn't bothered to notify us about this didn't seem to impress them.) So the next day, I went down and explained that they were electronic sub-assemblies. Because we didn't pay for them, they had no cash value and, therefore, we didn't have to pay any duty. But there was no such category on their forms. Instead, I was asked whether they should be considered “electronic parts” or “electronic equipment,” the closest they could find.

“Call them parts,” I said. “But we make

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electronic parts in this country, and you cannot import anything that's also made here without special dispensation," came the reply. "You don't have a license to import parts." I had never heard of a parts factory in Trinidad—all I could think of was some poor soul filling transformer cans with waste oil in his bathtub—but I wasn't going to argue. "Okay, then let's call them 'equipment,'" I said. "Ah!" came the swift rejoinder. "But then the equipment must have a cash value. And you must pay duty!"

I reached in my pocket and pulled out the first thing my fingers found: a \$5 bill (worth about \$2 U.S.). "How much cash value would this cover?" I demanded. The customs man dragged over a mechanical adding machine, and with great seriousness, punched in some numbers and pulled the crank. "At 17-percent duty, that would be \$29.41," he intoned. "\$29.41 it is," I said, leaving the five bucks on his desk and walking out with the cards.

I didn't last too long in Trinidad. My boss, who had been a respected filmmaker, turned out to be a sleazebag and a bully. He bounced my paychecks, physically threatened me and tried to confiscate my passport. He recruited me with all sorts of promises to bring in foreign acts and promote the local music scene, but others later told me that wasn't the idea at all: He was in reality building an international film and music bootlegging operation, for which the studio was a front.

After six months, I had had it, and I got out in a scene like the one at the end of *The Year of Living Dangerously*. Six months later, the place was liquidated. The equipment was scattered to the winds, the site was eventually leased to someone else and most of the projects I worked on never saw the light of day. I lost touch with everyone I had met there. My girlfriend and I stayed together a few more years, and then we went our separate ways, too. It left such an awful taste in my mouth, I wouldn't go anywhere south of Florida for more than 10 years.

But now it's 25 years later, and I have this strange hankering to go back. I want to see what became of the place and see how the recording scene in Trinidad has evolved. There were some beautiful places and lovely people there, and I would like to have a memory of them untarnished by the painful ones. I have some free time this month and a bunch of frequent-flyer miles burning a hole in my pocket. But this time, if I go, it'll be on my own terms. I'll let you know what happens. ■

Paul Lehrman is working on a lot of things, among them his tan.

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B&H Photo-Video	www.bhphotovideo.com	137
Behringer	www.behringer.com	87
Broadcast Supply Worldwide	www.bswusa.com	127
CAD	www.cadmics.com	141
Cakewalk (Sonar 3)	www.cakewalk.com	5
Carillon	www.carillonusa.com	IBC
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Event Electronics	www.event1.com	123
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JBL Professional	www.jblpro.com	9
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KRK Systems	www.krksys.com	49
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Miramax	www.miramax.com	36
MOTU	www.motu.com	8C
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Neumann/USA	www.neumannusa.com	74
Neutrik USA	www.neutrikusa.com	44
NSCA	www.nscaexpo.org	149
ORAM	www.oram.co.uk	122
Professional Audio Design	www.proaudiodesign.com	107

ADVERTISER	WEBSITE	PAGE
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Simon Systems	www.skeng.com	117
Sony Pictures Digital Media Software	www.sony.com/mediasoftware	2
Soundcraft	www.soundcraft.com	83
SPL	www.spl-usa.com	65
SRS Labs	www.srslabs.com	81
Steinberg	www.steinbergusa.net	41
Studio Network Solutions	www.studionetworksolutions.com	47
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Sweetwater Sound	www.sweetwater.com	166-167
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Telefunken NA	www.telefunkenusa.com	115
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Yamaha (DM1K)	www.yamaha.com	37
Yorkville Sound	www.yorkville.com	30
Zaolla	www.zaolla.com	105
Z-Systems Audio Engineering	www.z-sys.com	46

MARKETPLACE

AEA	www.wesdooley.com	151
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C & C Music	www.candcmusic.com	151
Clearsonic	www.clearsonic.com	152
Crystal Clear Sound	www.crystalclearcds.com	152
D.W. Fearn	www.dwfearn.com	154
Dreamhire	www.dreamhire.com	150
Goodlife Audio	www.goodlifeaudio.com	151
Ground Support Equipment	www.biomorph.com	154
Hot House	www.hothousepro.com	150
Marathon Computers	www.marathoncomputer.com	155
Media Manufacturing Company	www.mediamfgcorp.com	154
Media Services	www.mediaomaha.com	153
New Song Media	www.newsongmedia.com	151
Omnirax	www.omnirax.com	153
Pendulum Audio	www.pendulumaudio.com	154
Play-It Productions	www.play-itproductions.net	150
Progressive Music	www.progressivecds.com	151
Rainbo Records	www.rainborecords.com	154
Sonic Circus	www.soniccircus.com	153
Sound Anchors	www.soundanchors.com	155
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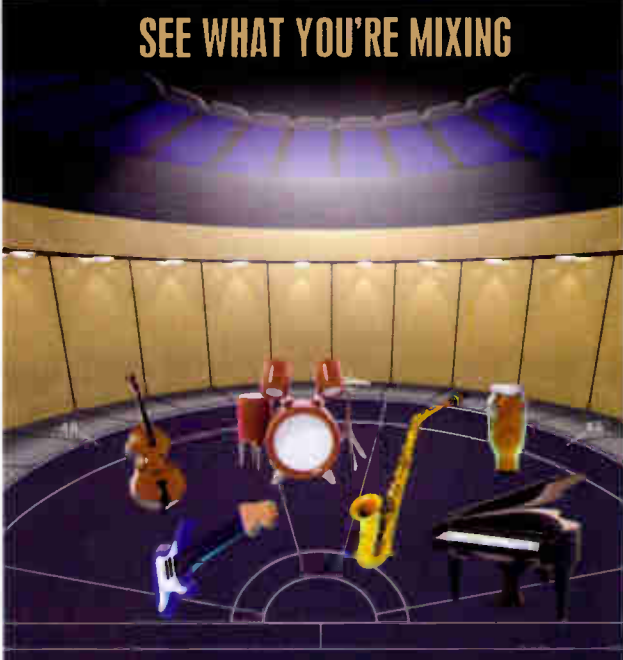
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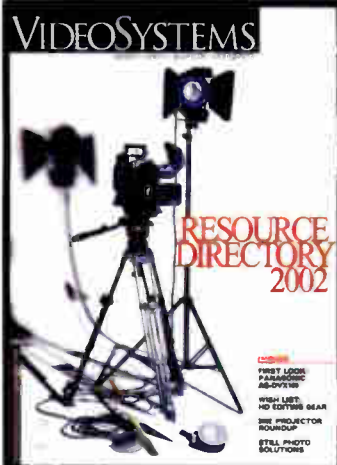


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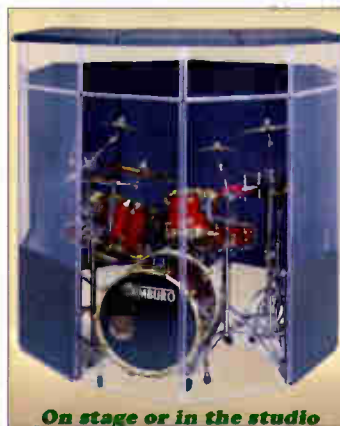
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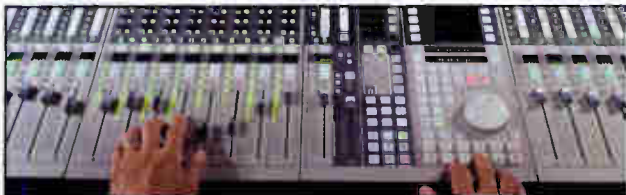
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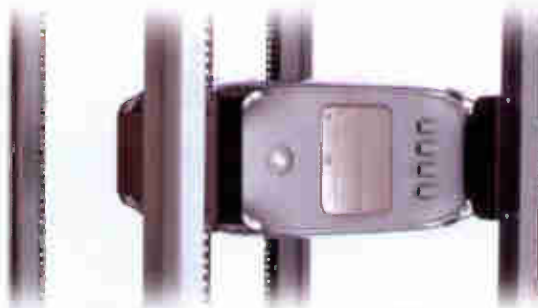
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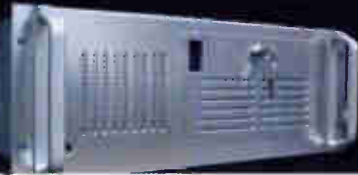
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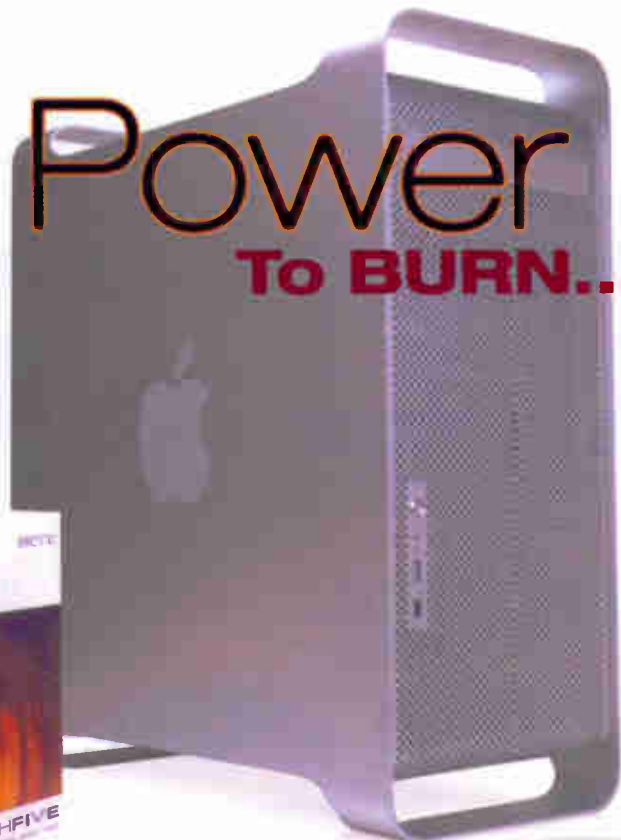
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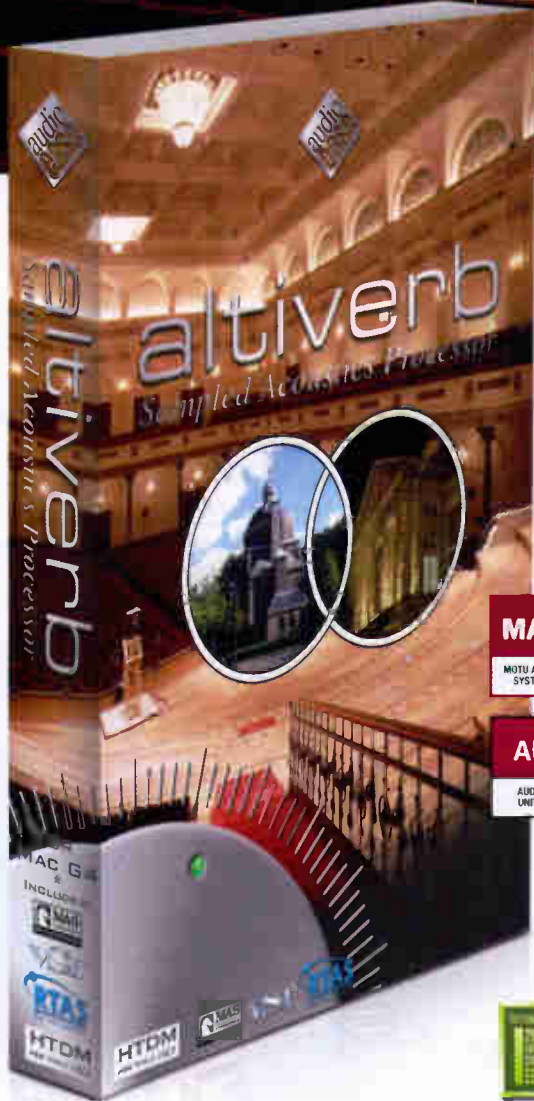
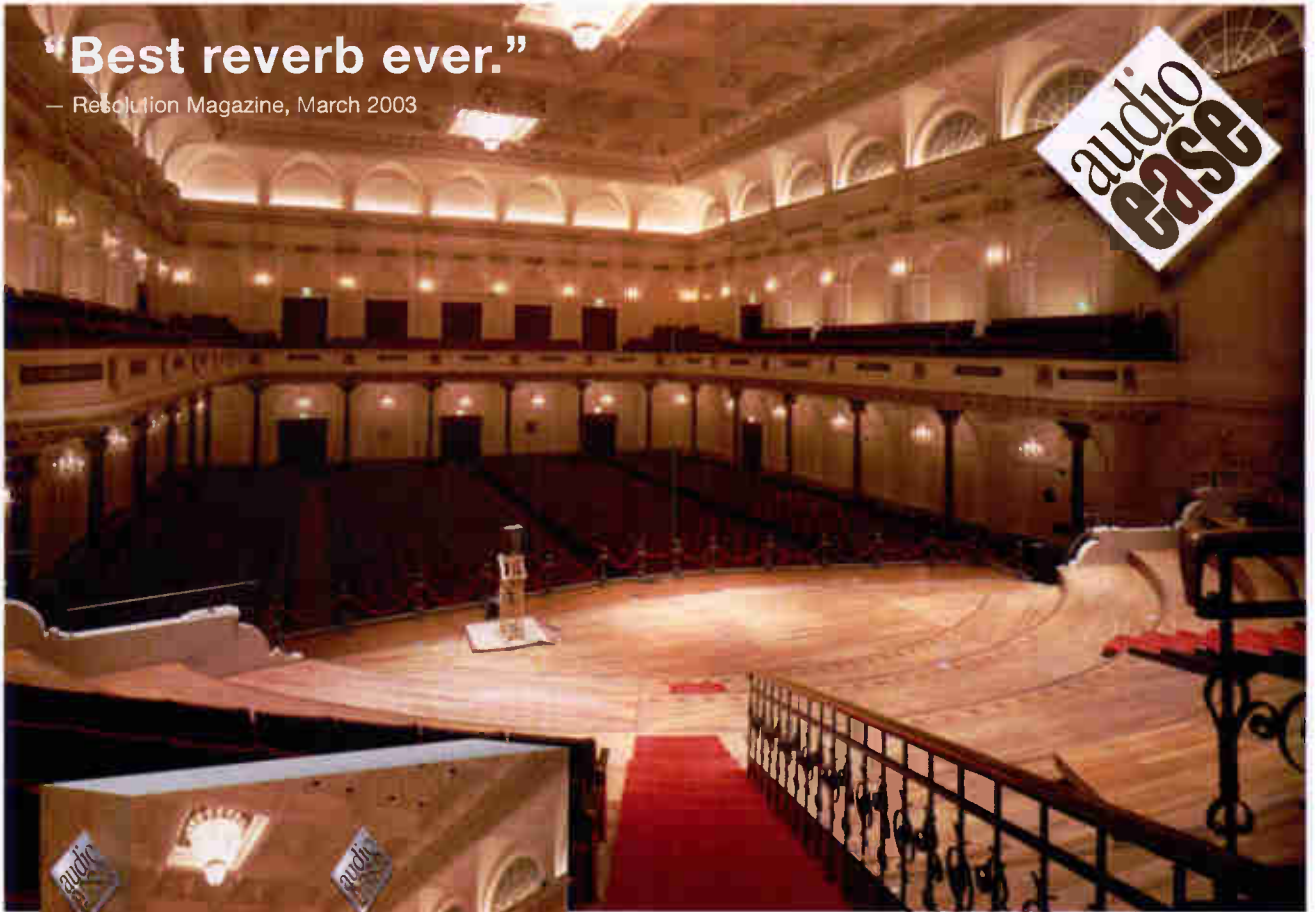
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Cool School Vol. 6.1 DP Basics, Vol. 9 DP4, Vol. 10&11 Plug-ins

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Native Instruments B4

This virtual instrument classic is now available for DP4 as an AU

The B4 is another classic keyboard from the 20th century which Native Instruments brings into the studio and onto the stage of the 21st century. The B4 is a complete virtual tonewheel organ, capable of reproducing in authentic detail the sound of the legendary B3 organ and rotating speaker cabinet, including tube amplification and distortion. Beneath the attractive, photo-realistic vintage-looking graphics operates an up-to-date audio engine, with perfect sound and lots of options for fine-tuning, all with full MIDI automation. This instrument is a must-have for every DP4 studio. Includes a full set of 91 tonewheels, photo-realistic graphics in the original look, full MIDI automation and many options for easily fine-tuning the sound.



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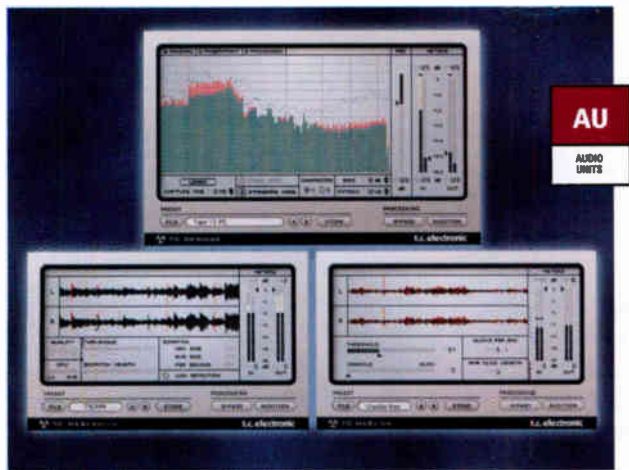


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TC Electronic Restoration Suite

Ground-breaking audio restoration plug-ins for DP4

TC Electronic revolutionizes audio restoration with the new Restoration Suite for the PowerCore platform. Powerful, fast and easy to use, this bundle of hi-end restoration plug-ins provides descrambling, denoising and declucking for the most critical applications in audio restoration. The descrambling algorithm, based on a collaboration between TC Electronic and Noveltech from Finland, employs a breakthrough first-to-market technology and delivers incredible results. Both the Denoiser and Declucker plug-ins are based on TC's many years of experience in the field of restoration, now with extended functionality. Restoration Suite is one of the first hybrid plug-ins, utilizing CPU and PowerCore DSP processing at the same time to combine the best of both worlds for optimal sound quality and best real-time results.



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Yamaha 03D Digital Mixer

Gotta Have It...Live!

During my past few years of touring and recording, I've driven a few sound companies insane with some of my interface methods. These requests usually lead to responses such as, "Hmmm, no one ever asked us to do that before." Unfortunately, the schemes needed for multitrack recording, 2-track recording, ambient press feeds, dry audio sends and routing comparative audio to an analysis device (such as SIA Software's *Smaart*) can be extremely complex and rather cumbersome.

At some point, a light bulb came on over my head, and I assembled a rig to handle such chores. It's no briefcase system, but it is very comprehensive, and the centerpiece of it is the Yamaha 03D digital mixer. I rarely go to a gig anymore without it. Other digital mixers could work as a substitute, but for my money, the 03D was the best value when I designed my system. Here are some instances where this rig has really come in handy.

SIA SMAART ANALYSIS

My primary use of the mixer is for analysis, comparing multiple sources with little fuss or muss. I set up a number of "Smaart inputs," meaning multiple analyzer mic ins along with outs from the main mixing console, such as L-R via a matrix, as well as solo. The MIDI functionality on both the *Smaart* software and the 03D lets me send a MIDI program change from *Smaart* as a function of "preset" changes to look at various parts of the room vs. the desk audio, or examine a soloed input in a frequency analysis mode.

RECORDING 2-TRACK

Need a sweet 2-track mix? Split the house's L-R audio to two additional 03D channels and combine it with your ambience (*not* analysis) mics, add EQ or compression if desired, and route it digitally to a 2-track recorder. As explained in my "Fix It" tip in the December *Mix*, you can also perform ducking—with key source selection—on the ambience mics, all in the digital domain. You can even do time-offset alignment of mix and ambient mics via the 03D's Input Delay feature—very handy. In my system, the 2-

track audio routes digitally to a TC Electronic Finalizer and then to dual HHB CDR-850 recorders, Tascam DA-60MkII TC DAT and a PC with *Samplitude Pro 7.0*. (This computer also runs my *Smaart* and ATI console control software and plays walk-in music via *Windows Media Player*.)

AUDIO DISTRIBUTION

While on tour, you always need to get audio to destinations other than the P.A., such as press feeds (MTV, VH-1, CNN, etc.), lawn seating, dressing rooms, press boxes, sky boxes and more. For such occasions, I route two stereo outputs from the 03D to dual 2-in/6-out splitter mixers. One set has L-R audio plus ambience; the other pair is L-R audio minus ambience. Once there, they can be set to mono/stereo narrow stereo and level-adjusted for the cameraman who doesn't realize what he's asking for is a "mic level output" from your console. You can also use time manipulation on these outputs for lawn systems, delay offsets, etc.

MULTITRACK REMIXING

In addition to the above 2-track scenario, I also take advantage of the 03D's multiple AES/EBU outs to bus the L-R audio and individual audience mics digitally to a 64 I/O Pro Tools system. Once completed, it then returns from Pro Tools digitally to the monitor path of the mixer. You can then reblend audio and ambience if needed, or you can use the Pro Tools busing to dictate what tracks arrive back at the 03D; for instance, if you want to break the entire 64 I/O audio into 16 outputs. At that point, you can do some down-and-dirty remixes on the 03D using its automation facilities while chasing Pro Tools as a time base. You could also mix within Pro Tools, but if you want to get your hands on some faders, they are right at your disposal.



Scovill's custom rig, featuring an 03D

Finally, during the course of some tours, I'm asked to help artists throw something down in the form of work CD demos for songs they're fleshing out. When that happens, I simply unplug a couple of multicores and head for the dressing room. Obviously, the mixer's recall ability is crucial in this situation, because you need to set up a tracking monitoring environment, store it for use during the next few days and quickly return it to its analysis/recording duties for the show. The 03D is wonderful for this kind of operation's demands.

The 03D has become my "audio Swiss Army knife": a true routing solution in a system that requires high flexibility and complexity. This is a situation where digital is worth its weight in gold. I try not to leave home without it. ■

Robert Scovill has mixed thousands of shows and recordings for acts such as Def Leppard, Rush, Matchbox 20 and Tom Petty. He offers an annual three-day, hands-on workshop at www.audioseminars.com.



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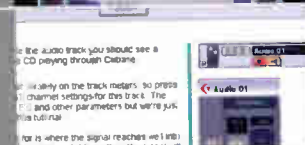
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